BOARD OF TRUSTEES
August 23, 2023
6:30 PM

Leeper Center, 3800 Wilson Avenue, Wellington, CO

Special Meeting Agenda

Individuals wishing to make public comments must attend the meeting in person or may submit comments by sending an email to muhse@wellingtoncolorado.gov. The email must be received by 4:00 p.m. on the day of the meeting. The comments will be provided to the Trustees and added as an addendum to the packet. Emailed comments will not be read during the meeting.

The Zoom information below is for online viewing and listening only.

Please click the link below to join the webinar:
https://us06web.zoom.us/j/84871162393?pwd=UkVaaDE4RmhJaERnallEK1hvNHJ5Zz09
Passcode: 726078
Or One tap mobile :
US: +17207072699,,84871162393# or +17193594580,,84871162393#
Or Telephone:
Dial(for higher quality, dial a number based on your current location):
US: +1 720 707 2699 or +1 719 359 4580 or +1 669 444 9171 or +1 253 205 0468 or +1 253 215 8782 or +1 346 248 7799 or +1 386 347 5053 or +1 507 473 4847 or +1 564 217 2000 or +1 646 558 8656 or +1 646 931 3860 or +1 689 278 1000 or +1 301 715 8592 or +1 305 224 1968 or +1 309 205 3325 or +1 312 626 6799 or +1 360 209 5623
Webinar ID: 848 7116 2393

A. CALL TO ORDER

1. Pledge of Allegiance
2. Roll Call
3. Amendments to Agenda
4. Conflict of Interest

B. COMMUNITY PARTICIPATION

1. Public Comment

C. ACTION ITEMS

1. Connell Asphalt Plant Appeal
    a. Original Packet Contents - Published August 9, 2023
    b. Addition 1 - Published August 17, 2023

D. REPORTS

1. Town Attorney
2. Town Administrator
3. Staff Communications
4. Board Reports

E. ADJOURN

The Town of Wellington will make reasonable accommodations for access to Town services, programs, and activities and special communication arrangements Individuals needing special accommodation may request assistance by contacting at Town Hall or at 970-568-3380 ext. 110 at least 24 hours in advance.

Board of Trustees Meeting

Date: **August 23, 2023**
Subject: **Connell Asphalt Plant Appeal**

BACKGROUND / DISCUSSION

Connell Resources, Inc. submitted a site plan review application regarding an asphalt mixing plant to be constructed in the north part of Wellington. The application was discussed at the March 6th, 2023 regular meeting of the Planning Commission and was tabled to allow time to perform studies and address questions and concerns raised by Commissioners and the public. The site plan hearing was continued to the May 1st, 2023, Planning Commission meeting. Public comments raised concerns regarding potential environmental impacts, increased noise levels, odor, and traffic disruptions.

Immediately prior to the May 1st, 2023 meeting, applicant Connell Resources requested a continuance because the reports it had contracted to address the concerns and questions presented at the previous meeting were not yet complete. The continuance was granted, and the agenda item was tabled until the June 5th, 2023 meeting.

During June 5th, 2023 Planning Commission Meeting, applicant Connell Resources presented their reports and addressed the concerns raised during the March 6th, 2023 meeting. Connell also provided expert witness testimony, analysis of data regarding the proposal, and addressed the concerns raised by the residents and the Board. The presentation touched upon critical topics requested by the Planning Commission, such as the Air Dispersion Model and Air Emission Characterization, Emission Standards and Regulatory Agencies, Adequate Separation and Setbacks, Traffic Impact Study, Noise Level Data and Information, Health and Environment Impacts, Groundwater Impacts and Monitoring, and even Architectural Character and Building Elevations.

Addressing the noise concern proved to be impossible due to the ambient noise level in Wellington. However, the applicant instead extrapolated data from their current active site in Timnath to provide accurate estimates. Additionally, they assured the community that night operations would only occur when mandated by statutory restrictions, such as highway work. As for traffic worries, the applicant pledged that their trucks would not traverse the community roads unless it was essential for local projects. Moreover, they assured everyone that they adhered to all statutory regulations, including those concerning the potential release of air contaminants.

After the extensive presentation, the Board as well as the residents of the community were permitted to raise additional questions and concerns. The applicant took the time to retake the podium and address the concerns and questions further.

The Planning Commission deliberated and approved the site plan presented by Connell Resources.

Within seven days of the hearing, the Appellants, Ben and Ayla Leistikow submitted through counsel an appeal of the decision of the Planning Commission.

An appeal of a Planning Commission decision to the Board of Trustees requires the Board to sit in a quasi-judicial capacity and determine if the Planning Commission erred in its decision. The Board, in this role, may not exceed the authority granted to the Planning Commission in the original decision.

Town staff has prepared a guide for site plan appeals to give the board a background in this area of the Land Use Code. Also attached hereto are the written appeal and a presentation to be made by the Appellant (the Leistikows), a staff report regarding the substance of the appeal, a written response and a presentation to be made by the Applicant/Appellee (Connell Resources), and an extensive record.

The record is the record of the decision made by the Planning Commission, including its meeting packets, public comment materials, and all data and information submitted prior to its decision.

STAFF RECOMMENDATION

Staff have identified the following options for Trustee consideration and action:
1. Uphold the June 5, 2023 decision by the Planning Commission on the site plan in question.
2. Modify the June 5, 2023 decision by the Planning Commission on the site plan in question.
3. Reverse the June 5, 2023 decision by the Planning Commission on the site plan in question.

ATTACHMENTS

None

Board of Trustees Meeting

Date: **August 23, 2023**
Subject: **Original Packet Contents - Published August 9, 2023**

BACKGROUND / DISCUSSION

Packet items have been separated into categories in order to clearly demonstrate the order in which documents were published. The documents in this section constitute the completed set of attachments as originally published on August 9, 2023.

STAFF RECOMMENDATION

ATTACHMENTS

1. Land Use Code Appeal Guidelines for Site Plan Appeals
2. Leistikow Written Appeal
3. Connell Resources Response
4. Staff Report - Connell Resources Appeal
5. Land Use Code Sections 15-2-120 and 15-2-230
6. Record Table of Contents
7. Record Video
8. Record Full

Town of Wellington, Land Use Code Appeal Guidelines for Site Plan Appeals

- July 10, 2023
- Prepared by Dan Sapienza – March, Olive & Sapienza, LLC, Town Attorney

Overview

This Guide is geared toward helping applicants and the public understand the appeals process for appeals of Site Plan decisions made by the Town of Wellington Planning Commission. This guide may be informative in other appeals processes within the Town of Wellington, but its intent is specific to Site Plan appeals.

Appealable decisions

Any aggrieved party may appeal decisions of the Town of Wellington made under the Town Land Use Code pursuant to the Procedures laid out in Chapter 15 of the Wellington Municipal Code (the "Land Use Code"). The procedures are primarily detailed in Section 15-2-230 and may be modified by more specific Land Use Code sections. Section 15-2-120 includes appeals procedures for Site Plan review that are controlling in these cases.

Per Section 15-2-230(b), as applicable to Site Plan appeals:

> An appeal application may be initiated by any person aggrieved by a final decision made by an administrative officer or agency, based upon or made in the course of the administration or enforcement of this Code. Appeals are made in accordance with C.R.S. § 31-23-307.
>
> …
>
> (3) Appeal of Planning Commission Decisions. Appeals of all Planning Commission decisions shall be to the Town Board.
>
> (4) Appeal of Town Board Decisions. Appeals of any final decision by the Town Board decisions made pursuant to this Code shall be to the District Court in the manner set forth in the Colorado Rules of Civil Procedure.
>
> …

Parties to the Appeal

Per the Land Use Code, any "person aggrieved by a final decision" may file an appeal. This term is intended to be broad, allowing essentially any person or entity to appeal if they disagree with the decision in question. This party is referred to herein as the Appellant.

If an appeal is filed by any party who was not the applicant for the site plan being appealed, that applicant is also considered a Party to the appeal, if they desire.

Filing Fee

Upon the filing of the appeal, the Appellant must pay a non-refundable application fee. Pursuant to the Fee Schedule adopted by the Board of Trustees in 2023, the fee is $500, plus any legal expenses incurred by the Town in preparing the appeal. At the time of filing, the Appellant must pay the $500 and agree to pay any legal expenses that are incurred by the Town in preparing and processing the appeal.

How Appeals are Filed

An appeal is to be filed, in writing, but there is no standard form provided by the Town. For Site Plan appeals, pursuant to Section 15-2-120, the appeal must be made in writing submitted to the Town Administrator/Clerk within seven days of the action on the site plan and must state the reasons why the Planning Commission action is incorrect.

For other appeals under Section 15-2-230, the appeal must be "made in writing and submitted to the Planning Director stating the specifics of the appeal, the grounds for the requested relief, and include all pertinent records of the decision." The appeal must be filed within 30 days of the decision being appealed.

Grounds for Appeal, Burden of Proof, and Required Findings

The written appeal must state the reasons why the Appellant believes the decision is incorrect. The Appellant has the burden of proving the facts necessary to warrant reversal of the decision being appealed. If the Appellant fails to meet the burden, the appeal must be denied.

An appeal is not a rehearing of the issue "de novo," but a quasi-judicial hearing of whether the previous decision was made in error, based on specific criteria. All appeals under the Land Use Code require that the appeal decision-making body consider the following findings:

(1) Whether the decision of the administrative official or Planning Commission was a clear error, as opposed to fairly debatable, according to the provisions of these regulations.
(2) The interpretation instructions of these regulations.
(3) The purposes, intent, and design objectives of any standards that are subject to the appeal.
(4) The record on the application, including the official plans and policies of the Town used to evaluate the application or make the decision.
(5) Whether the final decision and the grounds for relief requested in the appeal are within the authority granted by these regulations.

(6) Whether there are other more appropriate and applicable procedures to achieve the [Appellant]'s proposed objective, such as a plan amendment, text amendment, planned zoning districts, a zoning map amendment, or a variance.

See Land Use Code, Section 15-2-230(d).

For a Site Plan Appeal, the Town Board must also apply the site plan review criteria in evaluating the Planning Commission's decision:

(1) The site plan is consistent with the Comprehensive Plan and the intent stated in this Land Use Code.
(2) The lot size and lot dimensions are consistent with what is shown on the approved final plat.
(3) No buildings or structures infringe on any easements.
(4) The proposed site grading is consistent with the requirements of any applicable adopted storm drainage criteria or master drainage plans.
(5) The density and dimensions shown conform with Article 4 of this Code or the approved PUD requirements.
(6) The applicable development standards have been adequately addressed and the proposed improvements conform with Article 5 of this Code.

See Land Use Code, Section 15-2-120(c).

Appeal Hearing Scheduling

A Site Plan appeal must be scheduled within 45 days after the end of the appeal period, which is the period 7 days after the decision being appealed was entered.

The Record on Appeal

The appeal is based on the record of what occurred at the Planning Commission, the written appeal and response from other Parties, and relevant provisions of the Town Code.

On appeal, the Board of Trustees may consider:

(1) The same facts and information presented at the Planning Commission which is the subject of the appeal. This includes all packet items and other written materials presented.
(2) Relevant provisions of the Municipal Code and Land Use Code and any other applicable legal authorities.
(3) The grounds for appeal cited in the written application for appeal.
(4) Town staff report and presentation prepared for the appeal.
(5) Arguments made by Parties at the hearing on the appeal and in written submissions. Any issues raised during the presentation of arguments made by the Appellant that

were not raised in the written appeal may not be considered by the Board of Trustees in deciding the appeal.

Town staff will provide the Board of Trustees with a complete record for review and may include links to video that are part of the appeal. If a transcript is available, it will be provided.

Ex Parte Communications

In order to maintain the impartiality of the Board of Trustees, Trustees must avoid communication with parties-in-interest and members of the public regarding the merits of the appeal prior to the hearing on the appeal.

Packet Material

In many cases, the entire record on appeal will be very large, including a variety of documents, video, and potentially transcripts of public hearings. The packet material for the Board of Trustees will include:

(1) Staff Agenda Memorandum
(2) Written Appeal submitted by Appellant
    a. Any presentation materials from Appellant
(3) Staff Report
    a. Any staff presentation materials
(4) Written responses provided by other Parties to the Appeal
    a. Any presentation materials by other Parties
(5) Index of Record on Appeal, with links to documents and videos.

Hearing Procedures

The appeal hearing is similar to other quasi-judicial hearings conducted by the board of trustees, with the exception of public comment, which will not be heard. As noted above, the decision-making must be based on the record of the Planning Commission decision that is subject to appeal. New public comment would be, by definition, new evidence that was not part of the record before the Planning Commission.

The meeting procedures for a site plan appeal are as follows:

(1) Staff Introduction and presentation
(2) Consideration of procedural issues raised by Parties
(3) Appellant Presentation
(4) Presentation by other Parties, if any
(5) Appellant Rebuttal, if any
(6) Board of Trustees deliberation and questions
(7) Motion and Vote

As noted above, the Appellant has the burden of proof. Town staff will not make any formal recommendation in the presentation or in its report, as required by the Land Use Code. Staff's role will predominantly be procedural.

Board Action

On the appeal, pursuant to Section 15-2-120(b)(3)b.1. of the Land Use Code, the Board of Trustees may uphold, modify, or reverse the Planning Commission's decision on the site plan. Importantly, the Board of Trustees may not exceed the authority granted to the Planning Commission under the Land Use Code.

The decision of the Board must be accompanied by findings of fact. The Board may concur with and/or incorporate the findings of fact made by the Planning Commission or may make its own findings of fact.

Uphold the decision. If the Board upholds the decision of the Planning Commission, the Planning commission's determination stands unchanged.

Modify the decision. The Board of Trustees may modify the decision of the Planning Commission to add additional conditions or requirements that would be within the authority of the Planning Commission on hearing the site plan application.

Reverse the decision. The Board of Trustees may reverse the decision of the Planning Condition.

C. DEAN HERMS, JR.
JEFFREY B. CULLERS
RICK ZIER, OF COUNSEL

HERMS & CULLERS, LLC
— ATTORNEYS AT LAW —

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jeff@hhlawoffice.com

NOTICE OF APPEAL

June 9, 2023

Town Administrator/Clerk
Town of Wellington, CO
8225 Third Street
Wellington, CO 80549
Via hand delivery

Re: Appeal of Connell Resources Asphalt Plant Site Plan

Dear Town Administrator/Clerk,

This law firm represents Ayla and Benjamin Leistikow, residents of the Town of Wellington. Please accept this document as an appeal of approval for the Connell Resources Asphalt Site Plan.

I. APPEAL JURISDICTION.

This appeal concerns the Connell Resources Asphalt Plant Site Plan (the "Site Plan"). In general, the "Applicant," Connell Resources, proposes to construct an asphalt mixing plant located within the Town of Wellington. The Town of Wellington Planning Commission ("Planning Commission") approved with conditions the Site Plan on June 5, 2023, after multiple continuances.

The Site Plan was considered under Section 2.12 of the Wellington Land Use Code (the "Code"). Section 2.12.2.D.1 provides the following appeal right:

> Any aggrieved party who wishes to appeal the action shall file a written appeal stating the reasons why the Planning Commission action is incorrect. The applicant shall file the appeal with the Town Administrator/Clerk within seven (7) days of the meeting at which such action was taken.

Ayla and Ben Leistikow have submitted comments and participated in the proceedings in front of the Planning Commission. They also live in the vicinity of the proposed asphalt plant. Thus, they are "aggrieved" parties with a right to appeal the Planning Commission's decision. This appeal is submitted within seven days of the June 5, 2023 meeting and so is timely.

II. CRITERIA.

As provided in the Code Section 2.12.3, the Site Plan must the following criteria for

approval:

A. The site plan is consistent with the Comprehensive Plan and the intent stated in this Land Use Code.
B. The lot size and lot dimensions are consistent with what is shown on the approved final plat.
C. No buildings or structures infringe on any easements.
D. The proposed site grading is consistent with the requirements of any applicable adopted storm drainage criteria or master drainage plans.
E. The density and dimensions shown conform with Article 4 of this Code or the approved PUD requirements.
F. The applicable Development Standards have been adequately addressed and the proposed improvements conform with Article 5 of this Code.

III. BASIS FOR APPEAL.

Appellants Ayla and Ben Leistikow state the following reasons for why the Planning Commission action was incorrect:

A. First Setback Violation.

The asphalt plant is a heavy industrial use that will be "producing and curating toxic chemicals" within the meaning of Code Section 4.03.21.B. Thus, the setback in Code § 4.03.21.B. applies. Such provision states, in relevant part:

> B. Any Industrial and Manufacturing, Heavy use producing and curating toxic chemicals or conducting animal slaughtering shall be located at least:
>
> 1. Two thousand six hundred forty (2,640) feet from any residential district, religious land use, medical care facility, or school.

The foregoing setback is not met, and no variance was obtained by Applicant Connell Resources. For this reason, the Site Plan does not comply with Criteria E and/or F[1] and so the Planning Commission erred in approving the Site Plan.

B. Second Setback Violation.

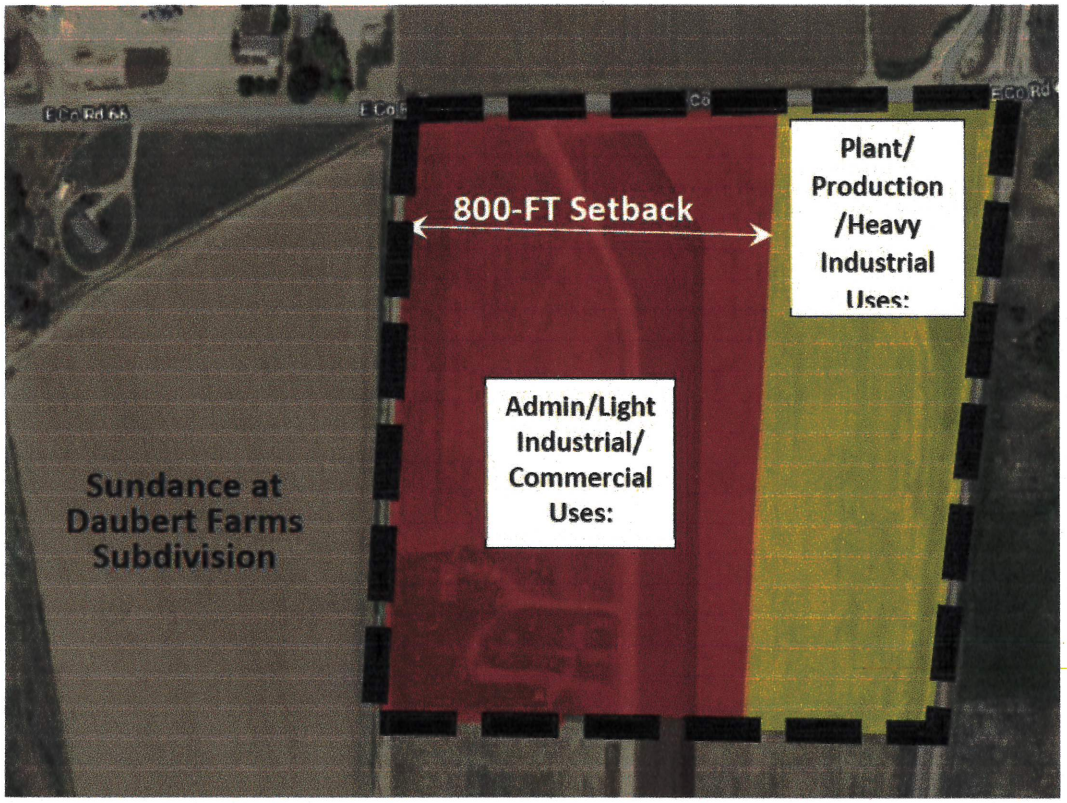
Applicant obtained a setback variance from the Board of Adjustment on October 27, 2022. The setback at issue provides:

> 4.03.21 Industrial and Manufacturing, Heavy.

[1] The staff recommendations at page 15 of the June 5 Packet treat setback requirements under Criteria F. Staff noted that Applicant obtained a variance for the setback in Code Section 4.03.21.A, requiring a setback of 1,000 feet from residential districts for "Heavy Industrial and Manufacturing" uses.

> A. An Industrial and Manufacturing, Heavy use shall be located at least one thousand (1,000) feet from any residential district or use.

The Board of Adjustment approved a variance reducing the setback to 800 feet, in the following configuration:



The red area is labeled "Admin/Light Industrial/Commercial Uses." As proposed in the Site Plan, the red area houses a truck washing station, fuel pumps, a fuel storage facility, two "welding and mechanical garages," a 10,000 square foot "storage lean-to" area, and a pull-through tractor-trailer parking area. *See* Planning Commission Meeting Packet for June 5, 2023 meeting (the "Packet"), at page 48. The truck-washing station, storage area, one of the "welding and mechanical" garages, and a portion of the truck parking area are located within 250 feet of the western boundary, abutting a residential district. These structures constitute a "light industrial use" under the Code;[2] indeed, Applicant's exhibit even uses the term "light industrial." Thus, the following code provision applies:

> 4.03.22 Industrial and Manufacturing, Light.
>
> A. Industrial Zones.
>
> 1. An Industrial and Manufacturing, Light use shall be located at least two hundred fifty (250) feet from any residential district or

[2] *See* Code Section 9.02, definitions, "Industrial and Manufacturing, Light."

use.

The foregoing setback is not met, and no variance was obtained by Applicant Connell Resources. For this reason, the Site Plan does not comply with Criteria E and/or F and so the Planning Commission erred in approving the Site Plan.

C. Third Setback Violation.

Even if the truck-washing station, one of the "welding and mechanical" garages, and a portion of the truck parking area are not considered "light industrial" use, the outdoor storage area is properly considered a "Contractor and Contractor Storage" area subject to a 100-foot setback from all property lines. *See* Code Section 4.03.12. The foregoing setback is not met, and no variance was obtained by the Applicant. For this reason, the Site Plan does not comply with Criteria E and/or F and so the Planning Commission erred in approving the Site Plan.

D. Fourth Setback Violation.

The Board of Adjustment approved a setback variance for Code Section 4.03.21.A., states that heavy industrial uses "be located at least one thousand (1,000) feet from any residential district or use." Specifically, the Board of Adjustment reduced the setback to 800 feet.

However, a careful look at Applicant's site plan shows that a significant portion of the asphalt batch plant is located within 800 feet of the western property line; the "aggregate loading bins" and a portion of the "aggregate storage bins" are also located within the 800-foot area. *See* Packet, page 48.

Appellants further note that Applicant's diagram for the variance hearing identified most of the northeast region of the site as "HEAVY INDUSTRIAL USAGE CONCENTRATED IN THIS AREA." *See* Exhibit A to this appeal, excerpt. The western boundary of such area is marked as 665 feet from the western property line. *See* Exhibit A. The site plan proposed to the Planning Commission is substantially the same. *See* Packet, page 48.

Thus, the Planning Commission approved a site plan that does not conform to the 800-foot setback requirement because much of the actual "heavy industrial" use is located within such setback. It appears that Applicant has measured the setback from a single point in the northeast area of the property (perhaps the asphalt plant's emissions stack), rather than the self-described area where heavy industrial activities will occur. *See* Packet, page 36. For this reason, the Planning Commission erred.

E. Air Dispersion.

The Site Plan is located in the Industrial zoning district. The Code addresses emissions of dust, fumes, etc. by activities in the Industrial district, as follows:

> Dust, fumes, odors, smoke, vapor and noise shall be confined to the site and be controlled in accordance with the state air pollution laws. Code Section 3.04.C.1.

The emissions modeling provided by the Applicant Connell Resources showed that emissions from the proposed asphalt plant will not be confined to the subject parcel. Thus, the Site Plan does not comply with the Code and so Criteria A, Code Section 2.12.3, is not met.

F. Compliance with Code Article 5.

Applicant's submissions did not comply with Article 5 of the Code. Specifically, Applicant failed to comply with Code Section 5.09, concerning "Site and Building Design." Section 5.09.2.A states: "Dimensioned elevation drawings or renderings, including front, back, and side elevations shall be submitted with all site plan applications to illustrate conformance with the regulations herein." Section 5.08.2.B-F contain basic requirements for the building exteriors.

In this case, Applicant submitted examples of the materials and general architectural character of the various buildings on the site. *See,* Packet, pages 40, 41, 76-81. However, Applicant clearly did not submit elevation drawings for any specific building on the site or the actual asphalt batch plant. For this reason alone, the Site Plan was incomplete and the Planning Commission erred in approving it. The Site Plan does not comply with Criteria F in Code Section 2.12.3. Furthermore, the lack of elevation drawings means that there is no way to know whether the structures to be built will comply with the substantive requirements in Code Section 5.08.2.B-F. For this reason also, Site Plan does not comply with Criteria F.

Appellants reserve the right to identify further instances of non-compliance with Article 5 of the Code.

IV. CONCLUSION.

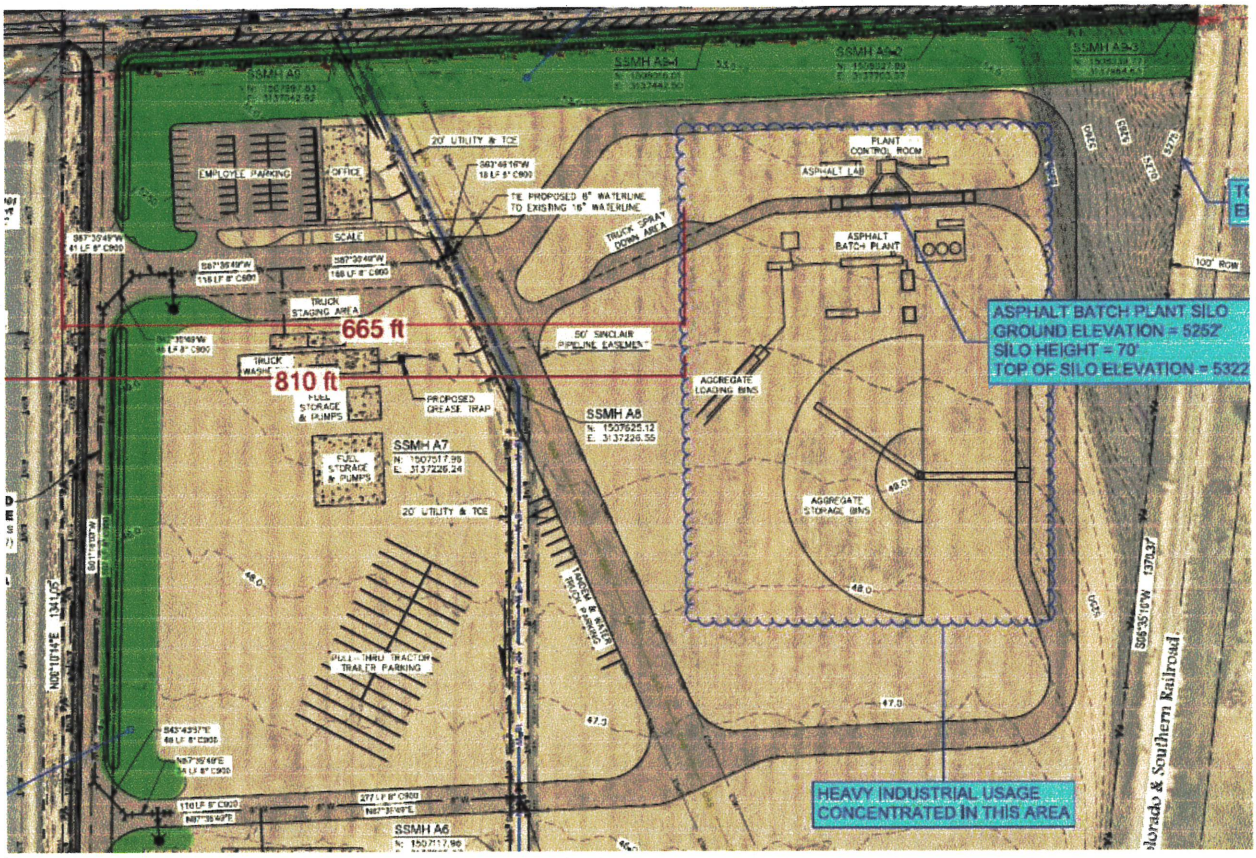
For the foregoing reasons, Appellants Ayla and Ben Leistikow respectfully request that this matter be put before the Town Board of Trustees as provided by Code Section 2.12.2.C.2., and further requests that the Town Board reverse the Planning Commission's decision in this matter for all of the reasons stated herein.

Very Truly Yours,

/s/ Jeffrey B. Cullers

Jeffrey B. Cullers

EXHIBIT A


665 ft
810 ft
ASPHALT BATCH PLANT SILO
GROUND ELEVATION = 5252'
SILO HEIGHT = 70'
TOP OF SILO ELEVATION = 5322'
HEAVY INDUSTRIAL USAGE
CONCENTRATED IN THIS AREA
SSMH A6
SSMH A7
SSMH A8
EMPLOYEE PARKING
OFFICE
SCALE
TRUCK STAGING AREA
TRUCK WASH
FUEL STORAGE & PUMPS
PROPOSED GREASE TRAP
20' UTILITY & TCE
50' SINCLAIR PIPELINE EASEMENT
PLANT CONTROL ROOM
ASPHALT LAB
ASPHALT BATCH PLANT
AGGREGATE LOADING BINS
AGGREGATE STORAGE BINS
TRUCK SPRAY DOWN AREA
PULL-THRU TRACTOR TRAILER PARKING
100' ROW
Colorado & Southern Railroad

Brownstein

Brownstein Hyatt Farber Schreck, LLP
303.223.1100 main
675 Fifteenth Street, Suite 2900
Denver, Colorado 80202

August 8, 2023

Carolynne C. White
Attorney at Law
303.223.1197 direct
cwhite@bhfs.com

Wellington Board of Trustees
3800 Wilson Avenue
Wellington, CO 80549

RE: Request to Affirm the Wellington Planning Commission Decision Approving the Site Plan for the Wellington Asphalt Plant

Dear Board of Trustees:

We represent Connell Resources, Inc. ("**Connell**" or the "**Applicant**"), the purchaser of the property that is the subject of this Appeal (defined below), with respect to Connell's application for approval of site plan for an asphalt mixing plant (the "**Application**") located at 3548 E. County Road 66 ("**CR 66**") west of the North Poudre Irrigation Ditch and east of the BNSF rail line (the "**Property**") in the town of Wellington (the "**Town**"), county of Larimer (the "**County**"), state of Colorado (the "**State**"). The Property is comprised of 35.56 acres and is zoned I – Industrial ("**I District**").

I. Background

Connell is a family founded and run company, established in 1946 with a 77-year presence in northern Colorado and Larimer County. Connell is both family and employee-owned with 265 full-time employees, 18 of whom are residents of Wellington. Connell performs earthwork, pipeline utilities (water, sanitary sewer, storm sewer), aggregate production and asphalt paving.

Connell has been safely operating an asphalt mixing plant southeast of Harmony Road and Interstate-25 ("**I-25**") for nearly 20 years (the "**Existing Facility**"). Connell has also safely operated an asphalt batch plant on two other sites east of I-25 for 10 years prior to the Existing Facility location.

The proposed new site for the asphalt mixing plant (the "**Project**") within the Town will have 35-40 full-time employees and will generate sales and property tax revenue for the Town. The Property is the only land zoned I District within the Town, and has been zoned I District for more than 20 years (since 2000). An asphalt mixing plant is considered an "Industrial and Manufacturing Heavy" use (defined hereafter) under the Town of Wellington Land Use Code (the "**Code**"), which is a use permitted by right in the I District.

Connell first presented its Application to the Town Board of Adjustment (the "**BOA**") on October 27, 2022 for approval of two variances:

1. To reduce the required building setback from 1,000 feet from a residential district to 800 feet for a Heavy Industrial land use; and
2. To allow for a height increase for the silos structure from 45 ft to up to 70 ft.

(each, individually a "**Variance**" and collectively, the "**Variances**").

The BOA approved the Variances with a 5-0 unanimous decision (the "**BOA Decision**") with the following six conditions of approval:

1. Site Plans must be reviewed and approved by the Commission;
2. The height variance (up to 70-ft) is applicable only to the silos;
3. A 15-foot earthen berm and landscaping is required along the west side of the site;
4. There is to be no signage on the silos;
5. Require signage and operator policies to disallow engine braking ("Jake Brakes");
6. Compliance with all applicable County and State permits for operation of an Asphalt Plant

The BOA also recommended that the Town-supplied potable water be reserved for office and occupied facility use only.

Pursuant to section 2.12 of the Code and section 106(a)-(b) of the Colorado Rules of Civil Procedure ("**C.R.C.P.**"), the above Variances approved by the BOA are not subject to further appeal or modification by the Town Planning Commission (the "**Commission**") or this Town Board of Trustees (the "**Board**"), as the period to appeal has long since passed. Pursuant to C.R.C.P. 106(b), the period to appeal ended 28 days after the BOA Decision. Accordingly, the Variances granted by the BOA are no longer appealable.

The Applicant presented its Application to the Commission on March 6, 2023, which was continued to May 1, 2023 to allow the Applicant and Town Building and Planning Department staff ("**Staff**") time to provide the information requested by the Commission and the public regarding the Application. The Applicant appeared before this Commission on May 1, 2023 to request a continuance because the refined air modeling report analyzing air emissions that the Commission requested of the Applicant and the Applicant voluntarily agreed to perform, which was being conducted by a consultant, Antea Group ("**Antea**"), commissioned by the Application, was not yet complete. The Commission granted the continuance, and the public hearing was rescheduled for June 5, 2023. The Applicant prepared and submitted to the Commission a memorandum dated May 26, 2023 (the "**Memo**") which provided a detailed written response to the questions posed by Commission and the public. The Memo is included in your packet.

On June 5, 2023, the Application was presented to the Commission (the "**PC Hearing**"), which the Commission approved with a 6-1 vote (the "**PC Decision**"), concluding that the site plan meets the following criteria of approval set forth in the Town Land Use Code (the "**Code**"):

1. The site plan is consistent with the Comprehensive Plan and the intent stated in this Land Use Code;
2. The lot size and lot dimensions are consistent with what is shown on the approved final plat.
3. No buildings or structures infringe on any easements;
4. The proposed site grading is consistent with the requirements of any applicable adopted storm drainage criteria or master drainage plans;
5. The density and dimensions shown conform with Article 4 of this Code or the approved PUD requirements; and
6. The applicable development standards have been adequately addressed and the proposed improvements conform with Article 5 of this Code.

Code, § 15-2-120(c)(1)-(6).

Pursuant to the Code, appeals of Commission decisions may be made to the Board, and must be filed within seven (7) days from the date of the decision. *Code, § 15-2-120; 230*.

Ayla and Benjamin Leistikow (the "**Appellants**") filed this appeal (the "**Appeal**") on June 9, 2023 challenging the PC Decision. For the reasons set forth in this letter, the Appellants have failed to meet their burden of proof in establishing that the Commission erred in approving the Application, and the Applicant therefore respectfully requests that this Board affirm the PC Decision.

II. The Appeal

The Appeal claims that:

1. The proposed asphalt plant is a heavy industrial use that will be "producing and curating toxic chemicals", and therefore the setback of 2,640 feet from any residential district, religious land use, medical care facility, or school is required.

2. The Applicant's site plan proposes "Admin/Light Industrial/Commercial Uses" within 250 feet from a residential district in violation of the Code's requirement that "Industrial and Manufacturing, Light" uses be located at least 250 feet from any residential district.

3. The outdoor storage area identified on the site plan is considered a "Contractor and Contractor Storage" in violation of the Code's 100 foot setback from all property lines.

4. The site plan proposes that the asphalt batch plant, aggregate loading bins and aggregate storage bins be located on the site within 800 feet from the adjacent residential district, and therefore the site plan does not comply with the Variance.

5. The Air Modeling Report concluded that emissions from the proposed asphalt plant will not be confined to the site, and therefore the site plan does not comply with the Code's requirement that "dust, fumes, odors, smoke, vapor and noise shall be confined to the site and be controlled in accordance with the state air pollution laws."

6. The Application does not include "[d]imensioned elevation drawings or renderings, including front, back, and side elevations. . . to illustrate conformance with the [Code]", and therefore the Application is not in compliance with the Code.[1]

The Appellants thus assert that the Application does not comply with all the criteria of approval for a site plan set forth in section 15-2-120(c)(1)-(6) of the Code.[2]

This letter responds to each of the Appellants' claims, demonstrating that the Appellants' assertions are without merit and that the PC Decision should therefore be upheld.

III. The 2,640 Foot Setback is Not Applicable Because the Proposed Asphalt Plant Will Not Be Producing or Curating Toxic Chemicals.

The Appellants argue that the Application violates section 15-4-30(v)(1)[3] of the Code requiring that a Heavy Industrial Use (defined below) producing or curating toxic chemicals be setback 2,640 feet from any residential district or use. *Appeal, p. 2*. The Appellants therefore claim that the Application does not meet the criterion of approval for a site plan requiring that: (1) the density and dimensions shown conform with Article 4 of the Code; and (2) the applicable development standards have been adequately addressed and the proposed improvements conform with Article 5 of the Code. *See Code, § 15-2-120(c)(5)-(6).*[4] *Appeal, p. 2*. Because the asphalt plant is not producing or curating toxic chemicals on the Property, the 2,640 setback is not applicable, and the Application therefore meets this criterion of approval under the Code.

"Industrial and Manufacturing, Heavy" ("**Heavy Industrial Use**") is defined by the Code as the "[m]anufacturing of paper, chemicals, plastics, rubber, cosmetics, drugs, nonmetallic mineral products (such as concrete and concrete products, glass), primary metals, acetylene, cement, lime, gypsum or plaster-of-Paris, chlorine, corrosive acid or fertilizer, insecticides, disinfectants, poisons, explosives,

[1] The Appeal cites to sections 5.08 and 5.09 of a former iteration of the Code.
[2] The Appeal cites to section 2.12.3 of a former iteration of the Code.
[3] The Appeal cites section 4.03.21.B of a former iteration of the Code.
[4] The Appeal cites section 2.21.3.E-F of a former iteration of the Code.

paint, lacquer, varnish, petroleum products, coal products, plastic and synthetic resins, electrical equipment, appliances, batteries, and machinery. This group also includes asphalt mixing plants, concrete mixing plants, smelting, animal slaughtering, oil refining, and magazine contained explosives facilities." *Code, § 15-9-20.* Pursuant to section 15-4-30(v)(1) of the Code, a Heavy Industrial Use must be located at least 1,000 from any residential district or use. However, if the Heavy Industrial Use produces or curates toxic chemicals or includes animal slaughtering, a setback of 2,640 is required. *Code, § 15-4-30(v)(2).*

Here, the setback of 2,640 does not apply because the proposed asphalt mixing plant will not produce or curate toxic chemicals. This is supported by a multitude of credible evidence provided by the Applicant, and the record is devoid of any evidence to the contrary. Further, the Appellants failed to provide any evidence to support their contention that the asphalt mixing plant will produce or curate toxic chemicals.

The National Asphalt Pavement Association ("**NAPA**") opines that asphalt mixing plants are non-hazardous. The safety of asphalt and asphalt mix plant emissions is supported by the Agency for Toxic Substances and Disease Registry ("**ATSDR**"), which is the federal agency tasked with protecting communities from harmful health effects related to exposure to natural and man-made hazardous substances. Between 1998 and 2004, ATSDR conducted a series of investigations to determine potential health impacts of asphalt emissions on surrounding communities. Seven mix plant locations across the country were examined and ATSDR concluded "in communities surrounding asphalt facilities. . . there do not appear to be any chemicals or compounds at levels that would pose a public health hazard." The ATSDR study and the letter from NAPA are attached as Exhibit H to the Memo included in your packet.

The Applicant also retained a consultant, Antea, at the request of the Commission, to conduct and complete a refined air modeling report dated May 19, 2023 (the "**Report**") to assess emissions for the Project. The Report was submitted to Staff and is included in your packet as part of the Application. The Report modeled the following emissions: Particulate Matter, Nitrogen Oxide, Sulfur Dioxide, Carbon Monoxide, Acetaldehyde, Hexane, Formaldehyde, Toluene, Quinone, Benzene, Ethylbenzene, Xylene, Total PAH. The Report demonstrates that the Applicant will meet all State and federal air quality standards at a maximum production level (i.e. worst case scenario). Furthermore, the Applicant voluntarily requested that the study perform air quality modeling at Eyestone Elementary School and Wellington Community Park as residents raised questions regarding the mixing plant's effect on air quality at these locations. The modeling results at these three locations demonstrate that none of the seventeen (17) emissions modeled reach acute or chronic levels based on risk-based screening levels developed by the EPA, CalEPA, NIOSHA, Or ASTDR.

Additionally, Stephen G. Zemba, PhD, PE[5], Project Director of Sanborn, Head & Associates ("**Sanborn**") prepared a health risk assessment evaluation ("**HRAE**") of potential air quality impacts associated with emissions from the hot-mix asphalt plant, which is attached as Exhibit I to the Memo. The HRAE reviewed the Report and evaluated the incremental risks of cancer and other non-cancer health effects. Sanborn concluded that (1) emissions from the hot-mix asphalt plant will present *de minimus* risks to human health, and (2) the highest incremental modeled concentrations will be negligible compared to existing background levels from other sources already present in the Town's existing air. As explained by Stephen Zemba in his presentation during the PC Hearing, such *de minimus* risk means less than a one in a million chance of someone getting cancer. *Transcript of PC Hearing, p. 20*. Sanborn thus found that any increase in the health risk of exposure to emissions from the asphalt mixing plant is far below that which is deemed safe exposure by the rules promulgated by the Environmental Protection Agency.

The manufacturing of asphalt is comprised of mixing two raw materials – sand/gravel (95%) and asphalt cement (5%) – that are produced off-site and then trucked onto the site. Leah Schneider ("**Schneider**"), the representative from the Larimer County Health Department, stated during her presentation at the PC Hearing that there are a limited number of emissions coming from this plant. *See Transcript of PC Hearing, p. 61-62*. As she confirmed, all potential emissions are below chronic or acute levels, and no negative health effects are expected in connection with the asphalt plant. *See Transcript of PC Hearing, p. 26.* Additionally, as Zemba explained during his presentation during the PC Hearing, the conclusion from the HRAE he performed is that "there really aren't going to be any significant health risks associated with the emissions in this plant and the incremental concentrations are going to be smaller than existing background levels for the air toxics." *Transcript of PC Hearing, p. 21*.

Further, Staff stated during the PC Hearing that the asphalt plant use does not meet the definition for "toxic chemicals" as described in the Code. Staff identified "pesticides, roundup paint, solvents, thinners, explosive manufacturers" as examples of producers of toxic chemicals. Staff explained that the aggregate materials used by the asphalt plant – such as sand, gravel, asphaltic cement – don't trigger concern for toxic chemicals. Staff further stated that "toxic chemicals [are] not a concern here[,]" and the Application is therefore not subject to the 2,640 setback. *See Transcript of PC Hearing, p. 30*.

Therefore, the asphalt plant will not be producing or curating toxic chemicals and the 2,640 setback does not apply. Accordingly, the Application complies with criterion of approval requiring that the site plan comply with the Code's density and dimension requirements and development standards, and the Commission did not err in approving the Application on this basis. *See Code, § 15-2-120(c)(5)-(6)*.

[5] Stephen G. Zemba's resume, which describes his qualifications, expertise and experience, is attached to the Memo as Exhibit I. Stephen G. Zemba's powerpoint presentation, which summarizes the HRAE is also attached to the Memo as Exhibit I.

Moreover, as discussed above, because an appeal was not filed within 28 days from the BOA Decision in accordance with section 2.12 of the Code and C.R.C.P. § 106(b), this setback issue is no longer appealable and the BOA Decision granting the Applicant the 800-foot setback is final.

IV. The Requirement that Light Industrial Uses Be Located at Least 250 Feet From a Residential Use or District is Not Applicable; However, the Application Can Meet Such Setback and the Site Plan Complies with the Criteria of Approval for a Site Plan.

Next, the Appellants argue that the site plan violates section 15-4-30(w)(1)[6] of the Code, requiring that a Light Industrial use (defined below) be located at least 250 from any residential district or use. The Appellants therefore claim that the Application does not comply with the following criterion of approval for a site plan: (1) the density and dimensions shown conform with Article 4 of the Code; and (2) the applicable development standards have been adequately addressed and the proposed improvements conform with Article 5 of the Code. *See Code, § 15-2-120(c)(5)-(6).*[7] For the reasons set forth below, the 250-foot setback is not applicable; however, the Application can still meet this setback and therefore the site plan complies with the criterion of approval.

"Industrial and Manufacturing, Light" ("**Light Industrial**") is defined by the Code as the "[m]anufacturing of products, from extracted, raw, recycled or secondary materials, including bulk storage and handling of those products and materials, or crushing, treating, washing, and/or processing of materials. This includes similar establishments, and businesses of a similar and no more objectionable character. It also includes incidental finishing and storage. Goods or products manufactured or processed on-site may be sold at retail or wholesale on or off the premises. This does not include any activity listed under Industrial and Manufacturing, Heavy." *Code, § 15-9-20.* Pursuant to section 15-4-30(w)(1) of the Code, a Light Industrial use must be located at least 250 feet from any residential district or use.

Here, the proposed use does not fall under Light Industrial and as such, the 250-foot setback from a residential district or use does not apply. Rather, the uses referred to on page 3 of the Appeal and identified as "Admin/Light Industrial/Commercial Uses" in the red area of the depiction are accessory uses to the principal use. As the BOA properly decided, the uses labeled as "Admin/Light Industrial/Commercial Uses" in the red area of the depiction[8] are permitted within the 800-foot setback area. *See Appeal, p. 3*. Such proposed uses in this area include an office, fuel storage facility, fuel pumps, welding and mechanical garages, a storage area, a parking area, and a pull-through tractor-trailer parking area (the "**Project Accessory Uses**"), and are ancillary to the asphalt plant as the principal use.

[6] The Appeal cites section 4.03.22 of a former iteration of the Code.
[7] The Appeal cites section 2.21.3.E-F of a former iteration of the Code.
[8] This depiction was provided by Staff in its report dated September 22, 2022.

Although the labeling is admittedly confusing on the depiction, these Project Accessory Uses are not actually Light Industrial.

The Project Accessory Uses do not fall under the definition of Light Industrial pursuant to section 15-9-20 of the Code, as described above. The label on the depiction was intended to convey that that the Project Accessory Uses are different and less intense than the principal Heavy Industrial use, and are therefore not subject to the 800-foot setback. Pursuant to section 15-4-40 of the Code, an "**Accessory Use**" is defined as a use that is "a subordinate use, clearly incidental and related to the main structure, building or use of land and located on the same lot (or on a contiguous lot in the same ownership) as that of the main structure, building or use." *Code, § 15-9-20*. Pursuant to section 15-4-20 of the Code, the Accessory Uses are permitted on the Property as uses ancillary to the principal use – the principal use being the asphalt plant. Further, if an Accessory Use is not identified as an established Accessory Use pursuant to section 15-4-40 of the Code, the Planning Director may evaluate accessory uses that are not identified in such section on a case-by-case basis.

Here, all of the Project Accessory Uses are either permitted as Accessory Uses under the Code, or were approved administratively during Staff's review of the Project. Notably, the site plan no longer proposes a truck washing station anywhere on the site. The truck washing station was a use eliminated from the site plan in response to the comments from the Town engineering department.

Nevertheless, the Applicant can meet the 250-setback by moving the Accessory Uses at least 250 feet from the property line boundary adjacent to the residential district. Pursuant to section 2.12.4 of the Code, the Applicant may revise the site plan for minor adjustments throughout the site plan approval process, which includes "[m]inor variations in the location of structures, improvements or open space areas[.]" The Application therefore proposes the 250-foot setback as a condition of approval.

Additionally, the BOA Decision granting the Variance for the 800-foot setback for the asphalt mixing plan considered that the Accessory Uses would be within the 800-foot setback area as ancillary and supporting uses to the asphalt mixing plant. This was the reason the BOA imposed a fifteen (15) foot berming requirement along the west side of the Property as a way to buffer the Accessory Uses and the asphalt mixing plant from the adjacent land. As Staff explained during the PC Hearing in response to a question from the Commission regarding how the setbacks are measured:

> "[W]hat was looked at [ ] is the industrial land use and that's the operational element of an asphalt plant. The office is the buildings. That's not the intense use. That's why we specifically asked the applicant to locate those on the West side of the site. To help mitigate the and buffer down from the most intense uses to offices, mechanical shops, landscaping and screening to help transition that down back to the adjacent land uses. Your other question on it's a little off topic, but

> marijuana setbacks are measured from the front wall or nearest wall of the building to the other protected use.

Transcript of PC Hearing, p. 36.

The BOA Decision allowing the Accessory Uses to be located within the 800-foot setback area was also intended to mitigate the conflicting zoning between the Property (zoned I District) and the adjacent undeveloped land zoned residential. During the BOA's discussion of the Variances, Staff suggested, and the BOA agreed, that imposing the Code's 1,000-foot setback solely on either property would be unreasonable, as neither property was responsible for the incompatible zoning of adjacent properties. Thus, the BOA Decision allowing the Accessory Uses within the 800-foot setback area mitigated the impacts of the incompatible zoning, while ensuring that neither the Property nor the adjacent residential property were overburdened for such incompatible zoning at no fault of either property owner. The property owner of the undeveloped adjacent residential land, Sundance at Dauber Farms, also submitted a letter dated March 6, 2023 in support of the Application, which is included in the record and attached hereto as Exhibit A for your reference.

Thus, although the 250-foot setback for a Light Industrial use from any residential district or use is not applicable, this setback can nonetheless be met. Accordingly, the Application meets the Code's criterion of approval requiring that the site plan comply with the density and dimensions conform with Article 4 of the Code, the applicable development standards have been adequately addressed and the proposed improvements conform with Article 5 of the Code. *See Code, § 15-2-120(c)(5)-(6)*

V. The Site Plan Complies with the Requirement that a Contractor and Contractor Storage Area Be Located at Least 100 Feet from the Property Lines.

The Appellants next claim that lean-to storage structure on the site plan is considered Contractor and Contractor Storage under the Code, and therefore is subject to the 100-foot setback. *See Code, § 15-4-30(l)*. [9] The Appellants claim that the Application violates the 100-foot setback requirement and therefore does not comply with the following criteria of approval for a site plan: (1) the density and dimensions shown conform with Article 4 of the Code; and (2) the applicable development standards have been adequately addressed and the proposed improvements conform with Article 5 of the Code. *See Code, § 15-2-120(c)(5)-(6).*[10] Because the site plan can meet the 100-foot setback, the site plan does not violate this criterion of approval.

"**Contractor and Contractor Storage**" is defined as "offices and/or storage facilities for a specialized trade related to construction, electric, glass, painting and decorating, welding, water well drilling, sign making, or similar items. Includes storage yards (for equipment, materials [including sand, road-building

[9] The Appeal cites to section 4.03.12 of a former iteration of the Code.
[10] The Appeal cites section 2.21.3.E-F of a former iteration of the Code.

aggregate or lumber], supplies and/or vehicles owned or rented by the establishment), roofing and sheet metal, fabrication of cabinetry and related millwork and carpentry, elevator maintenance and service, and venetian blind and metal awning fabrication and cleaning. Incidental sales of materials are included within this definition." *Code, § 15-9-20.* Pursuant to section 15-4-30(l) of the Code, all Contractor and Contractor Storage areas "shall be located at least 100 feet from any property line."

The lean-to storage structure was proposed in its original location to help with the screening and buffering of the more intensive use, the asphalt mixing plant, on the other side of the Property. The Applicant worked with Staff on this point, and it was decided that the lean-to storage structure would provide additional screening. However, by slightly adjusting the location of the lean-to storage structure to at least 100 feet from the property line, the Applicant can meet this setback. As previously mentioned, such a minor change to the site plan is permitted pursuant to section 2.12.4 of the Code, allowing minor variations in the location of structures to an approved site plan.

The Applicant thus proposes that, as a condition of approval the lean-to storage structure be located at least 100-feet from the property line. Accordingly, the site plan does not violate the Code's requirement that Contractor and Contractor Storage be located at least 100 feet from the property line, and the Application meets the Code's criterion of approval requiring that the site plan comply with the density and dimensions conform with Article 4 of the Code, the applicable development standards have been adequately addressed and the proposed improvements conform with Article 5 of the Code. *See Code, § 15-2-120(c)(5)-(6)*.

VI. The Site Plan Complies with the Variance Allowing a Heavy Industrial Use Be Located 800 Feet from a Residential District or Use.

The Appellants also argue that the site plan violates the Variance because the site plan shows that a significant portion of the asphalt plant is located within 800 feet of the western property line that borders the adjacent property zoned residential, and the aggregate loading bins and a portion of the aggregate storage bins are located within the 800-foot setback. The Appellants therefore claim that the site plan does not comply with the Variance. Contrary to the Appellants' claims, the Heavy Industrial use (the asphalt mixing plant) is located more than 800 feet from the property zoned residential. The aggregate loading and storage bins can be moved on the site plan to ensure these temporary and moveable uses comply with the Variance.

The site plan approved by the BOA reflected the same layout and configuration as the site plan approved by the Commission. The permanent or fixed components of the asphalt plant, which include the control house, silos, mixing drum, and bag house/dryer stack, are located more than 800 feet from the adjacent vacant land zoned residential, as shown on the site plan approved by both the BOA and the Commission. The Appellants are using measurements from temporary or moveable objects, such as stockpiles,

aggregate bins, and conveyor belts, to claim that the site plan does not adhere to the Variance requiring that the asphalt plant be located 800 feet from the adjacent land zoned residential. The moveable features are ancillary uses to the principal Heavy Industrial use. The principal Heavy Industrial Use, the actual asphalt plant and the permanent or fixed components mentioned above, is setback at least 800 feet from the adjacent residential land.

Nonetheless, the location of the temporary and moveable objects described above can be moved on the site plan to comply with the 800-foot Variance. As previously mentioned, pursuant to section 2.12.2(E) of the Code, the Applicant may make minor adjustments to the site plan, which includes altering the location of the moveable features, to ensure compliance with the Code. A revised site plan demonstrating that the 250-foot setback can be met was submitted separately and is included in your packet.

Therefore, the site plan complies with the Variance allowing a Heavy Industrial use to be located 800 feet from a residential district or use.

VII. Dust, Fumes, Odors, Smoke, Vapor and Noise Will Remain in Compliance with State Air Pollution Laws, and therefore compliant with the Code.

According to the Appellants, the site plan does not comply with requirements of the Code that "[d]ust, fumes, odors, smoke, vapor and noise be confined to the site and controlled in accordance with state air pollution laws." *See Code, § 15-3-40(a)(3)*.[11] Thus, the Appellants claim that the site plan does not comply with the criteria of approval requiring that the site plan be consistent with the Town Comprehensive Plan (the "**Comp Plan**") and the intent of the Code. *Code, § 15-2-120(c)(1).*[12] For the reasons set forth below, the Application is compliant with all local, state and federal air pollution laws, and will mitigate dust, fumes, odors, smoke, vapor and noise to remain in compliance with all local, state, and federal laws, regulations, and permits. The Application therefore meets this criterion of approval.

The Appellant's misinterpret section 15-3-40(a)(3) of the Code, and assert a much too restrictive reading of its requirements. The intent of section 15-3-40(a)(3) that "[d]ust, fumes, odors, smoke, vapor and noise" be "confined to the site" is not a requirement that no particle or dust, odor, smoke, vapor or noise may ever leave the site. That is a physical impossibility. As evidenced by many other projects approved within the Town that emit dust, fumes, odors, smoke, vapor and noise, the intent of this language is to ensure that any such activity is mitigated, does not negatively impact health, and that the Application is compliant with the local, state, and federal laws. The appropriate interpretation is that the Applicant's compliance with the local, state, federal laws on emittance of any dust, fumes, odors,

[11] The Appeal cites to section 3.04.C.1 of a former iteration of the Code.
[12] The Appeal cites to section 2.12.3.A. of a former iteration of the Code.

smoke, vapor, noise and air quality ensures compliance with section 15-3-40(a)(3) of the Code. As Staff explained during the PC Hearing in response to a question from the Commission regarding the intent of section 15-3-40(a)(3) of the Code, the intent of this section of the Code is to ensure that the Applicant has implemented proper mitigation measures to address relevant concerns and mitigate what can be feasibly mitigated:

> "In my experience in in planning, you typically design sites to mitigate adverse impacts as best you can. . . . it might be impossible to mitigate every single emission from every single source in town and how that standard might be applied town wide, consistently and fairly. Intent can be interpreted in large part that can be the role of the Planning Commission and considering the site application, but the intent from Staff's perspective would be to provide controls and mechanisms and mitigation measures to address the concerns. That if an operation involved heavy smoke and it's unmitigated, that would obviously not meet the intent of the of that language in the land use code. If an operation generates smoker vapors and the majority of it is mitigated except for worst case days, I think that arguably would meet the intent. I recognize that a lot of what's being looked at is pretty black and white. Right. And an application or site in real world activities, it's not always practical to eliminate 100% of the mitigating or the circumstances which might need mitigation if the standard is all or nothing. I'm not sure how we apply that to all of our land. These applications, all everywhere in town. So my position would be that the intent would be to mitigate all that can be mitigated through site plan controls."

Transcript of PC Hearing, p. 65-66.

The Application proposes significant mitigation measures to ensure that dust, fumes, odors, smoke, vapor and noise are mitigated to the site, including but not limited to, restricting the use of engine brakes, constructing berming around the site, paving of onsite haul roads, the use of water trucks as a dust palliative on non-paved areas. The Asphalt mixing plant will also be state of the art with a counterflow drum technology, emissions and odor recovery systems, warm mix asphalt mixing capabilities with use natural gas as the fuel source. Additionally, the Applicant has gone above and beyond what is generally required for approval of a site plan to provide extensive data to demonstrate that the asphalt plant will be operated safely and will not pose a health risk to the community.

For the reasons set forth below, the Applicant is compliant with both the Code and all local, state, and federal laws.

1. *Noise Generated by the Asphalt Mixing Plant Will Be Mitigated and Will Remain Compliant with State Air Pollution Laws.*

Although the Town has not adopted an ordinance governing noise that specifies maximum decimal limits for noise, the Project will not exceed the County noise ordinance which sets forth appropriate noise levels for different activities and applies to properties within the incorporated County. The County Noise Ordinance No. 97-03 (the "**County Ordinance**") specifies maximum sound levels at 55dbA at receiving property lines.

The Applicant has completed two Baseline Community Noise Assessments, performed and prepared by Antea, for both the new site in Wellington and another for the Existing Facility (collectively, the "**Noise Assessments**"), attached to the Memo as Exhibit C, which demonstrate that noise levels generated by the facilities at both locations are well below the maximums specified by the County Ordinance. The Noise Assessments included on-site measurement and mapping of sound levels at various locations throughout each property, along adjacent roadways, and around the entire perimeter of the properties.

Results from the Noise Assessments demonstrate that at the Existing Facility recorded noise levels are at 45-dbA to 50-dbA at 750 feet east of the asphalt production operation, which is well within compliance.

As set forth in the Noise Assessments, at 800 feet from the new facility in Wellington, noise levels generated by operation of the facility are expected to be below 45-dbA, which is also well within the County Ordinance. However, results for the new facility in Wellington recorded current background noise levels at the site – without noise generated by the operation of the facility (because the facility has not yet been constructed) – already above the County Ordinance but still below the State's maximum noise levels of 80-dbA. Thus, the Noise Assessments conclude that these results indicate that current weather, geographical conditions, and neighboring properties near the Wellington site are contributing to higher noise levels in the area. The Noise Assessments conclude that given that background noise levels at the Wellington site are already above the County Ordinance, the Project will not be the cause of the current exceedance of the County Ordinance. The Noise Assessments also states that, "given the sound profile previously collected from the [Existing Site], and the planned erection of dirt berms for noise attenuation, Connell Resources have properly planned to provide effective noise controls at their proposed Wellington location."

Additionally, a decibel level comparison chart prepared by Yale University, attached to the Memo as Exhibit D, shows that the noise levels from the asphalt mixing plant, when heard 750 feet from the facility, are at levels as low as a household refrigerator.

Moreover, the Applicant's site plan incorporates sound mitigation measures through berming and selective layout in order to absorb and direct noise away from adjacent properties. The Applicant has also committed to implementing mitigation measures to reduce noise, including restricting the use of engine brakes (Jake Brakes) for eastbound and westbound trucks on CR 66. Signs will be posted in both directions of CR 66 to warn drivers of this restriction. The Applicant will also install white noise back up alarms on equipment being used at the asphalt facility in lieu of a manufactured back-up alarm that exude a loud beeping noise.

Accordingly, this data indicates that hot asphalt mix plants are not significant generators of noise, and that any noise generated by the asphalt mixing plant will be contained to the site and compliant with State air pollution laws and local ordinances.

2. *Dust, Fumes, Odors, and Smoke Generated by the Asphalt Mixing Plant Will be Mitigated to the Greatest Extent Possible and Will Be Compliant with Air Pollution Laws.*

Asphaltic plant operations are regulated, licensed, and monitored by the State for air pollutants, odor, and dust particulates. The State has promulgated rules and standards to determine the safety of the operation of an asphalt plant and ensure ongoing compliance with such regulations. The Applicant compiled a list of the environmental permits that the Applicant must obtain and comply with various governmental organizations, and the penalties for noncompliance, which can be found on Exhibit E attached to the Memo.

Additionally, the BOA has already imposed a condition of approval requiring that all County and State permits be obtained and complied with, the County and State also oversee and monitor the Applicant's operations which includes periodic inspection and testing.

Asphalt Mixing Plants are recognized by the Environmental Protection Agency and the Colorado Department of Public Health and Environment ("**CDPHE**") as minor sources of air pollution. Asphalt plants must adhere to strict air requirements administered and monitored by CDPHE. Stringent limits are set for a range of emissions based on their known effects to human health and environment. Technology and control systems are available to asphalt mixing facilities to ensure compliance with the State's air quality standards. The Applicant must submit Operation and Maintenance Plans to CDPHE to obtain approval for a permit and ensure that the facility is working in the most efficient manner. Additionally, dust control plans are required to control fugitive dust from material storage and handling areas and from trucks traveling on haul roads.

Asphalt plants are required by CDPHE to install controls or take other measures to reduce harmful air emissions. These measures and controls include counter-flow mixing equipment technology, baghouse systems to control particulate emissions, enclosed or partially enclosed conveyor systems, and top-of-silo emission recovery systems. In addition, best management practices to minimize emissions during

hot mix asphalt production have been established by the asphalt industry. These best management practices include guidance on facility operation and maintenance to maximize efficiency and minimize emissions. Natural gas is a common fuel for asphalt plants. Therefore, the emissions from a plant fueled by natural gas are similar to a household furnace.

The Air Pollution Control Division (the "**APCD**"), which monitors air pollution for the State, has an enforcement staff that conducts routine inspections of asphalt plants to ensure that plant operators are properly maintaining the required air pollution equipment, keeping records, and complying with all conditions of the air permit. Most asphalt plants are inspected every 3 to 5 years, while others are inspected annually. The APCD also responds to citizen complaints on dust, odor, or noise problems at HMA plants. When a permit violation or noncompliance issue leads to enforcement proceedings, corrective action is required and fines up to $15,000 to $54,000 per day can be levied against the violator.

Asphalt plants are also required to comply with federal requirements called New Source Performance Standards ("**NSPS**") provided in Colorado Regulation No. 6, Part A, Subpart I, Standards of Performance for Hot Mix Asphalt Facilities. The NSPS limits the allowable particulate emissions from an asphalt plant. To show that the asphalt plant can meet the NSPS air emission limits, the owner/operator must conduct a performance test for particulates, opacity, and sometimes CO emissions. Generally, the test is conducted within six months after the asphalt plant receives an initial approval to construct the plant.

Operators of asphalt plants are also required to submit an Air Pollution Emission Notice ("**APEN**") to the Air Pollution Control Division if air emissions exceed the reporting thresholds. Once submitted, the APEN is valid for five years. The APEN includes information on the location and ownership of the site and detailed information on the site-specific process equipment and air pollution control measures. The APCD uses the information provided on the APEN to write an air permit for the plant if it is needed.

The asphalt plant emits minimal odor. However, the Applicant conducts regular self-testing to monitor any odor and adheres to the County standards. The Applicant uses the same testing procedure as the County employs, and three of the Applicant's employees are trained to perform such testing. Pursuant to County regulations, odor nuisance is a complaint process.

Lastly, as described in detail above, the Report and the HRAE demonstrate that that none of the seventeen (17) pollutants modeled reach acute or chronic levels based on risk-based screening levels developed by the EPA, CalEPA, NIOSHA, Or ASTDR. Thus, any risk to human health is *de minimus* and any exposure attributable to the plant would be well within levels determined to be safe by the state and federal authorities that promulgate rules, set standards, and closely monitor asphalt plants. The Appellants misinterpret the Reports

Accordingly, the data from the Report and the HRAE conclude that asphalt mix plants are not significant generators of dust, fumes, odors, and smoke, and that any generated by the asphalt mixing plant will be *de minimus*, compliant with local, state and federal air pollution laws, and 15-3-40(a)(3) of the Code. The Appellants misinterpret these findings set forth in the Report. The Report concludes that dust, fumes, odors, smoke and vapor emitted by the asphalt plant are so nominal that there is no real impact – at least one that is measurable. As Schneider stated during the PC Hearing, any emissions coming from the plant are limited. *Transcript of PC Hearing, p. 61*.

We also note that the Applicant voluntarily performed these extensive independent studies, as discussed above, at the request of the Commission to demonstrate that the asphalt plant complies with the health requirements of the Code as well as all local, state and federal regulations. Schneider confirmed that she independently consulted with the CDPHE to confirm that the threshold values and methodology used in the Report were acceptable that CDPHE agreed with the conclusions set forth in the Report. *See Transcript of PC Hearing, p. 26*.

Therefore, the site plan complies with the Code's criteria of approval requiring that the site plan remain consistent with the Comp Plan and the intent of the Code.

VIII. The Site and Building Design Will Comply with the Code's Requirements.

The Appellants final claim is that the Applicant failed to comply with section 15-5-90 of the Code requiring that "[d]imensioned elevation drawings or renderings, including front, back, and side elevations, shall be submitted with all site plan applications to illustrate conformance with the regulations herein. Elevations shall indicate materials to be installed on all building surfaces."

The Applicant submitted with the Application eleven pages of dimensioned elevation drawings and renderings of the proposed office building, in addition to a detailed narrative and depictions of proposed architecture and design components. Given that such renderings are reflective of the design of all other proposed buildings on the Property, and that Staff directed the Applicant to defer submission of final renderings until after site plan approval, such submissions suffice to meet the requirements under section 15-5-90 of the Code.

As explained by Staff during the PC Hearing, "It was staff's recommendation that in the absence of full architectural plans, [the] exemplary photos would [ ] suffice because we understand what a standing sheet metal building would look like." *Transcript of PC Hearing, p. 34*.

The site and building design therefore comply with the Code's requirements.

IX. Conclusion

The Applicant therefore requests the following conditions of approval:

- The Accessory Uses must be located at least 250 feet from the property line boundary adjacent to the residential district.
- The location of the temporary and moveable objects, such as such as the stockpiles, aggregate bins, and conveyor belts, must comply with 800-foot Variance.
- The lean-to structure must be located at least 100 feet from the property line.

Accordingly, for all of the reasons set forth above, the Application complies with the Code's criteria of the approval for a site plan and the Appellants have failed to meet their burden of proof to establish that the Commission erred in approving the Application. Therefore, the Applicant respectfully requests that this Board affirm the PC Decision.

Sincerely,

Carolynne C. White

cc: Dan Sapienza, Town Attorney

Exhibit A
Letter from Sundance

Sundance at Daubert Farm Holdings, LLC
308 Commerce Drive, Unit A
Fort Collins, CO 80524
Phone: 970-493-6262

March 6, 2023

Planning Department
Attention: Cody Bird
8225 Third Street
Wellington, CO 80549
birdca@wellingtoncolorado.gov

Re: Connell Resources

Dear Planning Department,

Sundance at Daubert Farm Holdings, LLC is the owner of the land immediately west of the proposed Connell site. We currently have a single-family home subdivision planned for this site and plan to construct it in the future. We have had several meetings and conversations with representatives from Connell, as well as several meetings and conversations with Cody Bird of the Wellington Planning Department. In every meeting we found all parties willing to work together to produce a plan that would work well for everyone. We have known from the very beginning that the land immediately east of our site would be developed into an industrial commercial facility. I am familiar with Connell's current plant located on I-25 just south of the Harmony exit. I have always been impressed with their efforts to make the plant as aesthetically pleasing as possible. We feel there are far worse potential users for this site than Connell. We also think Connell will be a good neighbor to our community. We fully support Connell's proposal for their plant and believe the effect it will have on our community will be minimal. We ask that you please approve this proposal.

Thank you for your time.

Sincerely,

John G. Giuliano
Managing Member

Staff Report

Leistikow Appeal of Planning Commission Decision regarding Connell Resources Site Plan

Introductory Note: *In this report, staff will reference pages of the official record using the Bates Stamp prefix "CR-TOW." These correspond with the Bates Stamps at the bottom of the written record provided to the Board of Trustees in the packet for the August 23, 2023 Board meeting at which the appeal will be heard.*

Purpose of Report: *This report is written to comply with the requirements of the Town of Wellington Municipal Code Chapter 15 (the "Land Use Code") at Section 15-2-230(c)(3)a, which states in relevant part, "The staff report shall not make a formal recommendation, but rather shall include only the necessary facts to warrant an appeal, which shall be provided by the appellant." This report will not make a recommendation to the Board of Trustees, but summarizes the assertions in the appeal and will reference relevant facts in the appeal record.*

The record on appeal is extensive and staff has attempted to identify relevant material facts within the record to aid the Board of Trustees in considering the appeal. In the event that material facts are omitted from this report, such omission was inadvertent.

Standard of Review for Appeal

An appeal is not a complete rehearing of the site plan under review, but a quasi-judicial hearing of whether the previous decision was made in error, based on specific criteria. All appeals under the Land Use Code require that the appeal decision-making body consider the following findings:

(1) Whether the decision of the administrative official or Planning Commission was a clear error, as opposed to fairly debatable, according to the provisions of these regulations.
(2) The interpretation instructions of these regulations.
(3) The purposes, intent, and design objectives of any standards that are subject to the appeal.
(4) The record on the application, including the official plans and policies of the Town used to evaluate the application or make the decision.
(5) Whether the final decision and the grounds for relief requested in the appeal are within the authority granted by these regulations.
(6) Whether there are other more appropriate and applicable procedures to achieve the [Appellant]'s proposed objective, such as a plan amendment, text amendment, planned zoning districts, a zoning map amendment, or a variance.

See Land Use Code, Section 15-2-230(d).

For a Site Plan Appeal, the Town Board must also apply the site plan review criteria in evaluating the Planning Commission's decision:

(1) The site plan is consistent with the Comprehensive Plan and the intent stated in this Land Use Code.
(2) The lot size and lot dimensions are consistent with what is shown on the approved final plat.
(3) No buildings or structures infringe on any easements.
(4) The proposed site grading is consistent with the requirements of any applicable adopted storm drainage criteria or master drainage plans.
(5) The density and dimensions shown conform with Article 4 of this Code or the approved PUD requirements.
(6) The applicable development standards have been adequately addressed and the proposed improvements conform with Article 5 of this Code.

See Land Use Code, Section 15-2-120(c).

On the appeal, pursuant to Section 15-2-120(b)(3)b.1 of the Land Use Code, the Board of Trustees may uphold, modify, or reverse the Planning Commission's decision on the site plan. Importantly, the Board of Trustees may not exceed the authority granted to the Planning Commission under the Land Use Code. The purpose is to determine if the decision by the Planning Commission was incorrect and, if so, whether the site plan approval should be reversed or whether the site plan approval should have additional conditions.

The decision of the Board must be accompanied by findings of fact. The Board may concur with and/or incorporate the findings of fact made by the Planning Commission or may make its own findings of fact.

Uphold the decision. If the Board upholds the decision of the Planning Commission, the Planning commission's determination stands unchanged.

Modify the decision. The Board of Trustees may modify the decision of the Planning Commission to add additional conditions or requirements that would be within the authority of the Planning Commission on hearing the site plan application.

Reverse the decision. The Board of Trustees may reverse the decision of the Planning Commission to approve the site plan. This reversal would not prohibit Connell Resources from submitting a new site plan application, if it so desired.

Background

The Town of Wellington received an appeal (the "Leistikow Appeal") filed by Ben and Ayla Leistikow (the "Leistikows") of the decision of the Planning Commission on June 5, 2023 approving the site plan submitted by Connell Resources, LLC ("Connell") for an asphalt plant to be located on County Road 66. The property for which the site plan as approved was annexed into the town in 2000 as the Lebsack Farms Annexation No. 3, at which time it was zoned I – Industrial. CR-TOW-0003.

Prior to the site plan being submitted by Connell, "[Connell] requested, and the Board of Adjustment granted, (2) two variances on October 27th, 2022 (reduce setback between I - Industrial use and Residential use, and variance to increase height of silo only to 70 ft.). The Board of Adjustment approved the variances with six conditions of approval, and also made one recommendation relating to water use." CR-TOW-0003. The Board of Adjustments Conditions were as follows:

1. Site Plans must be reviewed and approved by the Planning Commission;
2. The height variance (up to 70-ft) is for the silo only;
3. A 15-foot earthen berm and landscaping is required along the west side of the site;
4. There is to be no signage on the silo;
5. Require signage and operator policies to disallow engine braking ("Jake Brakes"); and
6. Compliance with all applicable County and State permits for operation of an Asphalt Plant.

   CR-TOW-0004.

The Staff Report for the Planning Commission recommended that the Planning Commission approve the site plan, subject to certain conditions:

- Satisfaction of the Conditions of Approval of the BOA Variance granted October 27, 2022;
- Addressing all staff report comments;
- Final engineering plans accepted by the Town Engineer;
- Obtain and provide evidence of satisfaction of all county, state and federal permits including but not limited to:
    - Air Quality
    - Storm Water Discharge
    - Process Water Discharge
    - Fugitive Dust
    - Operations Plan
    - Noise Ordinance
    - County Odors
    - Fuel Storage
- Satisfaction of all referral agency comments;
- Other conditions as directed by the Planning Commission.

  CR-TOW-0421 for the staff recommendation and conditions.

At the June 5, 2023 meeting, the Planning Commission approved the Connell site plan with the recommended conditions.

The Leistikow Appeal

The Leistikow Appeal was filed within the appropriate time required by the Wellington Land Use Code at Section 15-2-120. The Leistikow Appeal argues that the Planning Commission decision was incorrect for six (6) reasons. This report will address each in turn.

1. First Ground for Appeal – Producing and Curating Toxic Chemicals

In the Leistikow Appeal, the first argument is that the Site Plan should not have been approved because the use falls under a category of use in the Land Use Code requiring a 2,640 foot setback from residential land uses.

Section 15-4-30(v) of the Land Use Code provides certain site-specific standards for Heavy Industrial Uses:

> (v) Industrial and Manufacturing, Heavy.
>
> (1)An Industrial and Manufacturing, Heavy use shall be located at least one thousand (1,000) feet from any residential district or use.
>
> (2)Any Industrial and Manufacturing, Heavy use producing and curating toxic chemicals or conducting animal slaughtering shall be located at least:
>
> a. Two thousand six hundred forty (2,640) feet from any residential district, religious land use, medical care facility, or school.
>
> b. One thousand three hundred twenty (1,320) feet from any commercial use.
>
> c. Six hundred sixty (660) feet from any Industrial and Manufacturing, Light use.

Section 15-9-20 of the Land Use Code provides a definition for Industrial and Manufacturing, Heavy, which includes asphalt mixing plants:

> Industrial and Manufacturing, Heavy. Manufacturing of paper, chemicals, plastics, rubber, cosmetics, drugs, nonmetallic mineral products (such as concrete and concrete products, glass), primary metals, acetylene, cement, lime, gypsum or plaster-of-Paris, chlorine, corrosive acid or fertilizer, insecticides, disinfectants, poisons, explosives, paint, lacquer, varnish, petroleum products, coal products, plastic and synthetic resins, electrical equipment, appliances, batteries, and machinery. This group also includes asphalt mixing plants, concrete mixing plants, smelting, animal slaughtering, oil refining, and magazine contained explosives facilities.

That subset of Heavy Industrial Uses that involves "producing and curating toxic chemicals or conducting animal slaughtering" are subject to significantly increased setbacks from other uses. However, the Land Use Code does not provide a definition for these particular uses. The Leistikow appeal states that the asphalt plant will be "producing and curating toxic chemicals" with no citation to facts in the record.

The Board of Adjustment and the Planning Commission applied the 1,000-foot setback for the proposed asphalt plant (with the Board of Adjustment varying the setback to 800 feet). The argument that the higher setback should be applicable was addressed by staff in its staff report for the June 5 Planning Commission meeting at CR-TOW-0412. The staff report noted that the raw materials used in the production of asphalt are not required to carry placards indicating they are hazardous materials, nor is the finished product. The Staff Report also indicated that all air emissions would "be below applicable chronic and acute screening values for criteria pollutants and hazardous air pollutants as established by the EPA." CR-TOW-0413. The Staff Report did not recommend that the 2,640 foot setback be applied to the asphalt plant use in the site plan.

The safety of asphalt manufacturing was addressed at length in a submission by Connell Resources to the Planning Commission at CR-TOW-498-499. This submission discusses the classifications of asphalt by various government agencies:

> The safety of asphalt and asphalt mix plant emissions is supported by the Agency for Toxic Substances and Disease Registry ("ATSDR"), which is the federal agency tasked with protecting communities from harmful health effects related to exposure to natural and man-made hazardous substances. Between 1998 and 2004, ATSDR conducted a series of investigations to determine potential health impacts of asphalt emissions on surrounding communities. Seven mix plant locations across the country were examined and ATSDR concluded "in communities surrounding asphalt facilities. . . there do not appear to be any chemicals or compounds at levels that would pose a public health hazard."

The safety of the asphalt plant use was also addressed by representatives from the Larimer County Department of Health and Environment in written submissions and oral presentations to the Planning Commission. CR-TOW-1405. The LCDPHE representative noted that the proposed asphalt plant emission levels would fall below chronic and acute levels known to cause harmful health impacts.

The issue was also discussed at length by Planning Commission members, staff, representatives of Connell Resources, and the public at the June 5, 2023 Planning Commission meeting. Representatives from Connell Resources noted that the visible emissions from an asphalt plant was non-toxic steam. An expert on industrial emissions, Stephen Zemba, noted that emissions fall well below toxic levels. Staff stated in response to questions that it did not believe the use should be subjected to the higher setbacks for curating or producing toxic chemicals.

Connell Resources submitted extensive air dispersion models, which indicated that the use would not result in any emissions that would result in acute or chronic health effects. CR-TOW-0688.

A number of public commenters, including a resident who identified himself as an atmospheric scientist, noted that studies show that emissions from asphalt plants are toxic. The atmospheric

scientist, Ben Traying, stated that the site plan should be rejected because asphalt releases toxic compounds when heated.

The Planning Commission discussed this issue after hearing extensive testimony on the issue from residents, Connell Resources, staff, and experts and did not find that the higher setback for uses producing or curating toxic chemicals was warranted for the proposed asphalt plant.

2. Second Ground for Appeal – Light Industrial Uses

The second argument in the Leistikow Appeal is that certain uses of the site related to the asphalt plant should be considered as light industrial uses and therefore must be at least 250 feet from the neighboring residential district. Staff can find no evidence that this argument was made to the Planning Commission or that it was considered in its approval of the site plan. Importantly, the red and yellow exhibit referenced in the Leistikow Appeal was not presented to the Planning Commission and is not part of the Site Plan that was under consideration.

The Leistikow Appeal references a map at page 48, which is a site map that can be found at CR-TOW-0449. The map includes distances from the property line for some of the uses identified in the Leistikow Appeal.

The Land Use Code at Section 15-4-30(w)(1) provides use specific standards for Light Industrial Uses in Industrial Zones:

> (w) Industrial and Manufacturing, Light.
>
> (1) Industrial Zones.
>
> a. An Industrial and Manufacturing, Light use shall be located at least two hundred fifty (250) feet from any residential district or use.
>
> b. Overhead doors shall not face streets unless set back at least one hundred (100) feet from the street.

Section 15-9-20 of the Land Use Code provides a definition for Industrial and Manufacturing, Light:

> Industrial and Manufacturing, Light. Manufacturing of products, from extracted, raw, recycled or secondary materials, including bulk storage and handling of those products and materials, or crushing, treating, washing, and/or processing of materials. This includes similar establishments, and businesses of a similar and no more objectionable character. It also includes incidental finishing and storage. Goods or products manufactured or processed on-site may be sold at retail or wholesale on or off the premises. This does not include any activity listed under Industrial and Manufacturing, Heavy. Examples of general manufacturing include the manufacture or production of the following goods or products: apparel (including clothing, shoes, dressmaking); boats and transportation equipment; brooms; caskets; communication or computation equipment; dairy products; die-cut paperboard and cardboard; drugs, medicines, pharmaceutical; electrical equipment or machinery; farm machinery; fasteners and buttons; feed and grain; food/baking (including

coffee roasting, creameries, ice cream, ice, frozen food, confectionery, and beverage); fruit and vegetable processing, canning and storage; gaskets; glass products made of purchased glass; household appliances; industrial controls; leather and allied products; lithographic and printing processes (including printing plants as defined below); mattresses; medical equipment and supplies; medicines; mill work and similar woodwork; mobile homes; musical instruments; novelties; office supplies; optical goods; photographic equipment; prefabricated and modular housing and components; printing and print supplies (including printing plants); 3-D printing, radio and TV receiving sets; sanitary paper products; scientific and precision instruments; service industry machines; signs; textiles (including dyeing, laundry bags, canvas products, dry goods, hosiery, millinery); tobacco products; toys, sporting and athletic goods; and watches and clocks. A "printing plant" means a facility devoted to printing or bookbinding, including related large-scale storage and transshipment.

As noted, this argument was not raised before the Planning Commission and staff cannot identify additional facts in the record regarding the argument raised in the Leistikow Appeal.

3. Third Ground for Appeal – Contractor Storage Uses

The Leistikow Appeal argues that if the uses are not light industrial as noted above, one storage area should be considered Contractor and Contractor Storage, subject to a 100-foot setback. This argument was not raised before the Planning Commission. The map at CR-TOW-0449 identifies an area as “Storage Lean-To (10,000 sf), which is a proposed enclosed structure. The map does not provide a measurement from the property line for this storage area.

Section 15-9-20 of the Land Use Code provides a definition for Contractor and Contractor Storage:

> Contractor and Contractor Storage. The offices and/or storage facilities for a specialized trade related to construction, electric, glass, painting and decorating, welding, water well drilling, sign making, or similar items. Includes storage yards (for equipment, materials [including sand, road-building aggregate or lumber], supplies and/or vehicles owned or rented by the establishment), roofing and sheet metal, fabrication of cabinetry and related millwork and carpentry, elevator maintenance and service, and venetian blind and metal awning fabrication and cleaning. Incidental sales of materials are included within this definition.

Section 15-4-30(l) provides the following standards for this use type:

> (l) Contractor and Contractor Storage.
>
> (1) All outdoor storage areas shall be located at least one hundred (100) feet from any property line.
>
> (2) All structures shall be located at least fifty (50) feet from any property line.

(3) The minimum property size for a Contractor and Contractor Storage shall be two (2) acres.
(4) Outdoor storage areas shall be screened and comply with Section 15-4-40(e)(4).
(5) Maintenance of vehicles or machinery shall be incidental to the Contractor and Contractor Storage and the incidental use shall only include minor repair.
(6) Office space shall be incidental to the Contractor and Contractor Storage and shall comply with Section 15-4-40(e)(2).
(7) No retail sales associated with a Contractor and Contractor Storage may occur on the property unless retail sales are approved with a different use that allows retail sales.
(8) No on street parking of vehicles or equipment associated with the use is allowed.
(9) Hours of operation are limited between the hours of 7:00 a.m. and nine 9:00 p.m.

As noted, this argument was not raised before the Planning Commission and staff cannot identify additional facts in the record regarding the argument raised in the Leistikow Appeal.

4. Fourth Ground for Appeal – Industrial Uses within 800 feet

The Leistikow Appeal argues that significant portions of the Heavy Industrial Uses would be closer to a residential district than the 800 feet allowed pursuant to the Board of Adjustment Appeal. The argument uses a map (Exhibit A to the Leistikow Appeal) presented to the Board of Adjustment that was not included in a packet before the Planning Commission. Exhibit A to the Leistikow Appeal is not part of the record of the decision made by the Planning Commission.

The Leistikow Appeal also references a PowerPoint presentation by Connell Resources (CR-TOW-0437, referenced as “Page 36 of the Packet” in the Leistikow Appeal) as showing that the 800 measurement was incorrect.

The Site Plan map prepared by Connell Resources – CR-TOW-0449 – does not include the measurements that are discussed in the Leistikow Appeal.

This argument was not raised before the Planning Commission and staff cannot identify additional facts in the record regarding the argument raised in the Leistikow Appeal.

5. Fifth Ground for Appeal - Emissions will not be confined to site

The Leistikow Appeal argues that emissions will not be confined to the parcel upon which the asphalt plant is proposed, in violation of the Land Use Code. The Leistikow Appeal references emissions modeling provided by Connell Resources, which begins at CR-TOW-0688.

Section 15-3-40(b)(3)a. provides that in Industrial Zones:

> Dust, fumes, odors, smoke, vapor and noise shall be confined to the site and be controlled in accordance with the state air pollution laws.

The Planning Commission approved the Site Plan subject to a number of conditions, including the following:

> Obtain and provide evidence of satisfaction of all county, state and federal permits including but not limited to:
> - Air Quality
> - Storm Water Discharge
> - Process Water Discharge
> - Fugitive Dust
> - Operations Plan
> - Noise Ordinance
> - County Odors
> - Fuel Storage

The Planning Commission hearing included extensive discussion of emissions from the proposed asphalt plant. Conell Resources provided a response to these concerns in a submission to the Planning Commission at CR-TOW-0493-0499. This submission detailed the various county, state, and federal air quality requirements that would have to be complied with and the plan for how Connell would comply. Connell Resources additionally presented information on emissions, noise, and odor to the planning commission, with PowerPoint slides beginning at CR-TOW-1540.

Stephen Zemba, PhD, of Sanborn Head presented a voluntary Health Risk Assessment completed on behalf of Connell resources. The presentation slides begin at CR-TOW-1565.

The emissions from the asphalt plant use was also discussed by representatives from the Larimer County Department of Health and Environment in written submissions and oral presentations to the Planning Commission, with slides beginning at CR-TOW-1405.

Emissions were a significant point of discussion in public comment and among the Planning Commission members at the March and June hearings. Written comments submitted can be seen at CR-TOW-0066-0138, 0327-0384, 1415-1537, and 1591-1869. Oral comments at the March meeting are between time stamps 1:09:10 and 1:34:50, and for the June meeting between approximately 02:32:20 and 03:38:50.

6. Sixth Ground for Appeal – Incomplete site plan

The final basis for the Leistikow appeal is that the site plan application failed to include elevation drawings as required by the Land Use Code at Section 15-5-90.

Section 15-5-90(b)(1) of the Land Use Code states:

> Elevation and site plans. Dimensioned elevation drawings or renderings, including front, back, and side elevations, shall be submitted with all site plan applications to illustrate conformance with the regulations herein. Elevations shall indicate materials to be installed on all building surfaces.

As noted in the Leistikow Appeal, "[Connell] submitted examples of the materials and general architectural character of the various buildings on the site." However, the site plan did not include dimensioned elevation drawings. At CR-TOW-0441-0442, demonstrative renderings are shown along with building specifications for engineered buildings proposed to be used, and at CR-TOW-0477-0487, various examples of materials and design rendering are provided.

The issue of a lack of architectural renderings was raised by Commissioner Chollet at the June 5, 2023 hearing. Commissioner Chollet noted that elevation drawings are required as part of a discussion of the maximum allowed building height. The discussion of this issue begins in the video for the June 5 meeting at time stamp 2:00:30. Planning Director Bird explained that full plans and renderings would be provided prior to issuance of any building permits. In response to Connell Resource's desire to not complete full architectural work prior to approval of the buildings Mr. Bird stated that, "It was staff's recommendation that in the absence of full architectural plans that exemplary photos would suffice."

No other information in the record is available regarding this issue.

Sec. 15-2-120. - Site plan.

(a) *Purpose and Applicability.* The site plan shall be submitted to apply for a building permit for all permitted principal uses of multi-family, commercial and industrial developments. The site plan shows lot arrangement and site design so the Town can make sure the site plan complies with all Town regulations. A site plan shall also be submitted for any re-development, substantial changes to an existing site, changes that affect site circulation or access, and for any exterior modifications to an existing building within the C-2, Downtown Commercial District to show compliance with the Cleveland Avenue Architectural Standards. When a development requires approval as a conditional use, the site plan approval process shall be processed concurrently with the conditional use application.

(b) *Procedure.* All site plan applications shall comply with the following specific procedures in addition to the general procedures in Section 15-2-40(b).

(1) *Preapplication Conference.* A pre-application conference is required for a site plan application to discuss specific application procedures, criteria, and requirements for a formal application. This requirement may be waived at the discretion of the Planning Director or designee.

(2) *Land Use Application Submittal.* In addition to the requirements set forth in Section 15-2-40(c), a site plan application shall include:

a. Traffic study or waiver request. In accordance with the Standard Design Criteria and Standard Construction Requirements.

b. Site plan map. The site plan map shall provide information per the site plan application checklist provided by the Planning Director or designee.

c. Demonstrate, in written or graphic form, how the proposed structure is consistent with the Development Standards found in Chapter 5.

d. Final landscape plan per Section 15-5-40.

e. Provide complete building elevations and perspective rendering, drawn to scale, with illustrations of all colors and identifying major materials to be used in the structures. In addition, Town staff may require building floor plans, sectional drawings, additional perspective drawings, models and/or computer visualizations when the impacts of a proposal warrant such information.

(3) *Review and Approval.*

a. Planning Commission Approval.

1. The Planning Commission shall review the application at a regular meeting. Staff shall present their staff report and recommendation.

2. The Planning Commission shall either approve, approve with conditions, or deny the application.

b. Town Board consideration of appeals.

1. The Town Board shall consider any appeal within forty-five (45) days of the close of the appeal period, except an appeal associated with a concurrent development application requiring Town Board review or approval, which the Town Board shall consider with final action on the concurrent development application. The Town Board shall apply the site plan review criteria to either uphold, modify, or reverse the Planning Commission's decision.

(4) *Post Decision Actions.* Same as referenced in Section 15-2-40(c), in addition to the following:

a. Any aggrieved party who wishes to appeal the action shall file a written appeal stating the reasons why the Planning Commission action is incorrect. The applicant shall file the appeal with the Town Administrator/Clerk within seven (7) days of the meeting at which such action was taken.

(5) *Post Decision Actions.* Same as referenced in Section 15-2-40(c), in addition to the following:

a. Memorandum of Agreement for Public Improvements. Staff may require that the applicant execute a MOAPI to assure the construction of on-site and off-site improvements as a condition of approval of the site plan. Guarantees in the site plan agreement shall be secured by an irrevocable letter of credit in an amount determined appropriate by Town staff.

b. Building permit. A building permit shall be issued only when final site plan drawings have been submitted, reviewed, and approved by the Department directors.

1. Exception. A building permit may be issued for the construction of a foundation and shell only for commercial and industrial uses to allow for the partial construction of a speculation building with unknown tenant and use.

c.

Certificate of Occupancy. When building construction and site development are completed in accordance with the approved site plan and building permits, a Certificate of Occupancy may be issued.

d. Phasing and Expiration of Approval. The site plan shall be effective for a period of three (3) years from the date of approval, unless stated otherwise in the written site plan approval. Building permits shall not be issued based on site plans that have an approval date more than three (3) years old. For multi-phased plans, building permits shall not be issued based on an approval date more than three (3) years from the date of Phase I approval.

(c) *Findings for Approval.*

(1) The site plan is consistent with the Comprehensive Plan and the intent stated in this Land Use Code.

(2) The lot size and lot dimensions are consistent with what is shown on the approved final plat.

(3) No buildings or structures infringe on any easements.

(4) The proposed site grading is consistent with the requirements of any applicable adopted storm drainage criteria or master drainage plans.

(5) The density and dimensions shown conform with Article 4 of this Code or the approved PUD requirements.

(6) The applicable development standards have been adequately addressed and the proposed improvements conform with Article 5 of this Code.

(d) *Amendments to Approved Site Plans.*

(1) Minor variations in the location of structures, improvements or open space areas caused by engineering or other unforeseen difficulties may be reviewed and approved by the Town staff. Such changes shall not exceed ten percent (10%) of any measurable standard or modify the use, character, or density of an approved site plan. All plans so modified shall be revised to show the authorized changes and shall become a part of the permanent records of the Town.

(2) Changes to approved site plans that exceed the ten percent (10%) threshold, or other major modifications (such as changes in building size or footprint, relocation of access points, changes to required parking, etc.), shall be considered as a new site plan application. Such amendments shall require Planning Commission review and approval to become effective. A complete site plan application shall be prepared and submitted in compliance with the requirements set forth in this Section.

(Ord. No. 07-2022 , § 1(2.12), 3-22-22)

Sec. 15-2-230. - Appeals.

(a) *Purpose.* This section sets forth the process for appealing land use decisions made by any applicant, administrative official, board, or commission under this Code.

(b) *Applicability.* An appeal application may be initiated by any person aggrieved by a final decision made by an administrative officer or agency, based upon or made in the course of the administration or enforcement of this Code. Appeals are made in accordance with C.R.S. § 31-23-307.

(1) Appeals may be taken by any officer, department, board, or commission of the Town affected by the grant or refusal of the building permit, or by other decision of the administrative officer or agency, based on or made in the course of administration or enforcement of this regulation.

(2) Appeal of Administrative Decisions. Appeals of all administrative decisions shall be to the Board of Adjustment.

(3) Appeal of Planning Commission Decisions. Appeals of all Planning Commission decisions shall be to the Town Board.

(4) Appeal of Town Board Decisions. Appeals of any final decision by the Town Board decisions made pursuant to this Code shall be to the District Court in the manner set forth in the Colorado Rules of Civil Procedure.

(5) Appeal of Board of Adjustment Decisions. Appeals of any decision of the Board of Adjustments shall be to the District Court in the manner set forth in the Colorado Rules of Civil Procedure.

(c) *Procedure.*

(1) *Pre-application Conference.* A pre-application conference is not required for an appeal of an administrative decision, but may be used to discuss specific application procedures, criteria, and requirements for a formal application.

(2) *Application Submittal.* Appeals shall be:

a. Made in writing and submitted to the Planning Director stating the specifics of the appeal, the grounds for the requested relief, and include all pertinent records of the decision.

b. Made within thirty (30) days of the final decision.

c. Demonstrate that the decision is final and that all other administrative remedies have been exhausted.

(3) *Review.* Upon receipt of a formal application staff will conduct an internal review and may supplement the application with any additional records on the decision.

a. Upon submittal of a formal application, staff shall only review the application to confirm that it is complete and that the appeal is heard by the appropriate review body. The staff report shall not make a formal recommendation, but rather shall include only the necessary facts to warrant an appeal, which shall be provided by the appellant.

b. The appellant has the burden of proving the necessary facts to warrant approval of an appeal by the appropriate decision-making body. Such proof shall be provided at time of a written application with the non-refundable application fee. If the appellant fails to provide facts warranting an appeal, the application shall be rejected.

c. An appeal stays all proceedings from further action unless the Town Administrator determines that a stay would create adverse impacts to the health, safety, and welfare of the Town or subject neighborhood.

(4) *Public Hearings.*

a. The Board of Adjustments or Town Board of Trustees, as applicable, shall review the application subject to the criteria in this section. Upon the close of the public hearing the Board of Adjustments or Town Board of Trustees, as applicable, shall either affirm the decision of the administrative official or Planning Commission, affirm the decision of the administrative official or Planning Commission with specific conditions and modifications, overturn the decision of the administrative official or Planning Commission and make the decision that the Board of Adjustments or Town Board of Trustees, as applicable, determines should be made, or continue the application to collect additional information pertinent to the application or to take the matter under advisement.

1. If the hearing is postponed, new notice shall be required.

2. The continued hearing shall occur at the next regular meeting, or at some other time within sixty (60) days with the consent of the applicant. No application may be postponed more than once without the applicant's consent.

b. No decision of the Board of Adjustments or Town Board of Trustees, as applicable, may exceed the authority granted to the administrative official or Planning Commission under these regulations,

c. The appeal authority may reverse a previous decision in whole or in part, or may modify the order, requirement, decision, or determination appealed from.

d. The appeal authority may attach conditions of approval on any appeal to ensure the health, safety, and welfare of the Town.

(d) *Findings for Approval.* In reviewing and determining whether to affirm, reverse, or amend a decision of another decision-making body, the current decision-making body shall consider the following findings:

(1) Whether the decision of the administrative official or Planning Commission was a clear error, as opposed to fairly debatable, according to the provisions of these regulations.

(2) The interpretation instructions of these regulations.

(3) The purposes, intent, and design objectives of any standards that are subject to the appeal.

(4) The record on the application, including the official plans and policies of the Town used to evaluate the application or make the decision.

(5) Whether the final decision and the grounds for relief requested in the appeal are within the authority granted by these regulations.

(6) Whether there are other more appropriate and applicable procedures to achieve the applicant's proposed objective, such as a plan amendment, text amendment, planned zoning districts, a zoning map amendment, or a variance.

(e) *Post Decision Actions.* Any further appeals from the appropriate appeal authority shall be made as provided by law.

(Ord. No. 07-2022 , § 1(2.23), 3-22-22)

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March 6, 2023 Planning Commission Meeting -
https://www.youtube.com/watch?v=dEtph4sqtQQ&list=PLegRxdIlQQTRGtMbXuZX9qpHGRSDY2jgr&index=6&t=28s

TOWN OF WELLINGTON
PLANNING COMMISSION
March 6, 2023
6:30 PM

Leeper Center, 3800 Wilson Avenue, Wellington CO

REGULAR MEETING

Individuals wishing to make public comments must attend the meeting in person or may submit comments by sending an email to birdca@wellingtoncolorado.gov. The email must be received by 3:00 p.m. Monday, March 6, 2023. The comments will be provided to the Commissioners at the meeting. Emailed comments will not be read during the meeting.

The Zoom information below is for online viewing and listening only.

Please click the link below to join the webinar:
https://us06web.zoom.us/j/86154011660?pwd=VnZxZlRtUHRmNCtVSVpOcDIvYjZIQT09
Passcode: 446308
Webinar ID: 861 5401 1660
Or One tap mobile:
US: +17207072699,,87576162114# or +12532158782,,87576162114# Or Telephone:
US: +1 720 707 2699 or +1 253 215 8782 or +1 346 248 7799

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1. CALL TO ORDER
2. ROLL CALL
3. ADDITIONS TO OR DELETIONS FROM THE AGENDA
4. PUBLIC FORUM
5. CONSIDERATION OF MINUTES
   - A. Meeting Minutes of January 9, 2023
   - B. Work Session Minutes of February 6, 2023
6. NEW BUSINESS
   - A. Site Plan Review - Connell Resources Asphalt Plant - South of County Road 66, West of BNSF Railroad
   - B. Update Recommendations on Adoption of the Zoning Map for P - Public Zoning Districts
7. COMMUNICATIONS
8. ADJOURNMENT

The Town of Wellington will make reasonable accommodations for access to Town services, programs, and activities and special communication arrangements Individuals needing special accommodation may request assistance by contacting at Town Hall or at 970-568-3381 at least 24 hours in advance.

Planning Commission Meeting

Date: **March 6, 2023**
Submitted By: **Patty Lundy, Planning Analyst**
Subject: **Meeting Minutes of January 9, 2023**

EXECUTIVE SUMMARY

BACKGROUND / DISCUSSION

STAFF RECOMMENDATION

Move to approve the regular meeting minutes of January 9, 2023, as presented.

ATTACHMENTS

1. Meeting Minutes of January 9, 2023

Planning Commission Meeting

Date: **March 6, 2023**
Submitted By: **Paul Whalen, Planner III**
Subject: Site Plan Review - Connell Resources Asphalt Plant - South of County Road 66, West of BNSF Railroad

EXECUTIVE SUMMARY

Subject:
Connell Resources Asphalt Plant Site Plan Review – A parcel of land situated in NE ¼ Section 28, Township 9 North, Range 68 West of the 6th, P.M. Town of Wellington, County of Larimer, State of Colorado.

General Location:
South of E Larimer County Road 66 and west of the BNSF railroad crossing.

Applicant/Agent:
Applicant: John Warren, Connell Resources
Agent: Jill Burrell, P.E., Ditesco

Reason for request:
Request review for a proposed site plan for a new Connell Resources Asphalt Plant facility.

Background Information:

- The applicant is seeking approval of a site plan for a new Connell Resources Asphalt Plant facility in the Town of Wellington.
- The operation is to be relocated from the current plant location in Timnath. The facilities include an administration office building, silos/plant, welding/maintenance shop, fueling facilities, workshop and truck wash.
- The property is located along LCR 66 on the north, the North Poudre Irrigation ditch along the west, and the BNSF rail line along the eastern property line.
- The Town annexed the subject property in 2000 as the Lebsack Farms Annexation No. Three.
- The site was zoned I - Industrial and is comprised of 35.56 acres.
- An asphalt batch plant facility is a permitted land use within the I- Industrial zone district.
- The applicant requested, and the Board of Adjustment granted (2) two variances on October 27th, 2022 (reduce setback between I - Industrial use and Residential use, and variance to increase height of silo only to 70 ft.). The Board of Adjustment approved the variances with six conditions of approval, and also made one recommendation relying to water use.
- The Town referred the applicant's site plan review request to referral agencies for review and comment. Referral comments received are attached with this report.
- Initial referral review comments have been adequately resolved or are in the process of resolution. The applicant, Town, and other referral agencies will continue to coordinate on public improvement plans including traffic impacts, truck routing, utilities and road improvements. Final utility design and easements will be resolved in coordination with the site plan.
- The applicant is also coordinating and working with the Town's Public Works Department to relocate and upgrade the existing utility infrastructure for future town growth.
- If facility expansions or site plan improvements are proposed in the future, an amended site plan application shall be required.

Board of Adjustments - Variance Conditions of Approval:

1. Site Plans must be reviewed and approved by the Planning Commission;
2. The height variance (up to 70-ft) is for the silo only;
3. A 15-foot earthen berm and landscaping is required along the west side of the site;
4. There is to be no signage on the silo;
5. Require signage and operator policies to disallow engine braking ("Jake Brakes");
6. Compliance with all applicable County and State permits for operation of an Asphalt Plant;

Board of Adjustments - Variance Recommendation:
Town-supplied potable water shall be reserved for office & occupied facility use only (trucks transport non-potable water used for daily landscape irrigation and plant operations);

Neighborhood Comments:
The Town has heard comments through phone conversations and discussions with surrounding neighborhoods about the potential noise, odor, traffic, viewshed and environmental impacts generated from the project's operations. Prevalent themes of the comments include:

a. Planning Commission consideration of Site Plan;
b. Excessive Water Usage;
c. Setbacks for toxic materials;
d. Emissions / Odor;
e. Traffic Impacts / Roads;
f. Aesthetics / Viewshed Impacts;

Many of the public comments are similar to the comments expressed at the Board of Adjustment hearing. The applicant and the Connell Resources consultant team have proposed meeting with the community on several occasions to hear and discuss the concerns. The above topics to date have been addressed as follows:

a. The Site Plan will be reviewed by the Planning Commission (BOA COA#1) on March 6th, 2023 to consider compliance with the Town Land Use Code & Board of Adjustment Conditions for Approval. (Environmental and health issues are controlled by County, State and Federal agencies).
b. Town-provided water will be limited to offices and occupied facilities only. Non-potable water will be hauled onto the site for operations and landscape purposes. Water conservation is an ongoing need.
c. The hot-mix asphalt production requires mixing aggregate with asphaltic emulsion fluids (bitumen). The agents used in this operation are materials common to the industry and controlled by state, federal and county standards. Asphaltic plant operations are licensed and monitored by the State of Colorado for air pollutants, odor, and dust particulates.
d. Air emissions and odor are expected. The Board of Adjustments required the setback and site location at the northeast corner of the site (nearest to the railroad and furthest from Town-approved residential developments) to minimize the impact on the adjacent residences. Asphalt plants are regulated by county, state and federal agencies, and those agencies will continue to have regulatory oversight of the operations and permits. If approved, the Town will require the applicant to maintain a "good standing" with these agencies as they monitor and regulate the operation of this facility.
e. The business operation is centered upon importing the materials, processing the materials on-site and then trucking the asphaltic mix to customer locations during the production season. Use of the local road system and routes is critical to this operation. Recognizing the potential impacts, the project was reviewed by the Town's Public Works Department, the Larimer County Road and Bridge Department and CDOT. Comments were forwarded to the applicant and the applicant consultant team have worked on viable solutions with each agency pertaining to the area road improvements.

f. The site is zoned I- Industrial and an Asphalt Batch Plant is an industrial use with heavy equipment, large buildings and structures, silos, towers, and equipment sheds. The nature and activities of an industrial site do not lend itself to aesthetic standards typical of other commercial zone districts, however the applicant has agreed to provide:

- 15-ft earthen berms with landscaping to mitigate and minimize impacts on the surrounding viewshed;
- The applicant has also strategically located structures and operations as far from the adjacent residences as feasible— adjacent to the railroad.;
- The 15-ft berm, building locations and setback distance are designed to re-direct/deflect the on-site noise away from the residences;
- The applicant will conduct noise studies to ensure compliance with County standards for noise levels at the residential boundaries;

BACKGROUND / DISCUSSION

Site Plan Review:

The site is comprised of 35.56 acres. The property is proposed to be platted through a separate application process to memorialize the easements and dedications created and established through the site plan process. If the site plan is approved, the Town will be negotiating an agreement to re-align its existing water distribution line consistent with the establishment of the new easements, new private road and dedication of additional LCR 66 Right-of-Way.

1. Building Setbacks and dimensional standards for the Industrial Zone District: The proposed buildings will not encroach on any required building setbacks (Table 3.02.7 of the Town's Land Use Code: 25ft - Front; 20ft - side and 10ft – rear). The Board of Adjustments granted a variance on October 27th 2022 to increase the height of the silo (only the silo). The variance for structure height allows only the silo structure to exceed the maximum district height of 45 ft. The silo is allowed to be up to a maximum height of 70 ft.
2. Use Specific Standard Setback: Per Section 4.03.21-A, the Use Specific Standard for Heavy Industrial land use requires a 1,000-ft setback from any residential district or use. The Board of Adjustment granted a variance on October 27, 2022, allowing the use setback standard to be reduced to 800-ft from the property line to the heavy industrial operations.
3. Easements: The Town and applicant propose relocating the Town's existing water distribution utilities and adjusting or re-establishing new easements to accommodate the recommenced utility relocations. If the site plan is approved, the applicant will then submit a plat application to memorialize the adjusted LCR 66 right-of-way, and easement dedications. The proposed buildings and structures will not encroach on any platted, existing or proposed easements.
4. Streets and Access: A private roadway (future W. 1st Street) is proposed along the western property line adjacent to the North Poudre Irrigation Ditch/Sundance subdivision, granting two points of access to the Connell site. The public and Town will be granted access and use of the roadway via an easement that will be recorded by separate instrument and memorialized on a future plat application. The re-located Town utilities will be placed within this proposed access and utility easement. In addition, LCR 66 is scheduled for improvements to accommodate the increased heavy truck traffic and may require additional right-of-way dedications. Site access, including office and administration, is restricted to normal business hours of operation.
5. Pedestrian Connection: Sidewalks are proposed adjacent to the improved LCR 66 road along the northern property line in accordance with Town standards. As this is a heavy industrial facility and operates on private internal roads and driveways, the site's internal roadways do not have sidewalks. Due to the truck traffic associated with operations, sidewalks along the east side of the private road are not recommended. The applicant has requested, and staff has agreed, a sidewalk adjacent and west of the future W 1st Street is more practical to provide a connection to Wellington Community Park as a trail connection. Town staff, the Sundance developer and Connell Resources have had discussions about a possible pedestrian sidewalk, and subdivision access along the west side of the proposed private road to benefit Sundance subdivision and pedestrian access.
6. Parking: Parking is provided throughout the site for a variety of uses. Employee and customer parking with standard vehicle spaces 9 X 18 is provided at the main office (36 spaces), with employee-only parking limited to the welding/maintenance service areas (20 spaces) located along the western edge of the site. Restricted additional parking spaces of varying size and length are provided throughout the site for overnight parking and storage of heavy

equipment—trucks, semis and dirt-moving equipment. Access to the facility, including all parking spaces, is limited to normal business hours when the gates are open.
Heavy industrial uses are required to provide a minimum of (1) parking space per each 1,000 sq. ft. of gross floor area. The buildings consist of 21,380 sq. ft. of floor area, requiring 22 parking spaces. Fifty-six parking spaces are proposed for employee and customer parking, exceeding the requirement.

- SIZE: Parking spaces will comply with the minimum width and depth requirements. The drawing shows parking spaces that comply with these dimensions.
- BICYCLE RACK INFO: A bicycle rack is proposed and located near the administrative office on the site plan.
- SCREENING: The proposed parking lots are primarily screened from off-site public views by the perimeter landscape berm required as a condition of approval for a variance request by the Board of Adjustment. The Administration/Office building parking lot will be screened by a 4-5ft berm and landscape materials.

7. Circulation Aisles: Circulation aisles meet the minimum 24-ft. width requirement for two-way traffic circulation, and emergency vehicle access applicant has confirmed all measurements on the drawings.
8. ADA: ADA Standards for Accessible Design require accessible parking spaces based upon the total number of parking spaces provided on site. When (25) parking spaces are provided, a minimum of (1) accessible parking space is required, and (1) must be van accessible. Two accessible parking spaces are provided, meeting the requirement.
    - LOCATION/CLUSTER: The proposed office building is oriented north to south with the primary entrance located at the south-west corner. The ADA spaces are shown in this location. All spaces are van accessible spaces. Two accessible spaces are located near the public entrance on the west side of the building.
    - PATHWAY TO BUILDING OR CURBS: All ADA spaces have a curb cut with sidewalk ramps, and all have an ADA-compliant accessible path into the building.
    - The applicant or their designated agent shall ensure that all accessible parking spaces and routes meet the requirements of ADA standards including locations, widths, aisles, slopes, signage, and pavement markings. Sufficient details shall be included and coordinated in the civil engineering and architectural plans, as provided.
9. Signage: Planning staff has requested approximate signage locations be shown on the site plan for relationship coordination purposes only. **Per the Town's Board of Adjustment COA#4, signage may not be located on the silos.** The applicant has been informed signage is permitted through a separate Town application procedure.
    - The current applicant intends to return with wall sign specifications at a later time in a separate application.
    - Staff requests Planning Commission authorization for staff to review all future submitted sign details (wall and monument signs) for this site and administratively approve.
10. Site Lighting: A photometric plan was provided with the site plans and was found to be in compliance with the Town's Exterior Lighting standards. Adequate lighting is essential for safe operation during the late evening hours, silo and tower walkways and passages must be adequately illuminated for employee safety.
    - The Town's maximum illumination level at the property line or 20-FT beyond, is 0.1 foot-candle. The plan complies with the 0.1 maximum illumination.
    - The Town has a minimum illumination level of 1.0 foot-candle for parking areas and pedestrian paths for safety and security. The parking and sidewalk along the west building elevation comply with the minimal 1.0 footcandle illumination criteria, the maintenance service and loading areas also comply with a minimal illumination level of 5.0 footcandles.
    - LIGHTING DETAILS: The applicant provided manufacturer cut-sheets with specific model details about the proposed light fixtures. Specified fixtures are acceptable.
    - CONCERNS OR DISCUSSION FOR APPLICANT: The lighting package has been reviewed and the plan with details and manufacturer cut sheets comply with the intent and spirit of the Town's land use code.
11. Landscape/Screening and Buffering: (Section 5.04.14): The applicant has proposed a landscape plan that satisfies the minimum (15%) required landscape for the project. Primarily focused on perimeter buffering, the required landscape improvements include a minimum of 8-ft width perimeter landscape area that may include a pervious surface such as rock mulch/native soils with (1) tree per 40-ft (25% of req'd trees are evergreen). In addition to the landscape required by the Town's Land Use Code, the Board of Adjustment also requested a fifteen-foot landscaped earthen berm along the west and northern property lines to screen the site from the adjacent residences. **(Per the Town's Board of**

Adjustment COA#3 a fifteen-foot earthen berm shall be required along the western property line to screen/buffer the adjacent residences).

- Street Trees: The town standard of (1) street tree is required for each 40 linear feet of street frontage for a minimum requirement of (60) trees. Sixty-one deciduous and evergreen trees are shown as accents to the earthen berm along LCR 66 and the proposed west roadway (W 1st Street). These trees are located on the landscape berm to enhance the screening effect.
- Site Trees: Approximately 15% (or 232,350 SF) of the site is required for landscape with the proposed areas typically located along the site perimeter and on the berms. Approximately 6,000 SF of the required landscape area is proposed at the administration office, and at a ratio of (1) tree per 1,000 sq. ft. (6) site trees are required.
    - The (60) required street trees in the listed species are consistent with the Town's Landscape & Irrigation Design Manual standards and are acceptable.
    - The proposed street and site tree locations and species will define the property perimeter and right-of-way, and enhance the screening effectiveness of the earthen berm.
    - The proposed office landscaping with reduced berm height will screen the parking lot and compliment the aesthetic quality of the office building environment.
    - The tree planting rhythm adds character to the LCR 66 ROW.
  - Shrubs/Ground coverage: Shrub and groundcover/native grasses are required in the vicinity of the admin/office. The 6,000 SF of landscape area thus requires (40) shrubs, (71) shrubs (31-grasses) have been provided and thus satisfy Town standards.
    - SHRUB/TREE SUBSTITUTION: Tree substitution is not proposed. The applicant has provided (108) shrubs & grasses and 167,334 SF of native grasses to meet the town code requirement
  - Parking Lot Trees/Shrubs/Screening: (Section 5.04.15) Parking lots with 10 or more spaces are required to provide trees in islands and shrubs, berms, fencing or a combination thereof for screening and buffering. A sufficient number of tree and shrub species and earthen berms are proposed to meet the parking lot island screening requirements to screen/buffer the parking lots from public views.
    - LIGHT/TREE CONFLICT: There are no lighting-tree conflicts at this time.
    - CONCERNS OR ITEMS FOR DISCUSSION: Adequate screening/buffering is provided to screen the parking lots to comply with the intent of the Town code.
  - Other:
    - SIGHT TRIANGLE CONCERNS: Landscaping is not proposed in the sight triangle areas on the private or LCR 66 ingress/egress roads. Visibility onto LCR 66 and the future W 1st Street will not be infringed by plant materials.
    - SEPARATE TAP: The Town requires a separate tap/meter for irrigation and a separate tap/meter for domestic use. However, the BOA recommended the Town provide a separate water tap/source for only the administration/office operations, and non-potable water provided for landscape and daily plant operations. The applicant stated the non-potable water would be delivered to the site via tank trucks. An irrigation plan was provided in the plan set indicating the irrigation water source is limited to non-potable water as recommended by the BOA. Town-supplied potable water should only be used for domestic/office uses only. Location and size of water sources/taps/hydrants/POCs shall be indicated on the civil engineering plans.
    - POTABLE WATER/XERIC CONFIRMATION: Per the Board of Adjustments recommendation, the potable water provided by the Town should be limited for office use/human use & consumption only, the landscape and day-to-day plant operations will utilize a non-potable water source trucked into the site via water tanks. The landscape architecture firm has confirmed the plants provided have been specifically chosen as low-xeric water-use efficient plants, shrubs, and trees to ensure long-term health of plants, water conservation and financial savings for owners.

12. Drainage: The applicant has provided plans indicating proposed site grading and drainage patterns with details for staff review. The Public Works engineering team has reviewed the project with review comments provided for the applicant to address. The developed site with 35.56 acres indicates an approximately 18.1% impervious area. The drainage

report proposes surface flows across the property to a detention basin located in the southwest corner. The basin location in the lowest area of the property, conflicts with the required earth berm which must be relocated. An on-site drainage network conveys the storm water flow via swales and culverts to the detention pond which then flows into the North Poudre Irrigation Company ditch on the west-side of the future W 1st Street. Any required site modifications shall be addressed in a final drainage plan & report in accordance with Planning and Public Works.

13. Utilities:
    - Town Utilities: Water and sewer services are available in LCR 66 with sufficient capacity to serve the site. These services will be extended along the future W 1st Street south to the office/administration building location. The town-supplied potable water source shall be limited to administrative office operations/domestic uses only. The applicant proposes using a potable Town water tap to serve the occupied structures. Non-potable water for landscape irrigation and daily plant production operations will be brought in from off-site sources via truck delivery. A sanitary sewer line and potable water mainline will extend from the existing service lines located in LCR 66 south to the office location on the future W. 1st Street. The site plan submission did include civil engineering plans and details for connections to the public lines. The site plan approval is conditioned upon final review and approval by the Town Engineer.
    - Other Utilities: The applicant is responsible for coordinating with private companies to ensure that all utilities are installed underground.
    - Fire District Review: A six or eight-inch fire line will be routed around the site to serve fire hydrants as located by the Fire Department and the Town's Public Work Dept. The fire lines/hydrants shall be located within an easement with access granted to the Town for emergency access and fire line maintenance.
14. Architectural Design Standards: The Town's architectural design standards for industrial developments shall be adequately satisfied. The Town's Comprehensive Plan encourages an assortment of building types and sizes to support a diverse business base contributing to the Wellington economy. Predominantly large metal warehouse-type buildings, industrial facilities are encouraged to embrace a variety of architectural characters and themes. The Town's landscape regulations have also been updated to promote perimeter landscaping to screen and buffer the site and land use activity from public view.
    The fueling facility, maintenance building- a welders' shop, and administrative professional offices total 21,380 sq. ft. of floor area.
    - MASSING/SCALE: The admin/office building is a single-story metal building with a stone wainscott base, an earth-tone color theme, and substantial landscaping. The berm height is reduced to screen the parking lot, but yet maintain a visual connection to the public realm. Public access to the facility is limited to only normal hours of business operation by a fenced gate. The other structures closed to the public still embrace the character and color theme of the administration building to create a harmony and consistency across the site. The other buildings and structures/batch plant operation equipment will be functional utility structures housing welding and mechanical shops for equipment maintenance and repairs, all screened from public views. The architectural materials, style and color themes are matched and consistent and are typical for an industrial operation. Human and garage doors and roll-up docking station doors allow access into the structures. The lean-to structures will be open and screened by berms.
    - DESCRIPTION OF MATERIALS: The building is proposed to be finished primarily with metal panels, stone wainscot walls, tinted glazing, and architectural metal trim and accents as approved by the Town. Roofing materials proposed include raised seam metal roofing panels.
    - SCREENING OF MECHANICAL EQUIPMENT AND ROOFTOP UNITS: All ground-mounted mechanical equipment and rooftop units will be screened from public views via a screen wall and/or landscape elements to comply with Town code.
    - DUMPSTER SCREENING: Trash dumpsters will be located near shops and screened from public views behind the required earth berms. The trash dumpsters will be readily accessible for dumping and not visible from off-site public views.
    - SECURITY FENCING: The office-administration building shall be open to the general public during normal office hours with the remainder of the site closed to public access. The site shall be secured with chain link fencing at the two gated points of entry. A standard 3-strand perimeter livestock fence will secure the remainder of the site from public access during non-business hours.
15. Conditions of Approval: Town Staff recommends the below conditions of approval for this site plan:
    - Satisfaction of the Conditions of Approval of the BOA Variance granted October 27th 2022;

- Addressing all staff report comments;
- Final engineering plans accepted by the Town Engineer;
- Obtain and provide evidence of satisfaction of all county, state and federal permits including but not limited to:
    - Air Quality
    - Storm Water Discharge
    - Process Water Discharge
    - Fugitive Dust
    - Operations Plan
    - Noise Ordinance
    - County Odors
    - Fuel Storage
- Satisfaction of all referral agency comments;
- Other conditions as directed by the Planning Commission.

16. Corrected Plans: If the Planning Commssion approves the site plan, the next step requires the applicant to revise the site plan documents to incorporate all corrections, comments and/or Planning Commission conditions, including Town engineering review of the civil plans, and submit revised copies to the Town.
    - Revisions to the site plan shall be clouded, and a written response listing all changes shall be provided, noting which comment each response is addressing.
    - All drawings and plans must be coordinated so there is no differing information on the civil and architectural plans.
    - Provide 2 full-sized plans, and 2 half-sized plan sets, and an electronic submission must be submitted to the Town's Planning Department prior to receiving a building permit.
    - Building plans will not be reviewed or permits issued until revised plans are accepted by the Town.

STAFF RECOMMENDATION

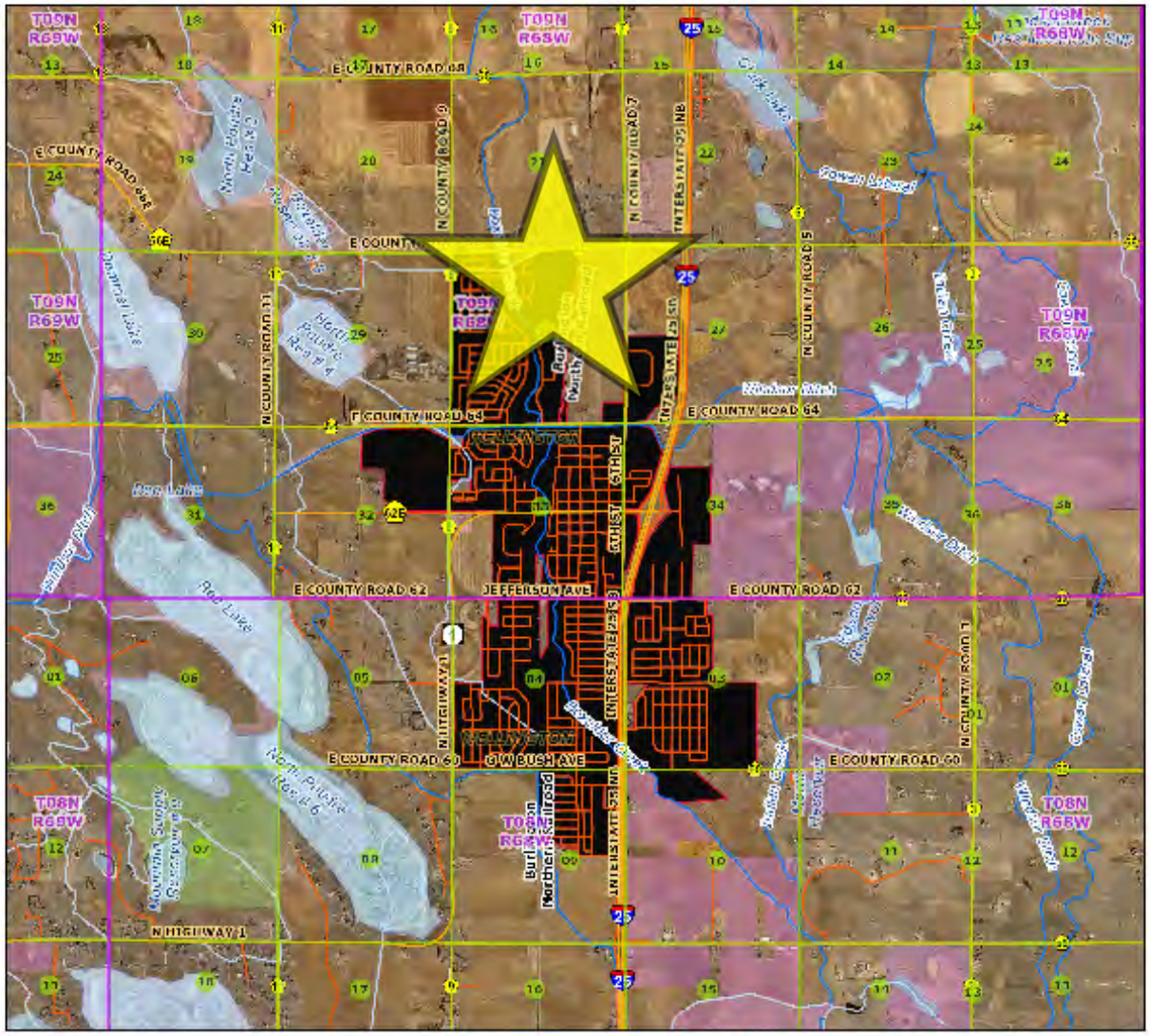
Below are motion options for the Planning Commission to consider. Town staff will also be available to assist the Planning Commission in modifying a motion option if desired to achieve the Planning Commission's intent.

1. Move to approve the site plans for Connell Resources subject to conditions identified in the staff report.
2. Move to approve the site plans for Connell Resources subject to conditions identified in the staff report and also including condition(s) _____, _____, [...], and _____.
3. Move to table the site plan review for Connell Resources to a regular/special meeting of the Planning Commission to be held _____ (month) _____ (day), 2023 at _____ (time) at the Wilson Leeper Center, 3800 Wilson Ave., Wellington, Colorado.
4. Move to deny the site plan for Connell Resources.

ATTACHMENTS

1. Location Map
2. Applicant Narrative
3. Revised Plans Narrative
4. Site Plans
5. Building Architecture Samples
6. Town Review Comments
7. Referral Agency Comments
8. Larimer County Health Department Response
9. Wellington Fire Protection District Response
10. Larimer County Engineering Dept. Response
11. CDPHE Asphalt Production Fact Sheet

CONNELL RESOURCES
PROPOSED SITE PLAN:



2133 S. Timberline Rd, Ste. 110
Fort Collins, CO 80525
ditescoservices.com

November 14, 2022

Mr. Cody Bird, AICP
Planning Director
Town of Wellington
8225 Third Street
Wellington, CO 80549

RE: Connell Batch Plant
Site Plan Application

Dear Mr. Bird –

This letter follows recent coordination on the submittal of the Site Plan Application for the construction of Connell Resources, Inc. (Connell) Asphalt Batch Plant (Batch Plant). The Batch Plant is planned to be constructed along County Road 66, between County Road 7 and County Road 9, immediately west of the Burlington Northern Santa Fe (BNSF) Railroad Tracks. Included with this letter are full submittal documentation, as outlined on the Site Plan Application checklist.

This letter is intended to specifically address items on the Site Plan Application checklist and specific areas of concern identified by Wellington staff, as listed and described in detail below.

Utility Plans – Existing Water Main

The Town of Wellington (Town) has an existing 16-inch C900 PVC waterline routed through the proposed Connell Batch Plant site. This property contains an existing easement, recorded in 2003, for the construction and maintenance of the waterline across the property, applicable to the current Grantee, successors and assigns. In the easement document, with records number 20030053554, states the following:

> *"…permanent non-exclusive utility easement twenty (20) feet in width for the installation, construction, maintenance, inspection, operation, replacement, or removal of utilities… in, over, across, and upon the real property legally described…"*

The location of roadways, building placement, and uses of the site have been completed with the Town's interest in mind, to protect and honor the existing easement. The utility easement across the property restricts the impediment of physical structures on the waterline and allows the Town access for maintenance of the utility. The existing waterline will be protected by a paved asphalt roadway on a portion of the site, and a flowfill cap in other areas.

Additionally, Connell is proposing to install an eight-inch waterline loop that will allow for future connectivity to the future Sundance property to the west. This waterline loop will be installed at Connell's cost and will be deeded to the Town for future expansion of the system, as desired, will improve water quality for the Town, and will reduce the need for a waterline tap on the Town's transmission main.

Utility Plans – Sanitary Sewer

At a meeting on October 20, 2022, the Town requested the sanitary sewer line be relocated to the west access road for future accessibility and maintenance of the line. The sanitary sewer line has been relocated to the west, per the Town's request. The sanitary sewer line is sized at the minimum necessary for the site use by Connell. If the Town desires to increase the size of the sanitary sewer system, the Town shall provide guidance on the revised sizing and cost-sharing program for increase in sanitary sewer size.

Roadway Improvements

The Traffic Impact Study (TIS), included with this application, identifies the addition of a right turn lane on north-bound CR 7, turning onto Owl Canyon Road. These roadway improvements are planned to be completed by Larimer County Engineering in 2023. As such, this construction has not been included within these documents. A copy of the preliminary construction drawings is attached to this letter in **Exhibit A**.

Further, the TIS does not require any additional features for County Road 66. In order to improve the quality of County Road 66, between BNSF and County Road 7, roadway improvements are proposed to minimize a vertical site curve obstruction immediately east of the BNSF tracks. These improvements will be maintained outside of the floodplain. The site plan also depicts that County Road 66 will be asphalt paved, although not mandated by the TIS.

Site Buildings

Connell's proposed site plan includes the construction of an office building, vehicle maintenance shop, ancillary vehicle shop, and lean-to structure. These structures are in a preliminary phase of design and elevations of these structures are not developed. Square-footages and finish floor elevations of each building are noted on the site plan. Color palettes for site buildings are not yet defined, but are intended to match the natural colors of the site.

Connell's office building is anticipated to have 26-gauge steel walls and roof, with a stone/brick wainscot. Connell anticipates maximizing natural light and will have windows on all four elevations of the building. The primary entrance to the building will be oriented to the west, facing the employee parking area.

Connell's vehicle shop buildings and lean-to storage structure are anticipated to have 26-gauge steel walls and roof. Both structures are anticipated to have translucent panels installed on a portion of the facility to maximize natural light into the building.

Photometrics

The proposed photometrics for the site are in preliminary design and a photometrics plan has not been included with this submittal. The site will have minimal lighting in effort to reduce light pollution to surrounding residential areas. The office and shops will have small, wall mounted fixtures and the batch plant will have several mounted lights. The batch plant and site will not have night operations, and therefore all lighting will be limited to employee safety and sight security.

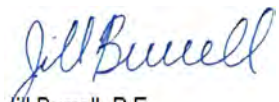
Site Access & Emergency Easements

The property abutting the south edge of the proposed property contains an existing emergency access easement, as identified on the attached documents and by records number 20050095592. The emergency access easement terminates at the proposed property southern property line and does not currently extend across the site.

Per the discussions at the October 20, 2022 meeting, as requested by Town staff, emergency access gates and temporary road-base roadway has been added to the southwest corner of the site. This roadway will be able to be utilized for emergency vehicles accessing the site. Connell will dedicate an emergency access easement of 20-ft in this area and install Knox boxes on access gates to allow continuous emergency access from the property to the south, north to County Road 66.

If you have any questions regarding this supplemental information, please contact me at 970-690-1889 or jill.burrell@ditescoservices.com.

Sincerely,



Jill Burrell, P.E.

Enclosed: **Exhibit A** – Larimer County Engineering CR7/Owl Canyon Road Construction Drawing

T R A N S M I T T A L (Site Plan Application)

NO. 02

TO: Paul Whalen
Senior Planner
Town of Wellington
8225 Third Street
Wellington, CO 80549

PROJECT: Connell Batch Plant – Site Plan Resubmittal

Date Submitted: February 10, 2023

TRANSMITTED: Site Plan Application and Associated Documents

☐	Shop Drawings	☐	Catalogs	☐	Price Proposal
☐	Prints	☑	Plans	☐	Product Samples
☐	Specifications	☐	Copies	☑	Other

☐	For Approval	☑	For Your Review	☐	As Requested
☐	For Your Use				
☐	Approved As Submitted	☐	Approved As Noted	☐	Resubmit
☐	Return for Correction	☐	Prints Returned		
☐	Submit Copies for Distribution				
☐	Return Corrected Prints				
☐	Other				

Paul –

We are pleased to resubmit the Site Plan Application and the associated documents for the Connell Batch Plant. The submittal contains the following documents:

- Site Plan Application - Updated
- Site Plan Drawing Package
    - Site Plan
    - Utility and Grading Plans
    - Drainage Exhibit
    - Landscape Plans
    - Irrigation Plans
    - Photometrics Plan
- Office Building Drawings and Architectural Samples
- Site Lighting Cut Sheets
- Comment Response Log

Please do not hesitate to contact me if you have any questions or concerns. I can be reached by email at dan.egger@ditescoservices.com or by phone at (719) 964-0973.

Thanks,

2/10/23

SIGNED: Dan Egger, Ditesco Services Date

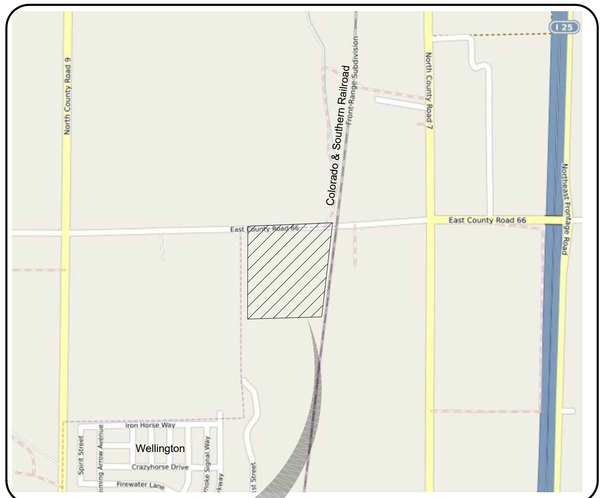
RECEIVED: Town of Wellington Date

SITE PLANS FOR

CONNELL RESOURCES
WELLINGTON BATCH PLANT

LOCATED IN THE NORTHEAST QUARTER OF SECTION 28, TOWNSHIP 9 NORTH, RANGE 68 WEST OF THE 6th P.M.
TOWN OF WELLINGTON, COUNTY OF LARIMER, STATE OF COLORADO

February, 2023



PROJECT LOCATION

VICINITY MAP

NOT TO SCALE

CONTACT INFORMATION

OWNER
Connell Resources, Inc.
John Warren, President
7785 Highland Meadows Parkway #100
Fort Collins, Colorado 80528
(970) 223-3151

CIVIL ENGINEER
Ditesco
Jill Burrell, P.E.
2133 S. Timberline Road, Suite 110
Fort Collins, Colorado 80525
(970) 632-5068

SURVEYOR
Majestic Surveying
Steven Parks, PLS
1111 Diamond Valley Drive,
Suite 104
Windsor, Colorado 80550
(970) 443-0882

GEOTECHNICAL
CTL Thompson, Inc
Chip Ledbetter, P.E.
400 North Link Lane
Fort Collins, Colorado 80524
(970) 206-9455

SHEET INDEX

INDEX NO.	SHEET NO.	DESCRIPTION
COVER AND GENERAL NOTES		
1	C001	COVER SHEET
SITE SHEETS		
2	S1	SITE PLAN
OVERALL EXHIBIT SHEETS		
3	C103	OVERALL SITE, UTILITY AND GRADING PLAN
SITE AND HORIZONTAL CONTROL SHEETS		
4	C201	SITE AND HORIZONTAL CONTROL PLAN
5	C202	SITE AND HORIZONTAL CONTROL PLAN
6	C203	SITE AND HORIZONTAL CONTROL PLAN
7	C204	SITE AND HORIZONTAL CONTROL PLAN
8	C205	LINE & CURVE DATA AND POINT TABLE
GRADING AND UTILITY SHEETS		
9	C301	UTILITY AND GRADING PLAN
10	C302	UTILITY AND GRADING PLAN
11	C303	UTILITY AND GRADING PLAN
12	C304	UTILITY AND GRADING PLAN
DRAINAGE EXHIBIT SHEETS		
13	C401	DEVELOPED DRAINAGE EXHIBIT
LANDSCAPE SHEETS		
14	L01	COVER SHEET
15	L02	LANDSCAPE PLAN NORTHEAST
16	L03	LANDSCAPE PLAN NORTHWEST
17	L04	LANDSCAPE PLAN MIDDLE EAST
18	L05	LANDSCAPE PLAN MIDDLE WEST
19	L06	LANDSCAPE PLAN SOUTH EAST
20	L07	LANDSCAPE PLAN SOUTH WEST
21	L08	LANDSCAPE PLAN SOUTH
22	L09	LANDSCAPE DETAILS
IRRIGATION SHEETS		
23	IR1.0	IRRIGATION PLAN
24	IR1.1	IRRIGATION PLAN
25	IR1.2	IRRIGATION PLAN
26	IR1.3	IRRIGATION PLAN
27	IR2.1	IRRIGATION DETAILS
PHOTOMETRICS SHEETS		
28	P101	PHOTOMETRICS PLAN
29	P102	PHOTOMETRICS SCHEDULE

BENCHMARKS

Coordinate Control

VERTICAL DATUM:
PROJECT DATUM: NAVD88

BENCHMARK: NGS R-356 Reset (2002)

ELEVATION: 5221.20 (NAVD88)

HORIZONTAL DATUM:
MODIFIED COLORADO STATE PLANE NORTH ZONE 0501 (GROUND) COORDINATES NAD 83(2011) DATUM. HORIZONTAL CONTROL BASED UPON TRIMBLE VRS NETWORK SOLUTION.

THIS DRAWING IS AT MODIFIED STATE PLANE. TO REDUCE TO STATE PLANE COORDINATES, SCALE X,Y,ONLY AT 0.999742580 (1.000257486) ABOUT THE ORIGIN 0,0.

CALL UTILITY NOTIFICATION CENTER OF COLORADO
811
Know what's **below.**
Call before you dig.
CALL 2 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

ditesco
Project & Construction Services
2133 S. Timberline Road, Suite 110
Fort Collins, Colorado 80525
Phone: 970.632.5068
www.ditescoservices.com

P.E. Seal

Sheet Revisions

No.	Revisions:	By	Date:

COVER SHEET

DESIGNED BY: D. Egger
DRAWN BY: R. Bunner
APPROVED BY: J. Burrell

DATE: February 8, 2023
SCALE: NTS
FILE NAME: Batch Plant Cover.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

PROJECT NUMBER: XXXX

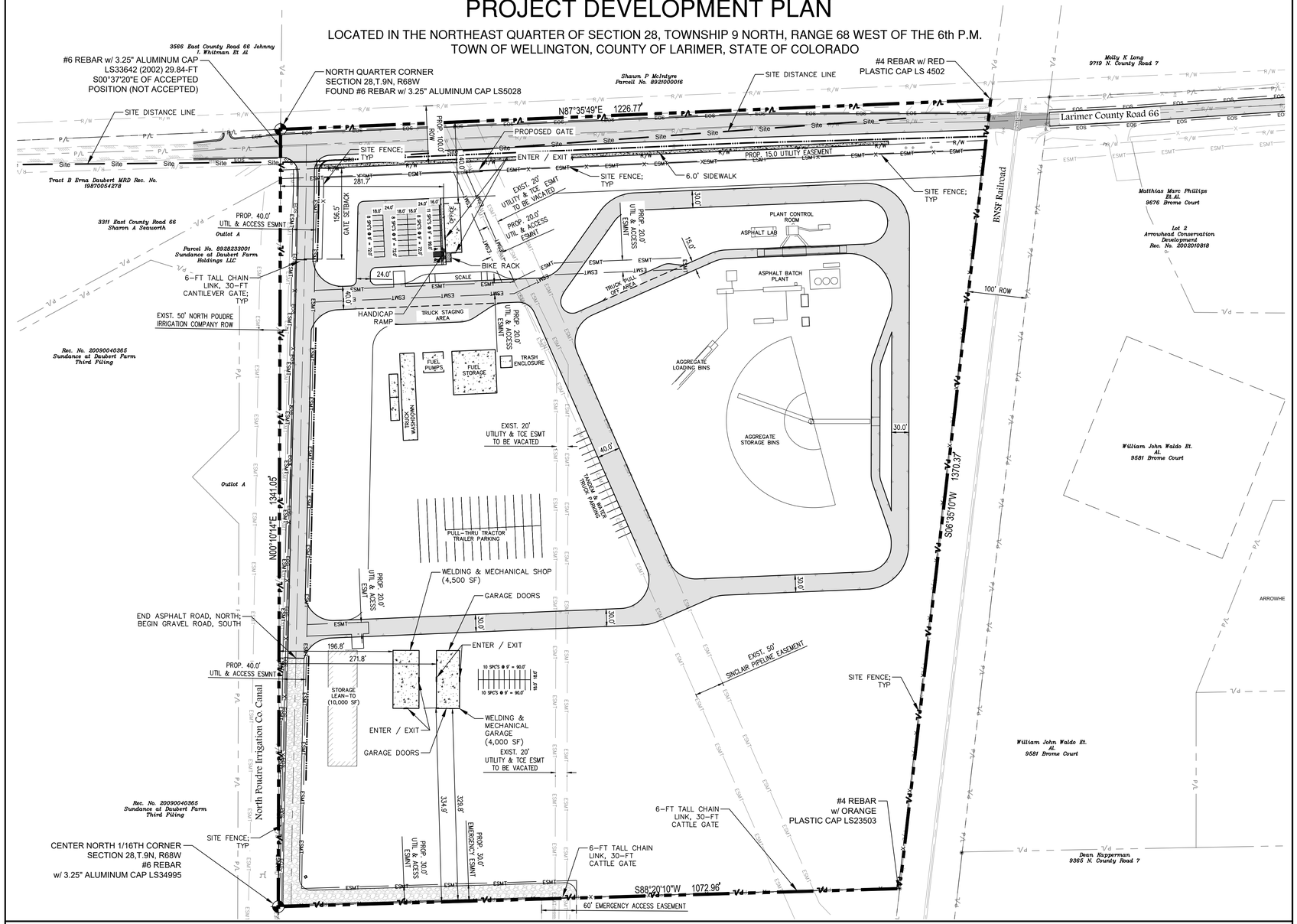
SHEET NUMBER
C001

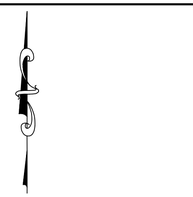
SHEET INDEX: 1

Drawing Name: D:\Projects\Wellington Batch Plant\Dwg\Sheets\Batch Plant Cover.dwg Thursday, February 09, 2023 2:09 PM By: Rhonda Bunner

WELLINGTON BATCH PLANT
PROJECT DEVELOPMENT PLAN

LOCATED IN THE NORTHEAST QUARTER OF SECTION 28, TOWNSHIP 9 NORTH, RANGE 68 WEST OF THE 6th P.M.
TOWN OF WELLINGTON, COUNTY OF LARIMER, STATE OF COLORADO





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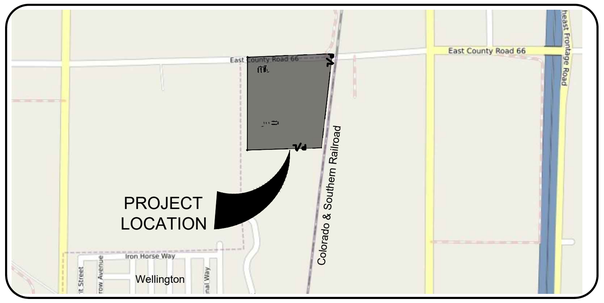
(True scale for 22x34 sheet size)



LEGEND & ABBREVIATIONS

RIGHTS-OF-WAY	ROW	EXISTING RIGHT OF WAY	R/W
TYPICAL	TYP	PROPOSED RIGHT OF WAY	R/W
SQUARE FEET	SF	PROPOSED SWALE	
EASEMENT	ESMT	PROPOSED FENCE	X
PROPERTY BOUNDARY	P/L	PROPOSED SHOULDER	EOS
EDGE OF GRAVEL ROAD		EXISTING EASEMENT LINE	ESMT
PROPOSED EDGE OF ASPHALT		PROPOSED EASEMENT	ESMT
SITE DISTANCE LINE	Site	PLANT ACCESS ROAD (ASPHALT)	
		GRAVEL ROAD	

GENERAL NOTES:

1. REFER TO UTILITY PLANS FOR LOCATIONS OF STORM DRAINAGE STRUCTURES, UTILITY MAINS AND SERVICES.
2. REFER TO CIVIL ENGINEERING PLANS FOR DETAILED INFORMATION OF PROPOSED TOPOGRAPHY, UTILITY, AND STREET IMPROVEMENTS.
3. REFER TO THE CIVIL ENGINEERING FOR EASEMENTS, LOT DIMENSIONS, UTILITY EASEMENTS, OTHER EASEMENTS, AND OTHER SURVEY INFORMATION.
4. ALL CONSTRUCTION WILL BE COMPLETED IN ONE PHASE.
5. ALL SIGNS UTILIZED SHALL COMPLY WITH THE TOWN OF WELLINGTON SIGN CODE.

LAND USE STATISTICS

Lot Coverage and Surfaces

Category	Description	Area (SF)	Area (Acres)	%
Paved		234,025	5.37	15.11
	Parking Lot	17,845	0.41	1.15
	Roads	216,180	4.96	13.96
Buildings		20,880	0.48	1.35
	Office	2,380	0.05	0.15
	Weld Shop	4,500	0.10	0.29
	Weld Garage	4,000	0.09	0.26
	Lean-To	10,000	0.23	0.65
Walk		17,743	0.41	1.15
Undeveloped		1,276,346	29.30	82.40
	Landscaped	269,084	6.18	17.37
	Detention	173,279	3.98	11.19
	Undeveloped	833,983	19.15	53.84
Total		1,548,994	35.56	100.00

Proposed Buildings

Description	Employees	Stories	Floor Area (SF)
Office	13	1	2,380
Welding and Mechanical Shop	3	1	4,500
Welding and Mechanical Garage	0	1	4,000
Storage Lean-To	0	1	10,000

Parking Requirements

	Required	Provided
Standard Spaces	2	32
ADA Spaces	2	2

LEGAL DESCRIPTION

A PARCEL OF LAND SITUATE IN THE NORTHEAST QUARTER OF SECTION TWENTY-EIGHT (28), TOWNSHIP NINE NORTH (T.9N.), RANGE SIXTY-EIGHT WEST (R.68W.) OF THE SIXTH PRINCIPAL MERIDIAN (6THP.M.) BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

ALL THAT PART OF THE NORTHEAST 1/4 OF SECTION 28, TOWNSHIP 9 NORTH, RANGE 68 WEST OF THE 6TH P.M., COUNTY OF LARIMER, STATE OF COLORADO, LYING WESTERLY OF THE C & S RAILROAD RIGHT OF WAY EXCEPT THAT PORTION CONVEYED BY DEED RECORDED NOVEMBER 22, 2004 AT RECEPTION NO. 20040111490.

SAID PARCEL CONTAINS 1,549,362 SQUARE FEET OR 35.568 ACRES MORE OR LESS BY THIS SURVEY.

NOTE

THIS IS A LAND USE PLANNING DOCUMENT, NOT A CONSTRUCTION DOCUMENT. REFER TO CIVIL ENGINEERING PLANS FOR SITE CONSTRUCTION.

OWNER

CONNELL RESOURCES, INC
JOHN WARREN, PRESIDENT
7785 HIGHLAND MEADOWS PARKWAY #100
FORT COLLINS, COLORADO 80528
(970) 223-3151

DEVELOPER/APPLICANT

CONNELL RESOURCES, INC
JOHN WARREN, PRESIDENT
7785 HIGHLAND MEADOWS PARKWAY #100
FORT COLLINS, COLORADO 80528
(970) 223-3151

OWNER'S CERTIFICATION

The undersigned does/do hereby certify that I/we are the lawful owners of real property described on this Site Plan and de hereby certify that I/we accept the conditions and restrictions set forth on said Site Plan.

Connell Resources, Inc. Date

The foregoing instrument was acknowledged before me

This _____ day of _____ A.D., 20_____ by

(Print Name)

as _____

My Commission Expires: _____

Witness my hand and official seal

Notary Public Address

PLANNING AND ZONING CERTIFICATE

Approved by the Planning and Zoning Board of the Town of Wellington, Colorado, on this _____ day of _____ , 20___.

Secretary of Planning and Zoning Board

dtesco
Project & Construction Services
2133 S. Timberline Road, Suite 110
Fort Collins, Colorado 80525
Phone: (970) 226-0860
www.dtescoservices.com

P.E. Seal

Sheet Revisions	No.	Revisions:	By:	Date:

SITE PLAN

DESIGNED BY: D. Egger
DRAWN BY: R. Bunner
APPROVED BY: J. Burrell

DATE: February 8, 2023
SCALE: 1" = 100'
FILE NAME: Batch Plant Site Plan.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

PROJECT NUMBER: XXXX

SHEET NUMBER
S1

SHEET INDEX: 2

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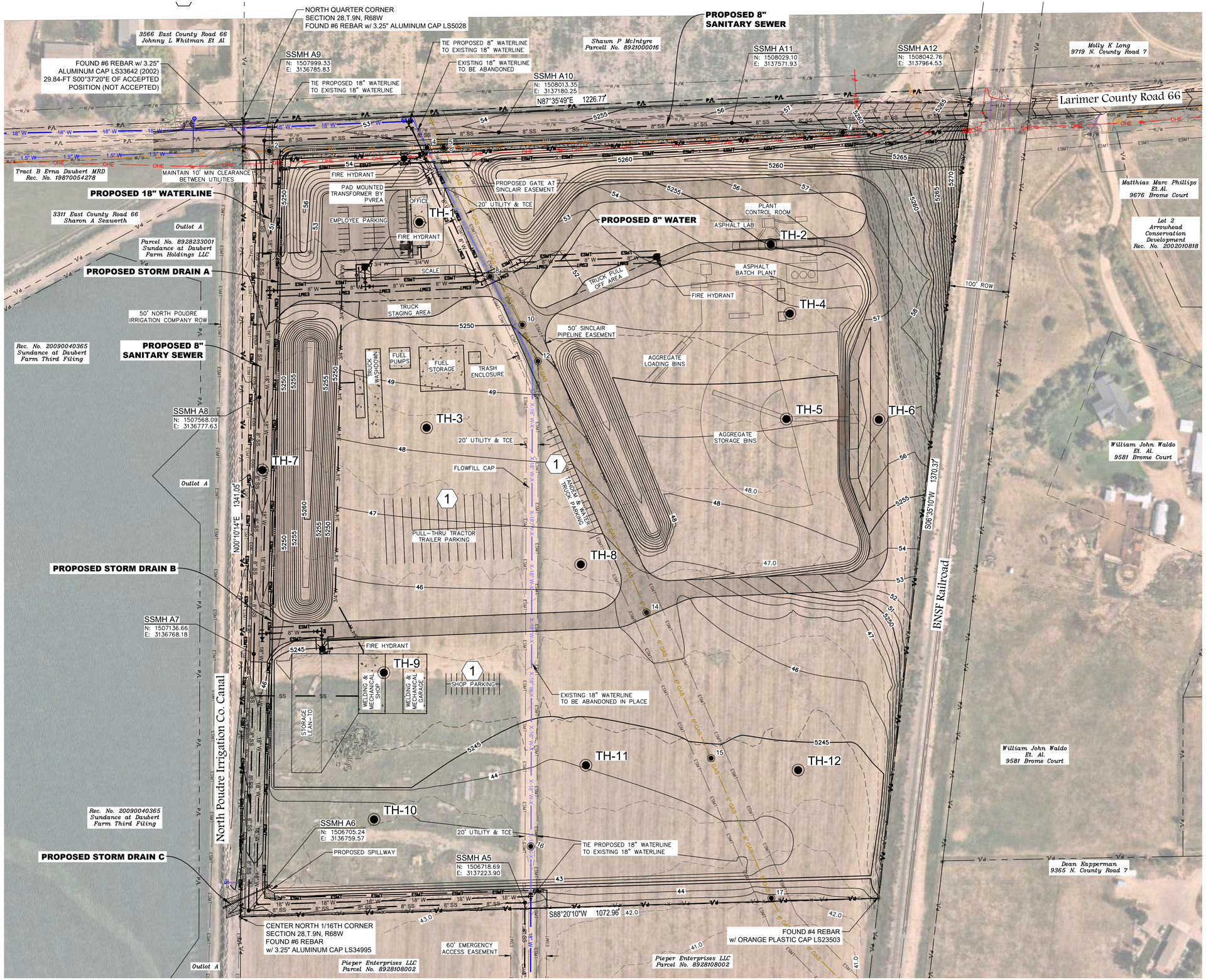
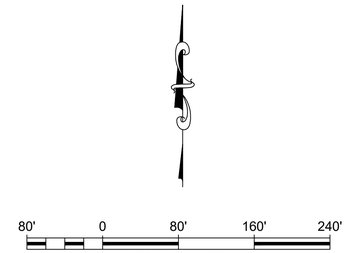




LEGEND:

- EXISTING CONTOURS — 4987
- PROPOSED CONTOURS — 4987
- SITE PROPERTY LINE — P/L
- EXISTING RIGHT OF WAY — R/W
- PROPOSED RIGHT OF WAY — R/W
- PROPOSED EDGE OF ASPHALT
- PROPOSED EDGE OF SHOULDER — EOS
- EDGE OF GRAVEL ROAD
- PROPOSED SWALE
- PROPOSED CHAIN LINK FENCE
- PROPOSED 2-STRAND BARB-WIRE — X
- EXISTING EASEMENT — ESMT
- PROPOSED EASEMENT — ESMT
- EXISTING WATER — 18" W
- PROPOSED WATER — 8" W
- PROPOSED 3/4" WATER SERVICE — 3/4"W
- EXISTING SANITARY SEWER — 8" SS
- PROPOSED SANITARY SEWER — 8" SS
- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN
- EXISTING OVERHEAD ELECTRIC — OHE
- EXISTING SINCLAIR GASOLINE PIPELINE — 6" GAS
- EXISTING FIBER OPTIC — FO
- EXISTING GATE VALVE — W
- EXISTING WATER MANHOLE — W
- EXISTING SANITARY SEWER MANHOLE — S
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED THRUST BLOCK
- EXISTING POWER POLE
- EXISTING ELECTRIC BOX
- EXISTING TELEPHONE PEDESTAL — T
- EXISTING MAILBOX — M
- PLANT ACCESS ROAD (ASPHALT)
- GRAVEL ROAD
- BORE HOLES — TH2
- UTILITY POTHOLE — 20

NOTES:

1. THE SIZE, TYPE AND LOCATION OF ALL KNOWN UNDERGROUND UTILITIES ARE APPROXIMATE WHEN SHOWN ON THESE DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXISTENCE OF ALL UNDERGROUND UTILITIES IN THE AREA OF THE WORK.
2. ALL SYMBOLS ARE ONLY GRAPHICALLY REPRESENTED AND ARE NOT TO SCALE.

TAG NOTES:

1. PARKING STALLS SHOWN FOR LAYOUT PURPOSES ONLY. STRIPING WILL NOT BE INSTALLED.

dtesco
Project & Construction Services
2139 S. Timberline Road, Suite 110
Fort Collins, Colorado 80525
Phone: 970.530.8068
www.dtescoservices.com

P.E. Seal

Sheet Revisions			
No.	Revisions:	By	Date:

OVERALL SITE, UTILITY AND GRADING PLAN

DESIGNED BY:	D. Egger
DRAWN BY:	R. Bunner
APPROVED BY:	J. Burrell
DATE:	February 8, 2023
SCALE:	########
FILE NAME:	Batch Plant OA Site Grading dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

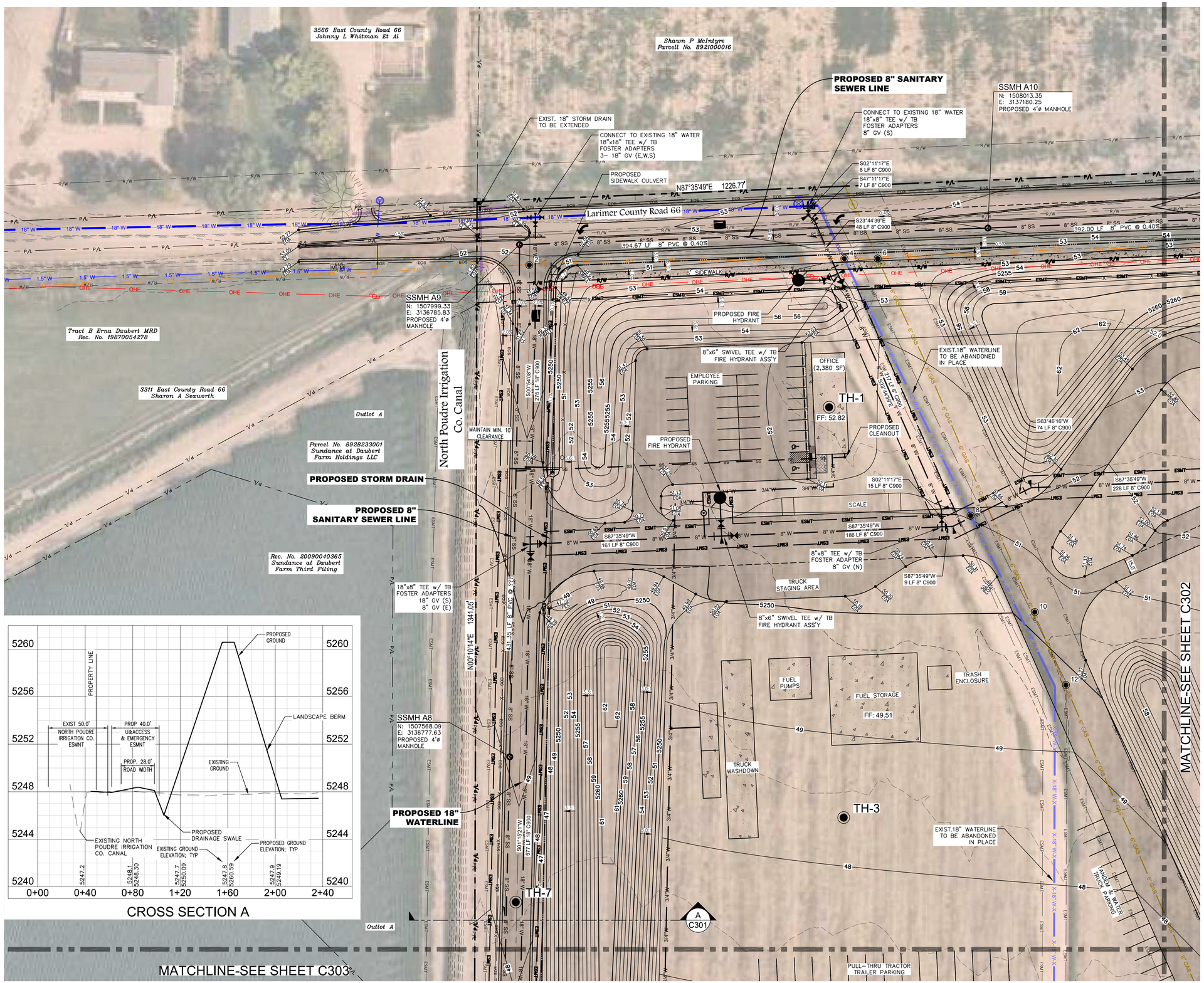
CONNELL

PROJECT NUMBER: XXXX

SHEET NUMBER
C103

SHEET INDEX: 3

Drawing Name: D:\Projects\Wellington Batch Plant\Dwg\Sheets\Batch Plant OA Site Grading.dwg Wednesday, February 08, 2023 5:12 PM By: Rhonda Bunner



40' 0 40' 80' 120'

SCALE: 1" =40'
(True scale for 22x34 sheet size)

LEGEND:

- EXISTING CONTOURS — 4987
- PROPOSED CONTOURS — 4987
- SITE PROPERTY LINE — P/L
- EXISTING RIGHT OF WAY — R/W
- PROPOSED RIGHT OF WAY — R/W
- PROPOSED EDGE OF ASPHALT
- PROPOSED EDGE OF SHOULDER — EOS
- EDGE OF GRAVEL ROAD
- PROPOSED SWALE
- PROPOSED CHAIN LINK FENCE
- PROPOSED 2-STRAND BARB-WIRE — X
- EXISTING EASEMENT — ESMT
- PROPOSED EASEMENT — ESMT
- EXISTING WATER — 18" W
- PROPOSED WATER — 8" W
- PROPOSED 3/4" WATER SERVICE — 3/4"W
- EXISTING SANITARY SEWER — 8" SS
- PROPOSED SANITARY SEWER — 8" SS
- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN
- EXISTING OVERHEAD ELECTRIC — OHE
- EXISTING SINCLAIR GASOLINE PIPELINE — 6" GAS
- EXISTING FIBER OPTIC — FO
- EXISTING GATE VALVE
- EXISTING WATER MANHOLE
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED THRUST BLOCK
- EXISTING POWER POLE
- EXISTING ELECTRIC BOX
- EXISTING TELEPHONE PEDESTAL
- EXISTING MAILBOX
- PLANT ACCESS ROAD (ASPHALT)
- GRAVEL ROAD
- BORE HOLES — TH2
- UTILITY POTHOLE — 20

NOTES:

1. THE SIZE, TYPE AND LOCATION OF ALL KNOWN UNDERGROUND UTILITIES ARE APPROXIMATE WHEN SHOWN ON THESE DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXISTENCE OF ALL UNDERGROUND UTILITIES IN THE AREA OF THE WORK.
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Sheet Revisions

No.	Revisions:	By	Date:

UTILITY AND GRADING PLAN

DESIGNED BY:	D. Egger
DRAWN BY:	R. Bunner
APPROVED BY:	J. Burrell
DATE:	February 8, 2023
SCALE:	1" = 40'
FILE NAME:	Batch Plant Site Grading.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

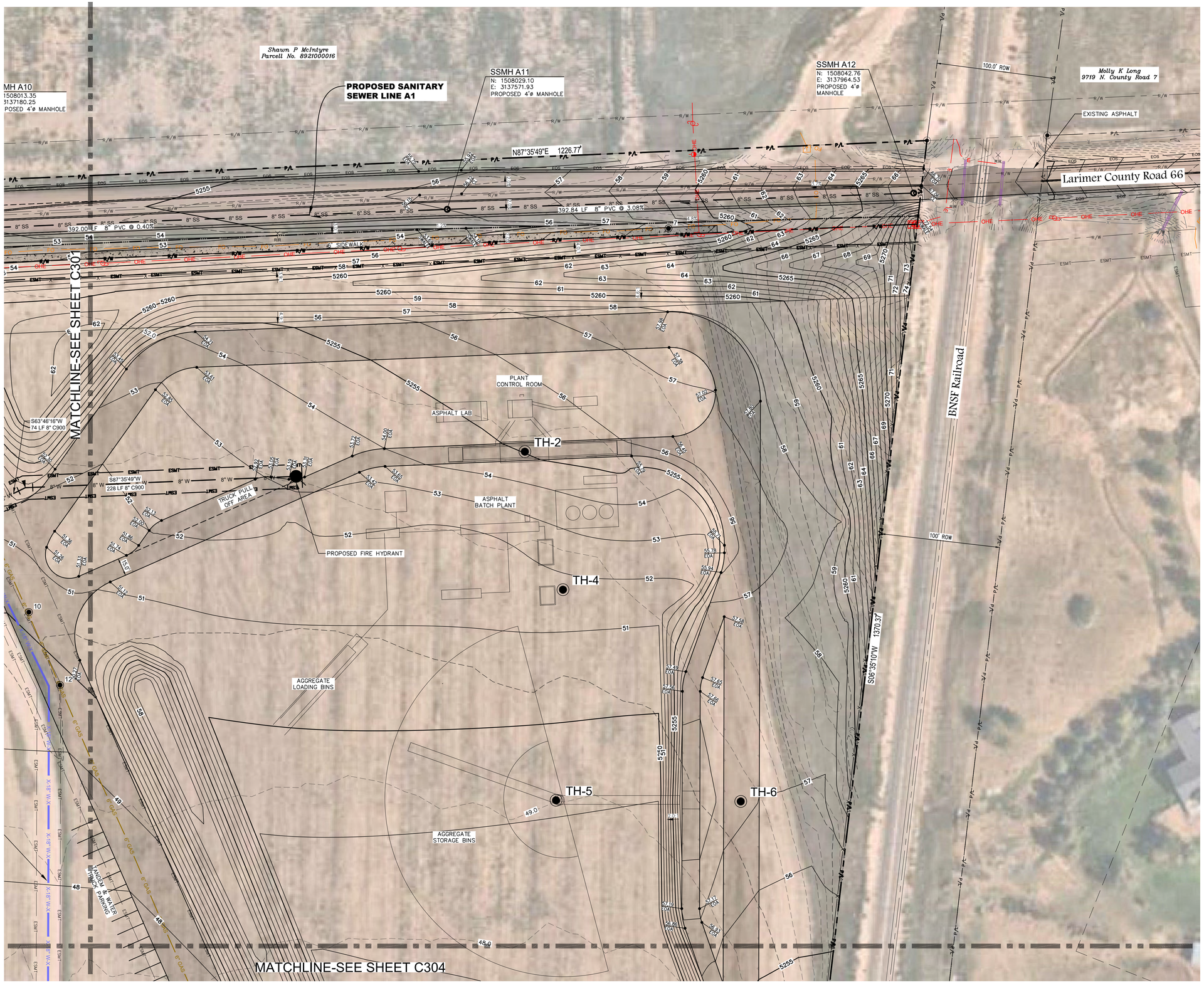
CONNELL

PROJECT NUMBER: XXXX

SHEET NUMBER
C301

SHEET INDEX: 9

Drawing Name: D:\Projects\Wellington Batch Plant\Dwg\Sheets\Batch Plant Site Grading.dwg Wednesday, February 08, 2023 5:08 PM By: Rhonda Bunner



40' 0 40' 80' 120'

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LEGEND:

EXISTING CONTOURS	4987
PROPOSED CONTOURS	4987
SITE PROPERTY LINE	P/L
EXISTING RIGHT OF WAY	R/W
PROPOSED RIGHT OF WAY	R/W
PROPOSED EDGE OF ASPHALT	
PROPOSED EDGE OF SHOULDER	EOS
EDGE OF GRAVEL ROAD	
PROPOSED SWALE	
PROPOSED CHAIN LINK FENCE	
PROPOSED 2-STRAND BARB-WIRE	X
EXISTING EASEMENT	ESMT
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EXISTING STORM DRAIN	
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PROPOSED THRUST BLOCK	
EXISTING POWER POLE	
EXISTING ELECTRIC BOX	
EXISTING TELEPHONE PEDESTAL	T
EXISTING MAILBOX	M
PLANT ACCESS ROAD (ASPHALT)	
GRAVEL ROAD	
BORE HOLES	TH2
UTILITY POTHOLE	20

NOTES:

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TAG NOTES:

(A) PARKING STALLS SHOWN FOR LAYOUT PURPOSES ONLY. STRIPING WILL NOT BE INSTALLED.

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P.E. Seal

Sheet Revisions

No.	Revisions:	By	Date:

UTILITY AND GRADING PLAN

DESIGNED BY:	D. Egger	DATE:	February 8, 2023
DRAWN BY:	R. Bunner	SCALE:	1" = 40'
APPROVED BY:	J. Burrell	FILE NAME:	Batch Plant Site Grading.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

PROJECT NUMBER: XXXX

SHEET NUMBER
C302

SHEET INDEX: 10

Drawing Name: D:\Projects\Wellington Batch Plant\Dwg\Sheets\Batch Plant Site Grading.dwg Wednesday, February 08, 2023 5:08 PM By: Rhonda Bunner

40' 0 40' 80' 120'

SCALE: 1" =40'
(True scale for 22x34 sheet size)

LEGEND:

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Sheet Revisions

No.	Revisions:	By	Date:

UTILITY AND GRADING PLAN

DESIGNED BY:	D. Egger	DATE:	February 8, 2023
DRAWN BY:	R. Bunner	SCALE:	1" = 40'
APPROVED BY:	J. Burrell	FILE NAME:	Batch Plant Site Grading.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

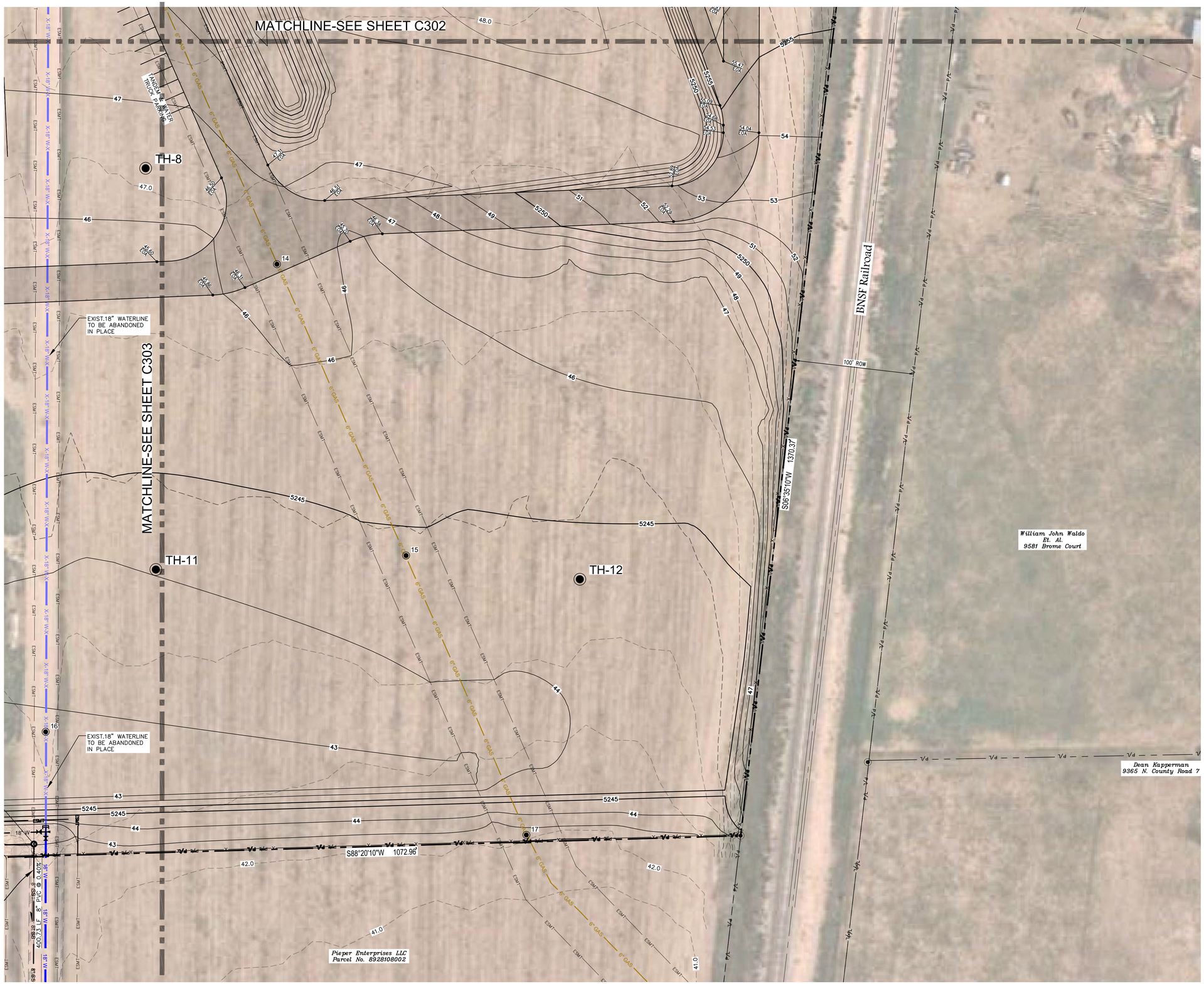
CONNELL

PROJECT NUMBER: XXXX

SHEET NUMBER
C303

SHEET INDEX: 11

Drawing Name: D:\Projects\Wellington Batch Plant\Dwg\Sheets\Batch Plant Site Grading.dwg Wednesday, February 08, 2023 5:08 PM By: Rhonda Bunner



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Sheet Revisions

No.	Revisions:	By	Date:

UTILITY AND GRADING PLAN

DESIGNED BY: D. Egger
DRAWN BY: R. Bunner
APPROVED BY: J. Burrell
DATE: February 8, 2023
SCALE: 1" = 40'
FILE NAME: Batch Plant Site Grading.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

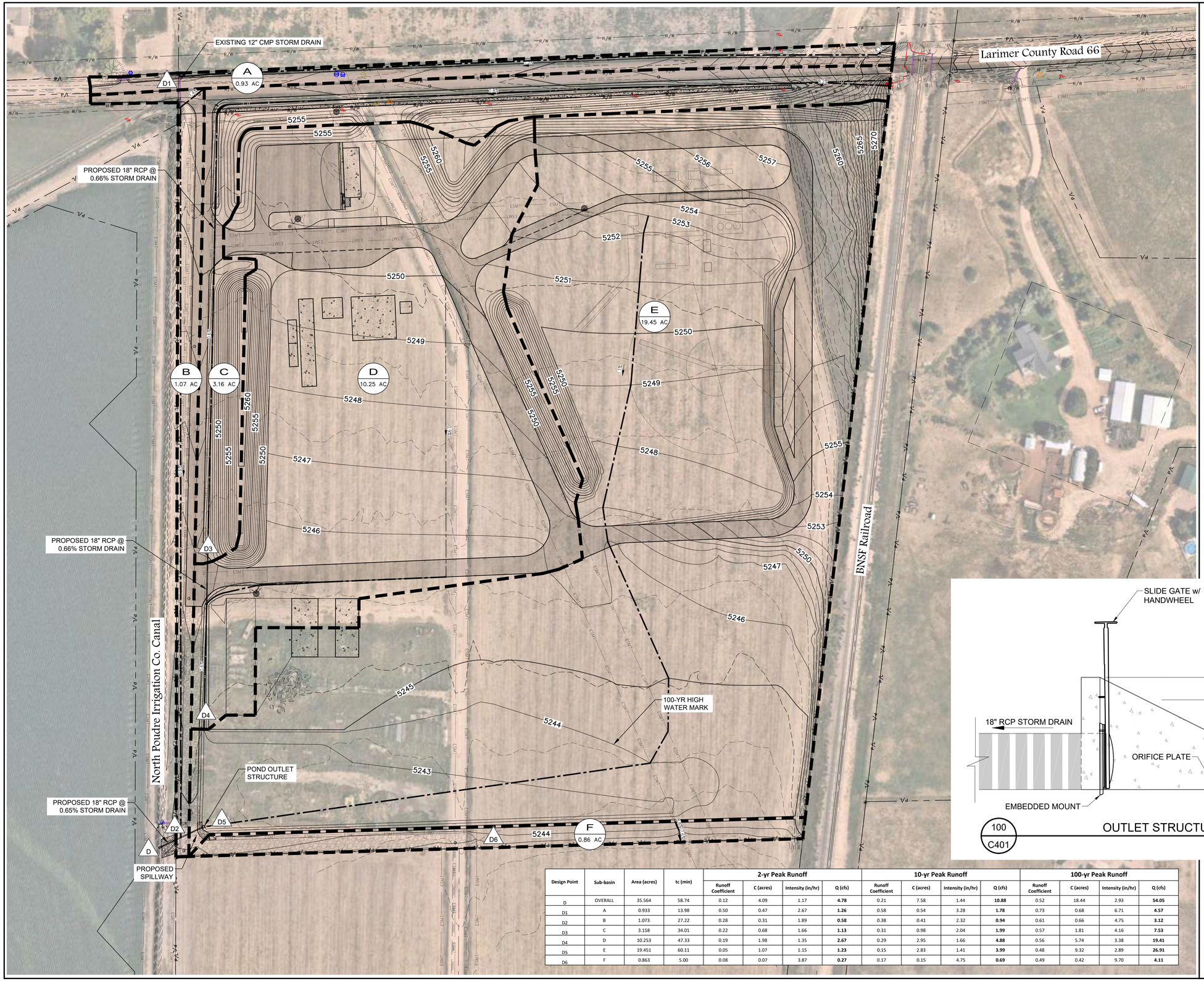
CONNELL

PROJECT NUMBER: XXXX

SHEET NUMBER
C304

SHEET INDEX: 12

Drawing Name: D:\Projects\Wellington Batch Plant\Dwg\Sheets\Batch Plant Site Grading.dwg Wednesday, February 08, 2023 5:08 PM By: Rhonda Bunner



80' 0 80' 160' 240'

SCALE: 1" = 80'
(True scale for 22x34 sheet size)

LEGEND:

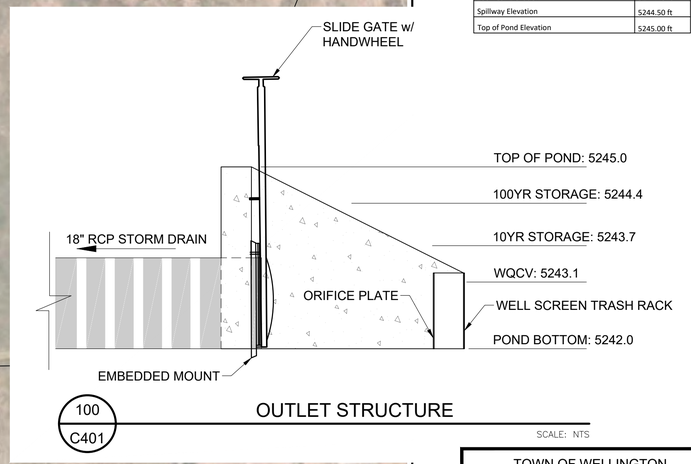
- PROPOSED CONTOUR — 28
- EXISTING CONTOUR — 5028
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- DRAINAGE BASIN LABEL — BASIN DESIGNATION: A; BASIN AREA (AC): 1.23 ac
- DRAINAGE DESIGN POINT — 9B
- DRAINAGE BASIN BOUNDARY
- FLOW PATH

NOTES:

FOR DRAINAGE REVIEW ONLY NOT FOR CONSTRUCTION

1. REFER TO THE "CONNELL BATCH PLANT DRAINAGE REPORT" BY DITESCO, DATED NOVEMEBER 11, 2022 FOR ADDITIONAL INFORMATION.
2. REFER TO SITE PLAN AND GRADING AND UTILITY PLANS FOR ADDITIONAL INFORMATION.

Pond Summary Table	
Pond Bottom Elevation	5244.00 ft
Water Quality Capture Volume (WQCV)	0.34 ac-ft
WQCV Elevation	5243.10 ft
100-Year Storage Volume	2.23 ac-ft
100-Year Elevation	5244.40 ft
Spillway Elevation	5244.50 ft
Top of Pond Elevation	5245.00 ft



100 / C401 OUTLET STRUCTURE

SCALE: NTS

Design Point	Sub-basin	Area (acres)	tc (min)	2-yr Peak Runoff				10-yr Peak Runoff				100-yr Peak Runoff			
				Runoff Coefficient	C (acres)	Intensity (in/hr)	Q (cfs)	Runoff Coefficient	C (acres)	Intensity (in/hr)	Q (cfs)	Runoff Coefficient	C (acres)	Intensity (in/hr)	Q (cfs)
D	OVERALL	35.564	58.74	0.12	4.09	1.17	**4.78**	0.21	7.58	1.44	**10.88**	0.52	18.44	2.93	**54.05**
D1	A	0.933	13.98	0.50	0.47	2.67	**1.26**	0.58	0.54	3.28	**1.78**	0.73	0.68	6.71	**4.57**
D2	B	1.073	27.22	0.28	0.31	1.89	**0.58**	0.38	0.41	2.32	**0.94**	0.61	0.66	4.75	**3.12**
D3	C	3.158	34.01	0.22	0.68	1.66	**1.13**	0.31	0.98	2.04	**1.99**	0.57	1.81	4.16	**7.53**
D4	D	10.253	47.33	0.19	1.98	1.35	**2.67**	0.29	2.95	1.66	**4.88**	0.56	5.74	3.38	**19.41**
D5	E	19.451	60.11	0.05	1.07	1.15	**1.23**	0.15	2.83	1.41	**3.99**	0.48	9.32	2.89	**26.91**
D6	F	0.863	5.00	0.08	0.07	3.87	**0.27**	0.17	0.15	4.75	**0.69**	0.49	0.42	9.70	**4.11**

TOWN OF WELLINGTON
DRAWING APPROVAL
REVIEW IS FOR GENERAL COMPLIANCE WITH TOWN STANDARDS. NO RESPONSIBILITY IS ASSUMED FOR CORRECTNESS OF DESIGN.

DATE_____ BY _____
TOWN ENGINEER

DATE_____ BY _____
PUBLIC WORKS DIRECTOR

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P.E. Seal

Sheet Revisions

No.	Revisions:	By	Date:

DEVELOPED DRAINAGE EXHIBIT

DESIGNED BY:	D. Egger
DRAWN BY:	R. Bunner
APPROVED BY:	J. Burrell
DATE:	February 8, 2023
SCALE:	1" = 80'
FILE NAME:	Batch Plant Drainage Site.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

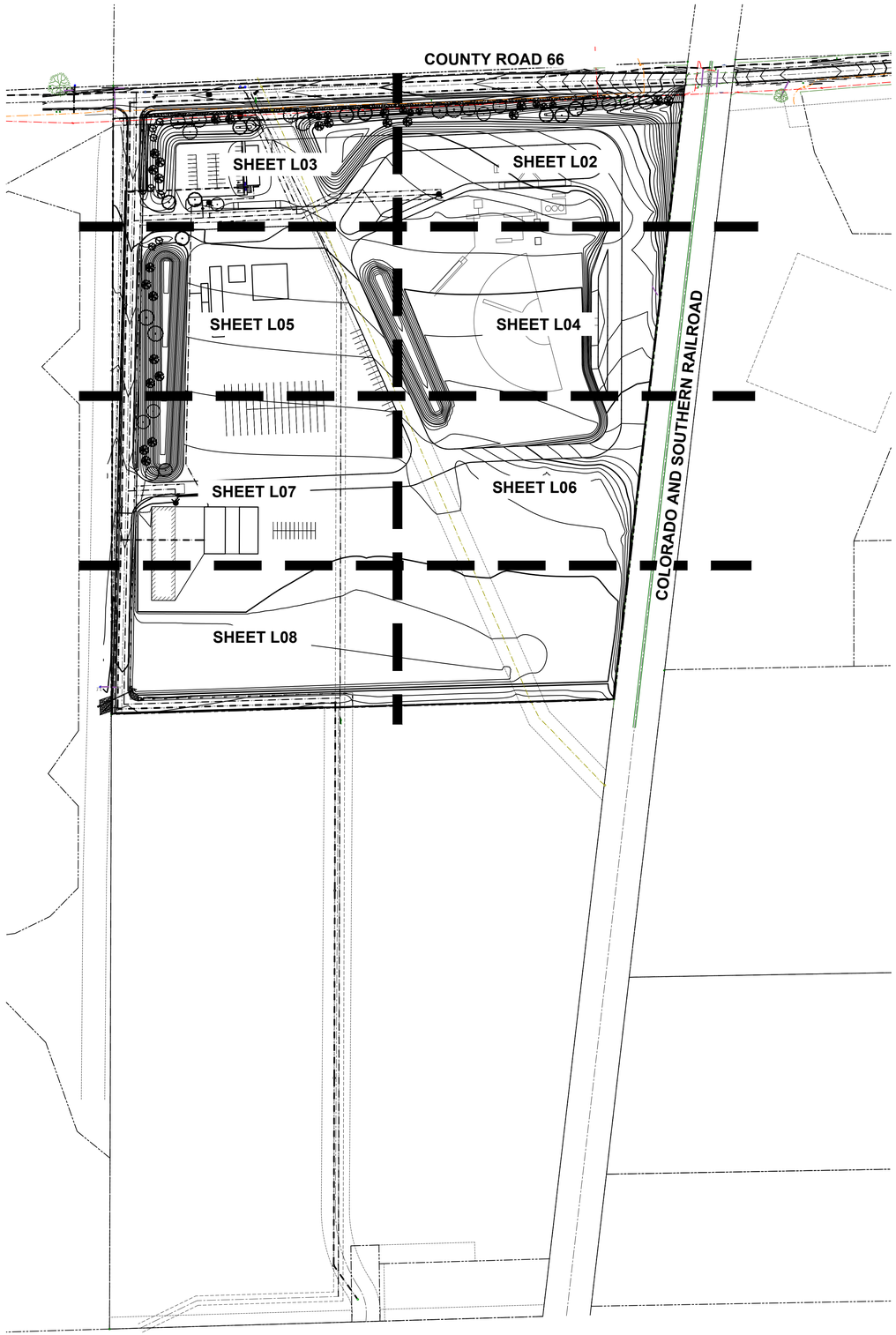
CONNELL

PROJECT NUMBER: XXXX

SHEET NUMBER
C401

SHEET INDEX: 13

Drawing Name: D:\Projects\Wellington Batch Plant\Dwg\Sheets\Batch Plant Drainage Site.dwg Wednesday, February 08, 2023 5:07 PM By: Rhonda Bunner



GENERAL LANDSCAPE NOTES

1. PLANT QUALITY: ALL PLANT MATERIAL SHALL BE A-GRADE OR NO. 1 GRADE - FREE OF ANY DEFECTS, OF NORMAL HEALTH, HEIGHT, LEAF DENSITY AND SPREAD APPROPRIATE TO THE SPECIES AS DEFINED BY THE AMERICAN ASSOCIATION OF NURSERYMEN (AAN) STANDARDS. ALL TREES SHALL BE BALL AND BURLAP OR EQUIVALENT.
2. IRRIGATION: ALL LANDSCAPE AREAS WITHIN THE SITE INCLUDING TURF, SHRUB BEDS AND TREE AREAS SHALL BE IRRIGATED WITH AN AUTOMATIC IRRIGATION SYSTEM. THE IRRIGATION PLAN MUST BE REVIEWED AND APPROVED BY THE TOWN OF WELLINGTON WATER UTILITIES DEPARTMENT PRIOR TO THE ISSUANCE OF A BUILDING PERMIT. ALL TURF AREAS SHALL BE IRRIGATED WITH AN AUTOMATIC POP-UP IRRIGATION SYSTEM. ALL SHRUB BEDS AND TREES, INCLUDING IN NATIVE SEED AREAS, SHALL BE IRRIGATED WITH AN AUTOMATIC DRIP (TRICKLE) IRRIGATION SYSTEM, OR WITH AN ACCEPTABLE ALTERNATIVE APPROVED BY THE CITY WITH THE IRRIGATION PLANS. THE IRRIGATION SYSTEM SHALL BE ADJUSTED TO MEET THE WATER REQUIREMENTS OF THE INDIVIDUAL PLANT MATERIAL.
3. TOPSOIL: TO THE MAXIMUM EXTENT FEASIBLE, TOPSOIL THAT IS REMOVED DURING CONSTRUCTION ACTIVITY SHALL BE CONSERVED FOR LATER USE ON AREAS REQUIRING REVEGETATION AND LANDSCAPING.
4. SOIL AMENDMENTS: THE SOIL IN ALL LANDSCAPE AREAS, INCLUDING PARKWAYS AND MEDIANS, SHALL BE THOROUGHLY LOOSENED TO A DEPTH OF NOT LESS THAN EIGHT(8) INCHES AND SOIL AMENDMENT SHALL BE THOROUGHLY INCORPORATED INTO THE SOIL OF ALL LANDSCAPE AREAS TO A DEPTH OF AT LEAST SIX(6) INCHES BY TILLING, DISCING OR OTHER SUITABLE METHOD, AT A RATE OF AT LEAST FOUR (4) CUBIC YARDS OF SOIL AMENDMENT PER ONE THOUSAND (1,000) SQUARE FEET OF LANDSCAPE AREA. NATIVE GRASS SEED MIXES CAN REDUCE THE COMPOST RATE TO TWO (2) CUBIC YARDS OF SOIL AMENDMENT PER ONE THOUSAND (1,000) SQUARE FEET.
5. INSTALLATION AND GUARANTEE: ALL LANDSCAPING SHALL BE INSTALLED ACCORDING TO SOUND HORTICULTURAL PRACTICES IN A MANNER DESIGNED TO ENCOURAGE QUICK ESTABLISHMENT AND HEALTHY GROWTH. ALL LANDSCAPING FOR EACH PHASE MUST BE EITHER INSTALLED OR THE INSTALLATION MUST BE SECURED WITH AN IRREVOCABLE LETTER OF CREDIT, PERFORMANCE BOND, OR ESCROW ACCOUNT FOR 125% OF THE VALUATION OF THE MATERIALS AND LABOR PRIOR TO ISSUANCE OF A CERTIFICATE OF OCCUPANCY FOR ANY BUILDING IN SUCH PHASE.
6. MAINTENANCE: TREES AND VEGETATION, IRRIGATION SYSTEMS, FENCES, WALLS AND OTHER LANDSCAPE ELEMENTS WITH THESE FINAL PLANS SHALL BE CONSIDERED AS ELEMENTS OF THE PROJECT IN THE SAME MANNER AS PARKING, BUILDING MATERIALS AND OTHER SITE DETAILS. THE APPLICANT, LANDOWNER OR SUCCESSORS IN INTEREST SHALL BE JOINTLY AND SEVERALLY RESPONSIBLE FOR THE REGULAR MAINTENANCE OF ALL LANDSCAPING ELEMENTS IN GOOD CONDITION. ALL LANDSCAPING SHALL BE MAINTAINED FREE FROM DISEASE, PESTS, WEEDS AND LITTER, AND ALL LANDSCAPE STRUCTURES SUCH AS FENCES AND WALLS SHALL BE REPAIRED AND REPLACED PERIODICALLY TO MAINTAIN A STRUCTURALLY SOUND CONDITION.
7. REPLACEMENT: ANY LANDSCAPE ELEMENT THAT DIES, OR IS OTHERWISE REMOVED, SHALL BE PROMPTLY REPLACED IN ACCORDANCE WITH THE REQUIREMENTS OF THESE PLANS.
8. THE FOLLOWING SEPARATIONS SHALL BE PROVIDED BETWEEN TREES/SHRUBS AND UTILITIES:

   40 FEET BETWEEN CANOPY TREES AND STREET LIGHTS
   15 FEET BETWEEN ORNAMENTAL TREES AND STREETLIGHTS
   10 FEET BETWEEN TREES AND PUBLIC WATER, SANITARY AND STORM SEWER MAIN LINES
   10 FEET BETWEEN SHRUBS AND PUBLIC WATER AND SANITARY AND STORM SEWER LINES
   6 FEET BETWEEN TREES AND GAS LINES
9. ALL STREET TREES SHALL BE PLACED A MINIMUM EIGHT (8) FEET AWAY FROM THE EDGES OF DRIVEWAYS AND ALLEYS
10. PLACEMENT OF ALL LANDSCAPING SHALL BE IN ACCORDANCE WITH THE SIGHT DISTANCE CRITERIA AS SPECIFIED BY THE TOWN OF WELLINGTON. NO STRUCTURES OR LANDSCAPE ELEMENTS GREATER THAN 24" SHALL BE ALLOWED WITHIN THE SIGHT DISTANCE TRIANGLE OR EASEMENTS WITH THE EXCEPTION OF DECIDUOUS TREES PROVIDED THAT THE LOWEST BRANCH IS AT LEAST 8' FROM GRADE. ANY FENCES WITHIN THE SIGHT DISTANCE TRIANGLE OR EASEMENT MUST BE NOT MORE THAN 42" IN HEIGHT AND OF AN OPEN DESIGN.
11. THE FINAL LANDSCAPE PLAN SHALL BE COORDINATED WITH ALL OTHER FINAL PLAN ELEMENTS SO THAT THE PROPOSED GRADING, STORM DRAINAGE, AND OTHER DEVELOPMENT IMPROVEMENTS DO NOT CONFLICT WITH NOR PRECLUDE INSTALLATION AND MAINTENANCE OF LANDSCAPE ELEMENTS ON THIS PLAN.
12. MINOR CHANGES IN SPECIES AND PLANT LOCATIONS MAY BE MADE DURING CONSTRUCTION -- AS REQUIRED BY SITE CONDITIONS OR PLANT AVAILABILITY. OVERALL QUANTITY, QUALITY, AND DESIGN CONCEPT MUST BE CONSISTENT WITH THE APPROVED PLANS. IN THE EVENT OF CONFLICT WITH THE QUANTITIES INCLUDED IN THE PLANT LIST, SPECIES AND QUANTITIES ILLUSTRATED SHALL BE PROVIDED. ALL CHANGES OF PLANT SPECIES AND LOCATION MUST HAVE WRITTEN APPROVAL BY THE CITY PRIOR TO INSTALLATION.
13. ALL PLANTING BEDS SHALL BE MULCHED TO A MINIMUM DEPTH OF THREE INCHES.
14. EDGING BETWEEN GRASS AND SHRUB BEDS SHALL BE 18" X 4" STEEL SET LEVEL WITH TOP OF SOD OR APPROVED EQUAL.
15. ONE YEAR WARRANTY TO BE PROVIDED ON ALL PLANT MATERIAL BY THE LANDSCAPE CONTRACTOR.
16. MULCH SHALL BE COMPRISED OF A ROCK MULCH MIX:
    40% WASHED PEA GRAVEL
    60% 3/4-1.5" DIA. WASHED WESTERN RIVER ROCK
17. DRIP IRRIGATION OF PLANT MATERIAL SHALL BE INCLUDED IN THE DRYLAND SEEDED AREAS PER THE APPROVED IRRIGATION PLANS.

NATIVE SEED MIX NOTES

1. PREPARE SOIL AS NECESSARY AND APPROPRIATE FOR NATIVE SEED MIX SPECIES THROUGH AERATION AND ADDITION OF AMENDMENTS, THEN SEED IN TWO DIRECTIONS TO DISTRIBUTE SEED EVENLY OVER ENTIRE AREA.
2. IF CHANGES ARE TO BE MADE TO SEED MIX BASED ON SITE CONDITIONS THEN APPROVAL MUST BE PROVIDED BY CITY ENVIRONMENTAL PLANNER.
3. APPROPRIATE NATIVE SEEDING EQUIPMENT WILL BE USED (STANDARD TURF SEEDING EQUIPMENT OR AGRICULTURE EQUIPMENT SHALL NOT BE USED).
4. DRILL SEED APPLICATION RECOMMENDED PER SPECIFIED APPLICATION RATE TO NO MORE THAN ½ INCH DEPTH. FOR BROADCAST SEEDING INSTEAD OF DRILL SEEDING METHOD DOUBLE SPECIFIED APPLICATION RATE. REFER TO NATIVE SEED MIX TABLE FOR SPECIES, PERCENTAGES AND APPLICATION RATES.
5. TREAT NATIVE SEED MIX AREA PRIOR TO INSTALLATION OF SEED WITH APPROPRIATE HERBICIDE TO PROACTIVELY MITIGATE HERBACEOUS WEED SPECIES GROWTH DURING ESTABLISHMENT PERIOD THEN AFTER APPROPRIATE TIME PERIOD APPLY NATIVE SEED AS CALLED FOR ON APPROVED PLANS.
6. AFTER SEEDING THE AREA SHALL BE COVERED WITH CRIMPED STRAW OR OTHER APPROPRIATE METHODS AND PROVIDED TEMPORARY IRRIGATION UNTIL SEED IS ESTABLISHED.
7. CONTRACTOR SHALL MONITOR SEEDED AREA FOR PROPER IRRIGATION, EROSION CONTROL, GERMINATION AND RESEEDING AS NEEDED TO ESTABLISH COVER.
8. THE APPROVED SEED MIX AREA IS INTENDED TO BE MAINTAINED IN A NATURAL LIKE LANDSCAPE AESTHETIC. IF AND WHEN MOWING OCCURS IN NATIVE GRASS SEED MIX AREAS DO NOT MOW LOWER THAN 6-8 INCHES IN HEIGHT TO AVOID INHIBITING NATIVE PLANT GROWTH.
9. NATIVE SEED AREA WILL BE CONSIDERED ESTABLISHED WHEN SEVENTY PERCENT TOTAL COVER IS REACHED WITH NO LARGER THAN ONE FOOT SQUARE BARE SPOTS AND/OR UNTIL DEEMED ESTABLISHED BY CITY PLANNING SERVICES.
10. THE DRYLAND GRASSES SHALL BE IRRIGATED WITH A WATER TRUCK ONCE EVERY THREE DAYS DURING THE FIRST MONTH TO AID IN ESTABLISHMENT, AND ONCE A WEEK THEREAFTER FOR THE FIRST GROWING SEASON. DURING THE SECOND GROWING SEASON, THE DRYLAND GRASSES SHALL BE WATERED WITH THE SAME METHOD EVERY OTHER WEEK DURING THE GROWING SEASON. AFTER THE FIRST TWO GROWING SEASONS, WATERING WILL BE ON AN AS NEEDED BASIS.

PLANT LIST

Code	Scientific Name	Common Name	Qty.	Size	Diversity	Water Use	Comments
DECIDUOUS SHADE TREES			**29**				
CASP	Catalpa speciosa	Western Catalpa	8	2" cal	13.1%	Low	
CEOC	Celtis occidentalis	Western Hackberry	8	2" cal	13.1%	Xeric	
GLTS	Gleditsia triacanthos interims 'Skyline'	Skyline Honeylocust	9	2" cal	14.8%	Low	
GYDI	Gymnocladus diocia 'Espresso'	Espresso Kentucky Coffetree	4	2" cal	6.6%	Low	Seedless Clone
ORNAMENTAL TREES			**7**				
CVWG	Crataegus viridis 'Winter King'	Wintergreen Hawthorne Hawthorne	7	1.5" cal	11.5%	Low	
EVERGREEN TREES			**25**				
PIPG	Picea pungens glauca	Colorado Blue Spruce	12	6' B&B	19.7%	Med	
PINI	Pinus nigra	Austrian Pine	13	6' B&B	21.3%	Low	
TOTAL TREES			**61**				
DECIDUOUS SHRUBS			**31**				
ERNN	Ericameria nauseosa ssp. nauseosa var. speciosa	Tall Blue Rabbitbrush	26	#5		Xeric	
RHTR	Rhus trilobata	Three Leaf Sumac	5	#5		Low	
EVERGREEN SHRUBS			**40**				
JUCH	Juniperus chinensis 'Holbert'	Holbert Juniper	21	#5		Xeric	
JUHH	Juniperus horizontalis 'Hughes'	Hughes Juniper	14	#5		Xeric	
JUTT	Juniperus scopulorum 'Table Top'	Table Top Blue Juniper	5	#5		Xeric	
ORNAMENTAL GRASSES			**37**				
PAVS	Panicum virgatum 'Shenandoah'	Shenandoah Switchgrass	37	#1		Low	

SEED MIXES

DRYLAND NATIVE GRASS SEED MIX

Scientific Name	Common Name	Percent of Mix	Seeded Rate Lbs/ Acre (drilled)
Schizachyrium scoparium 'Cimarron'	**Little Bluestem**	**5.0%**	**0.50**
Pasopyrum smithii 'Arriba'	**Western Wheatgrass**	**23.0%**	**5.46**
Bouteloua gracilis 'Hachita'	**Blue Grama**	**25.0%**	**0.79**
Sporobolus airoides	**Alkali sacaton**	**9.0%**	**0.13**
Achnatherum hymenoides	**Indian Ricegrass**	**5.0%**	**0.93**
Elymus Trachycaulus 'Prior'	**Slender Wheatgrass**	**15.0%**	**2.47**
Artemisia millefolium	**Prairie Sage***	**1.0%**	**0.01**
Nassila Viridula 'Lodorm'	**Green Needle Grass**	**15.0%**	**2.17**
Achillea millefolium	**White Yarrow***	**0.1%**	**0.001**
Sphaeralcea coccinea	**Scarlet Globemallow**	**0.9%**	**0.05**
Ratibida columnifera	**Prairie Coneflower**	**1.0%**	**0.04**
		100%	**12.54**

***Package seed separately**
Seeding rate: 60 seeds per square foot, drilled

WATER USE

Water Usage Category	Total Area Per Category	Gallons per sf	Total Gallons of Water per Square foot of Category
High Water Use	0	12	0
Medium Water Use	0	9	0
Low Water Use (shrub beds)	5,997	3	17,991
Xeric (very low) Water Use (dryland turf)	263,087	1	263,087
Totals	269,084		281,078

LANDSCAPE USE CATEGORIES

Category	Area/ length			
Total Site Area	1,463,725			
Landscape Area	269,084			
Percent of Site	18.38%			
			Trees Required	Trees Provided
County Road 66	1,160	1 tree/ 40 Linear Foot	29	29
Site Perimeter	1,235	1 tree/ 40 Linear Foot	30.875	38
On Site Landscaping	3,100	1 tree/ 1000 sf	3.1	4
Total Trees Provided			59.875	71
Notes				
1) Due to the drainage swale along CR 66, street trees were placed behind the walk, but in front of the fence.				

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NORTH

SCALE-1 SCALE-2 SCALE-3 SCALE-4
SCALE

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SHEET STATUS

90% PLAN SET
NOT FOR CONSTRUCTION

COVER SHEET

DESIGNED BY: TCH
DRAWN BY: TCH
APPROVED BY: TCH

DATE: February 7, 2023
SCALE: NTS
FILE NAME: 25034 L01

WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

PROJECT NUMBER: 25034

SHEET NUMBER
L01

SHEET INDEX: 14

Drawing Name: \\Mac\Dropbox\Vignette 2\25034 Connell\Drawings\PDF\25034L1.dwg Tuesday, February 07, 2023 12:40 PM By: Terenceahoglund Bunner

COUNTY ROAD 66

ROADSIDE DITCH
OVERHEAD POWER LINE

6' WALK

(1) PINI
(3) PICE
(2) GYDI
(3) CEOC
(2) PINI
(3) PICE
(2) GLTS
(2) QUMA
(3) CASP
(2) PINI

COLORADO AND SOUTHERN RAILROAD

MATCHLINE SHEET L03

MATCHLINE SHEET L04

LANDSCAPE PLAN LEGEND

- PRAIRIE SEED MIX
- ROCK MULCH
- SHADE TREES
- ORNAMENTAL TREES
- EVERGREEN TREES
- DECIDUOUS SHRUBS
- ORNAMENTAL GRASSES
- EVERGREEN SHRUBS

NORTH

0 10 20 40
SCALE 1"=20'

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LANDSCAPE PLAN NORTHEAST

DESIGNED BY:	TCH	
DRAWN BY:	TCH	
APPROVED BY:	TCH	

DATE: 02/07/2023
SCALE: NTS
FILE NAME: 25034L1.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

PROJECT NUMBER: 25034

SHEET NUMBER
L02

SHEET INDEX: 15

Drawing Name: \\Mac\Dropbox\Vignette 2\25034 Connell\Drawings\PDP1\25034L1.dwg Tuesday, February 07, 2023 12:40 PM By: Terencehoagland Bunner

COUNTY ROAD 66

NORTH POUDRE IRRIGATION COMPANY CANAL

ACCESS ROAD

OFFICE

ROADSIDE DITCH
OVERHEAD POWER LINE
6' WALK
50' SINCLAIR EASEMENT
20' UTILITY EASEMENT

(3) CVWG
(3) CASP
(2) PINI
(2) GLTS
(2) PIPG
(2) QUMA
(3) PICE
(2) CASP
(2) PINI
(4) PIPG
(2) CVWG
(1) GLTS
(3) JUHH
(6) ERNN
(7) JUCH
(1) GLTS
(5) RHTR
(3) ERNN
(3) JUCH
(1) CEOC
(11) JUHH
(21) PAVS
(6) ERNN
(16) PAVS

MATCHLINE SHEET L05

MATCHLINE SHEET L02

SCALE

LANDSCAPE PLAN LEGEND

- PRAIRIE SEED MIX
- ROCK MULCH
- SHADE TREES
- ORNAMENTAL TREES
- EVERGREEN TREES
- DECIDUOUS SHRUBS
- ORNAMENTAL GRASSES
- EVERGREEN SHRUBS

NORTH

0 10 20 40
SCALE 1"=20'

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LANDSCAPE PLAN NORTHWEST

DESIGNED BY:	TCH	DATE:
DRAWN BY:	TCH	SCALE: NTS
APPROVED BY:	TCH	FILE NAME: 25034L.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

PROJECT NUMBER: 25034

SHEET NUMBER
L03

SHEET INDEX: 16

Drawing Name: \\Mac\Dropbox\Vignette 2\25034 Connell\Drawings\PDF\25034L1.dwg Tuesday, February 07, 2023 12:40 PM By: Terencehoaglund Bunner

MATCHLINE SHEET L02

MATCHLINE SHEET L05

MATCHLINE SHEET L06

COLORADO AND SOUTHERN RAILROAD

LANDSCAPE PLAN LEGEND

- PRAIRIE SEED MIX
- ROCK MULCH
- SHADE TREES
- ORNAMENTAL TREES
- EVERGREEN TREES
- DECIDUOUS SHRUBS
- ORNAMENTAL GRASSES
- EVERGREEN SHRUBS

NORTH

0 10 20 40
SCALE 1"=20'

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LANDSCAPE PLAN MIDDLE EAST

DESIGNED BY:	TCH	DATE: 2/7/2023
DRAWN BY:	TCH	SCALE: NTS
APPROVED BY:	TCH	FILE NAME: 25034LI.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

PROJECT NUMBER: 25034

SHEET NUMBER
L04

SHEET INDEX: 17

Drawing Name: \\Mac\Dropbox\Vignette 2\25034 Connell\Drawings\PDP1\25034LI.dwg Tuesday, February 07, 2023 12:40 PM By: Terenceheaglund Bunner

MATCHLINE SHEET L03

NORTH POUDRE IRRIGATION COMPANY CANAL

ACCESS ROAD

(16) PAVS
(1) GLTS
(9) JUCH
(5) ERNN
(6) ERNN
(2) CVWG
(5) JUTT
(3) PIPG
(2) GYDI
(3) PINI

MATCHLINE SHEET L04

MATCHLINE SHEET L07

LANDSCAPE PLAN LEGEND

- PRAIRIE SEED MIX
- ROCK MULCH
- SHADE TREES
- ORNAMENTAL TREES
- EVERGREEN TREES
- DECIDUOUS SHRUBS
- ORNAMENTAL GRASSES
- EVERGREEN SHRUBS

NORTH

0 10 20 40
SCALE 1"=20'

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LANDSCAPE PLAN MIDDLE WEST

DESIGNED BY:	TCH	DATE: February 07, 2023
DRAWN BY:	TCH	SCALE: NTS
APPROVED BY:	TCH	FILE NAME: 25034L.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

PROJECT NUMBER: 25034

SHEET NUMBER
L05

SHEET INDEX: 18

Drawing Name: \\Mac\Dropbox\VIgnette 2\25034 Connell\Drawings\PDP1\25034L1.dwg Tuesday, February 07, 2023 12:40 PM By: Terrencehoagland Bunner

MATCHLINE SHEET L04

MATCHLINE SHEET L07

GAS

COLORADO AND SOUTHERN RAILROAD

LANDSCAPE PLAN LEGEND

- PRAIRIE SEED MIX
- ROCK MULCH
- SHADE TREES
- ORNAMENTAL TREES
- EVERGREEN TREES
- DECIDUOUS SHRUBS
- ORNAMENTAL GRASSES
- EVERGREEN SHRUBS

NORTH

0 10 20 40
SCALE 1"=20'

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LANDSCAPE PLAN SOUTH EAST

DESIGNED BY:	TCH	DATE: Tuesday, February 07, 2023
DRAWN BY:	TCH	SCALE: NTS
APPROVED BY:	TCH	FILE NAME: 25034L.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

PROJECT NUMBER: 25034

SHEET NUMBER
L06

SHEET INDEX: 19

Drawing Name: \\Mac\Dropbox\Vignette 2\25034 Connell\Drawings\PDP\125034L1.dwg Tuesday, February 07, 2023 12:40 PM By: Terancehoaglund Bunner

MATCHLINE SHEET L07

NORTH POUDRE IRRIGATION COMPANY CANAL

ACCESS ROAD

(2) CEOC

(3) PINI

(2) CEOC

MATCHLINE SHEET L06

MATCHLINE SHEET L08

LANDSCAPE PLAN LEGEND

- PRAIRIE SEED MIX
- ROCK MULCH
- SHADE TREES
- ORNAMENTAL TREES
- EVERGREEN TREES
- DECIDUOUS SHRUBS
- ORNAMENTAL GRASSES
- EVERGREEN SHRUBS

NORTH

0 10 20 40

SCALE 1"=20'

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LANDSCAPE PLAN SOUTHWEST

DESIGNED BY:	TCH	DATE: 2023.02.07
DRAWN BY:	TCH	SCALE: NTS
APPROVED BY:	TCH	FILE NAME: L07.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

PROJECT NUMBER: 25034

SHEET NUMBER
L07

SHEET INDEX: 20

Drawing Name: \\Mac\Dropbox\Vignette 2\25034 Connell\Drawings\PDP1\25034L1.dwg Tuesday, February 07, 2023 12:40 PM By: Terencehoaglund Bunner

MATCHLINE SHEET L07

LEAN 2

NORTH POUDRE IRRIGATION COMPANY CANAL

LANDSCAPE PLAN LEGEND

- PRAIRIE SEED MIX
- ROCK MULCH
- SHADE TREES
- ORNAMENTAL TREES
- EVERGREEN TREES
- DECIDUOUS SHRUBS
- ORNAMENTAL GRASSES
- EVERGREEN SHRUBS

NORTH

0 10 20 40
SCALE 1"=20'

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LANDSCAPE PLAN SOUTH

DESIGNED BY:	EDH	DATE:	February 7, 2023
DRAWN BY:	TCH	SCALE:	NTS
APPROVED BY:	EDH	FILE NAME:	L08.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

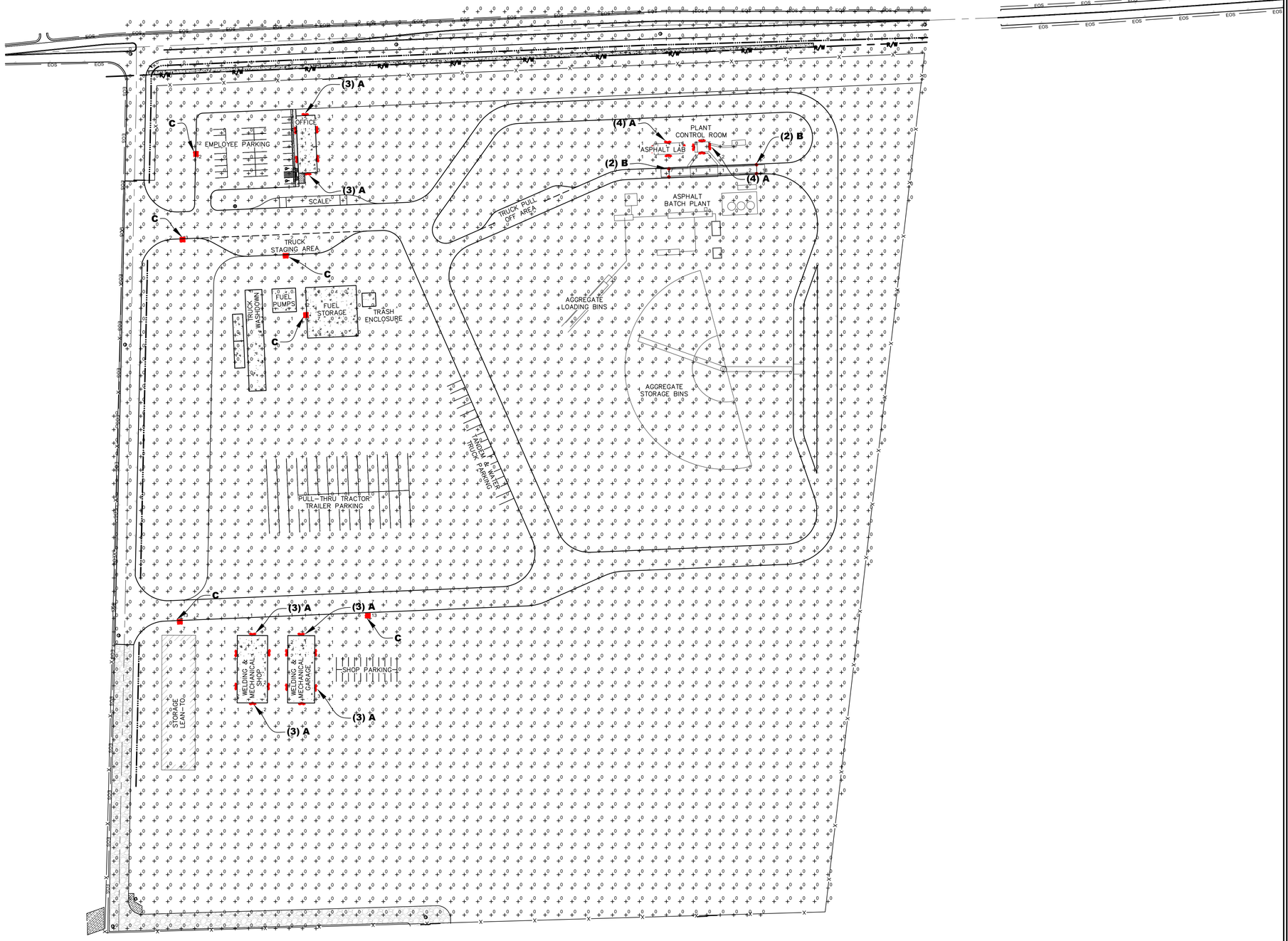
CONNELL

PROJECT NUMBER: 25034

SHEET NUMBER
L08

SHEET INDEX: 21

Drawing Name: \\Mac\Dropbox\VIgnette 2\25034 Connell\Drawings\PDP1\25034L1.dwg Tuesday, February 07, 2023 12:40 PM By: Terencehoagland Bunner



80' 0 80' 160' 240'

SCALE: 1" = 80'
(True scale for 22x34 sheet size)

LEGEND:

- PHOTOMETRIC CALCULATION POINT (FOOT CANDLES)
- FIXTURE TYPE A
- FIXTURE TYPE B
- FIXTURE TYPE C
- SITE PROPERTY LINE — PA —
- EXISTING RIGHT OF WAY — R/W —
- PROPOSED RIGHT OF WAY — R/W —
- PROPOSED EDGE OF ASPHALT
- PROPOSED EDGE OF SHOULDER — EOS —
- EDGE OF GRAVEL ROAD
- PROPOSED SWALE
- PROPOSED CHAIN LINK FENCE
- PROPOSED 2-STRAND BARB-WIRE — X —

NOTES:

1. PHOTOMETRIC VALUES ARE BASED UPON PLACEMENT OF FIXTURES AS SHOWN IN THE FIXTURE SCHEDULE ON P102.
2. BATCH PLANT OPERATIONS PRIMARILY OCCUR DURING DAYLIGHT HOURS. FIXTURES WILL BE INSTALLED TO PROVIDE SAFETY LIGHTING AT THE OFFICE AND A KEY OPERATIONAL LOCATIONS AROUND THE SITE.
3. ALL NEW ELECTRICAL INFRASTRUCTURE ROUTED TO NEW LIGHT POLES / WALL PACKS, AS APPLICABLE.

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Sheet Revisions

No.	Revisions:	By:	Date:

PHOTOMETRICS PLAN

DESIGNED BY: D. Egger
DRAWN BY: R. Bunner
APPROVED BY: J. Burrell
DATE: February 8, 2023
SCALE: 1" = 80'
FILE NAME: Batch Plant Photometrics-Plan.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

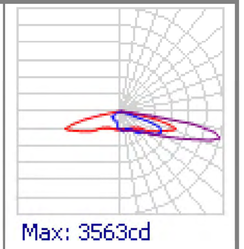
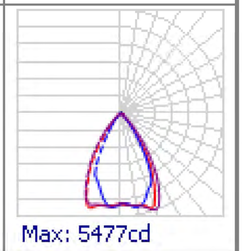
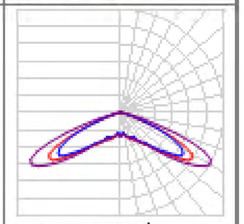
PROJECT NUMBER: XXXX

SHEET NUMBER
P101

SHEET INDEX: 28

Drawing Name: D:\Projects\Wellington Batch Plant\Dwg\Sheets\Batch Plant Photometrics-Plan.dwg Thursday, February 09, 2023 2:06 PM By: Rhonda Bunner

Schedule

Symbol	Label	Image	QTY	Manufacturer	Catalog	Description	Number Lamps	Lamp Output	LLF	Input Power	Polar Plot
	A		26	Holophane	HLWPC2 P20 30K XX T4M XXXXX 80CRI	Wallpack Full Cutoff LED, LED Performance Package P10, 3000 series CCT, Voltage, Type IV Medium with 80 CRI LEDs	1	4745	1	47	
	B		4	Holophane	PSLED P1 XXXXX 55 30K	Predator Small LED Floodlight with P1 Performance Package, Flood (5x5) (formally FL), 3000K CCT	1	Absolute	1	37	
	C		6	Holophane	MGLEDM P1 30K XXXXX AG	Mongoose Medium, P1 Performance Package, 3000K, Area (Type 5) with Refractor	1	15680	1	104.9	

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Sheet Revisions

No.	Revisions:	By	Date:

PHOTOMETRICS SCHEDULE

DESIGNED BY: D. Egger
DRAWN BY: R. Bunner
APPROVED BY: J. Burrell

DATE: February 8, 2023
SCALE: NTS
FILE NAME: Batch Plant Photometrics.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

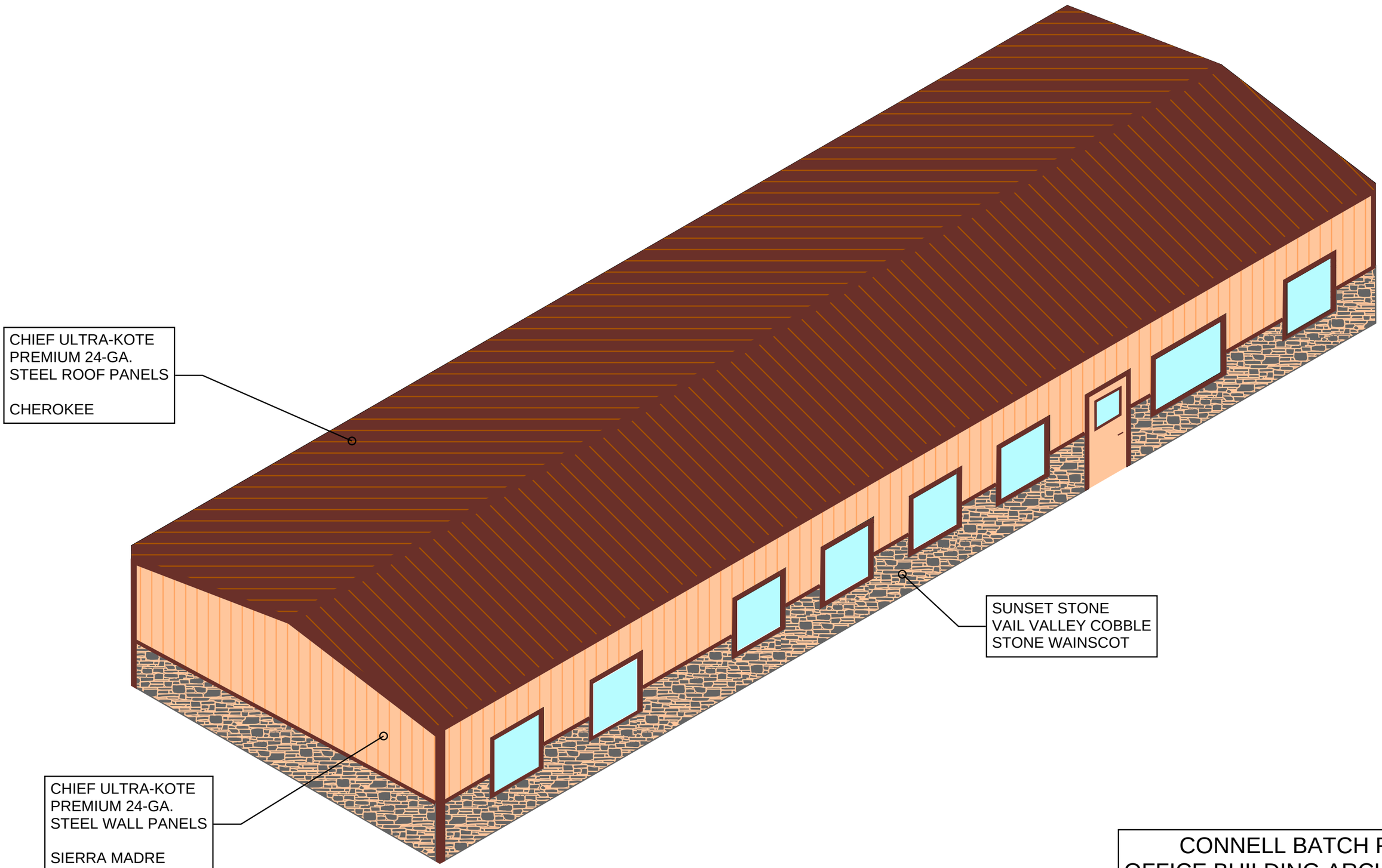
CONNELL

PROJECT NUMBER: XXXX

SHEET NUMBER
P102

SHEET INDEX: 29

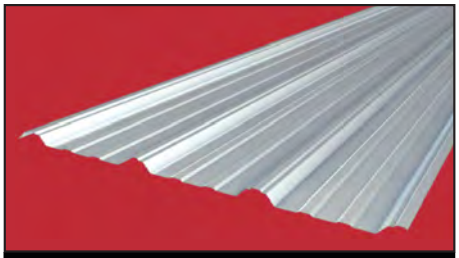
Drawing Name: D:\Projects\Wellington Batch Plant\Dwg\Sheets\Batch Plant Photometrics.dwg Friday, January 27, 2023 3:14 PM By: Rhonda Bunner



CONNELL BATCH PLANT
OFFICE BUILDING ARCHITECTURE
SAMPLE MATERIAL SUBMITTALS

CS/AP Panels

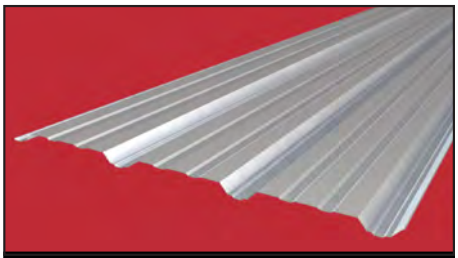
Ultra-Kote Premium (PVDF)



CS - Chief Standard
(Roof and Wall Panel)
36" Coverage

Superior materials make the difference...

Premium finishes and design give Chief's Standard Panels (CS) and Chief's Architectural Panels (AP) the edge when it comes to quality steel roof and wall panels. They're ideal for a variety of other applications as well. Interior liners, fascias, canopies, and soffits are just some of the many uses for this versatile panel. With a 1 1/8" deep corrugation for added strength, 36" panel widths for quicker erection and availability in many different colors, Chief's CS and AP ribbed panels are the perfect choice for your construction project.



AP - Architectural Panel
(Wall Panel Only)
36" Coverage

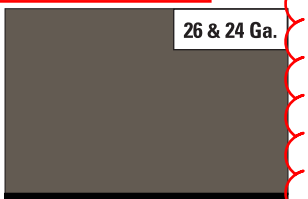
ROOF PANELS

26 & 24 Ga.

Antique Bronze (AQ)

26 & 24 Ga.

Ash Gray (AG)

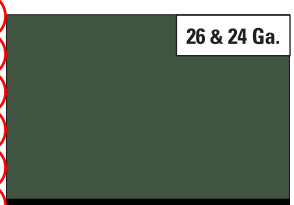


26 & 24 Ga.

Charcoal Gray (CG)

26 & 24 Ga.

Cherokee (CK)

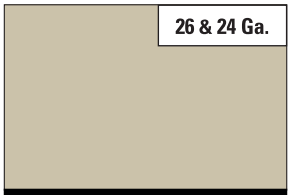


26 & 24 Ga.

Emerald Green (EG)

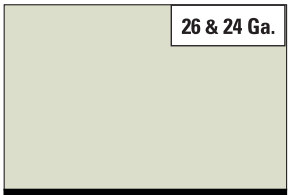
26 & 24 Ga.

Fieldstone (FS)



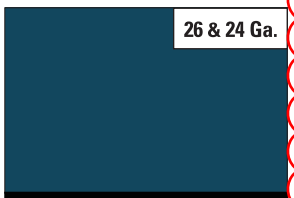
26 & 24 Ga.

Parchment (PA)



26 & 24 Ga.

Polar White (PW)



26 & 24 Ga.

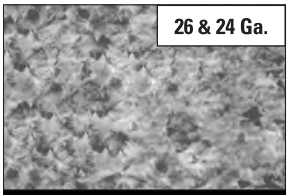
Royale Blue (RB)

26 & 24 Ga.

Sierra Madre (SM)

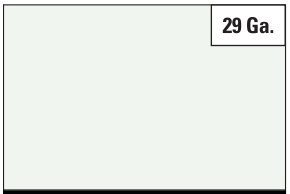
*Chief maintains inventory of all 26 Ga. Chief standard colors, 24 Ga. Polar White and 24 Ga. Galvalume. All other colors are available as Chief standard colors and may not be in stock.

WALL PANELS



26 & 24 Ga.

Galvalume (GM)



29 Ga.

White Polyester (WP)

Ultra-Kote Premium (UKP) Finish

Chief's Ultra-Kote Premium finish is made with polyvinylidene fluoride resin, where a minimum of 70% of the resin is PVDF (Kynar 500® or Hylar 5000®). This unique chemistry is combined with acrylic resin, as well as ceramic and select inorganic pigmentation. The result is Ultra-Kote Premium's proven ability to resist ultraviolet radiation in sunlight for maximum protection against general weathering effects, chalking and fading.

Acrylic Coated Galvalume® (GM)

Chief's exterior roof, wall and trim material is available in an industry standard ASTM A792 Acrylic Coated Galvalume® finish. Galvalume® is a unique coating of 55% aluminum and 45% zinc that resists corrosion. The Galvalume® sheet is coated with a thin, clear acrylic coating applied to both sides.

White Polyester (WP)

Chief's White Polyester is an economical polyester finish intended for interior applications only.
Note: 29 Ga. White polyester is a non-warranty product.

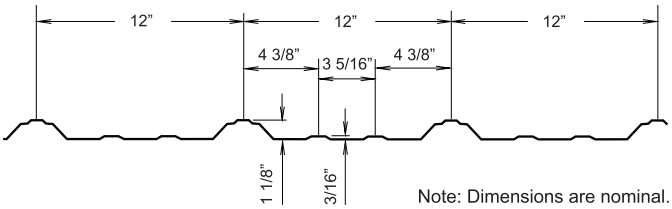
Since all color chips are affected by age, lighting conditions, heat and mechanical coating processes, the chips on this page may vary slightly in color or finish from the actual product. Oil canning in the flat areas of panels is inherent of coil steel products and shall not be a cause for product refusal. Chief reserves the right to change designs, prices and specifications at any time without notice.

Chief's Finish Warranties:

- Galvalume® Panel Limited Warranty - 25 Year
- Ultra-Kote Premium Roof Panel Finish Limited Warranty - 35 Year
- Ultra-Kote Premium Wall Panel Finish Limited Warranty - 35 Year

MEMBER MBMA METAL BUILDING MANUFACTURERS ASSOCIATION

1821 S. North Road P.O. Box 2078 Grand Island, NE 68802-2078 (308) 389-7281 fax: (308) 389-7282 http://www.chiefbuildings.com



Note: Dimensions are nominal.

Ribbed roof panel

a. Rollformed profile shall be CS (Chief Standard) configuration as manufactured by Chief Buildings. Panels shall have 1 1/8" deep major ribs spaced at 12" on center, with minor ribs between major ribs. Each panel shall provide a net coverage width of 36".
b. Panels shall be manufactured from 26 gauge or 24 gauge, 80,000 PSI material.
c. Provide roof panel assemblies with permanent resistance to air leakage through assembly of not more than 0.005 cfm/sf of fixed roof area when tested according to ASTM E1680 at a static pressure differential of 6.24 psf.
d. Provide roof panel assemblies with no water penetration as defined in the test method when tested according to ASTM E1646 at a static pressure differential of 12.0 psf.
e. Provide roof panel assemblies with UL Class 30, 60, or 90 uplift rating in accordance with UL 580 “Tests for Uplift Resistance of Roof Assemblies”.
f. Provide roof panel assemblies with UL Class A Fire Rating in accordance with UL 790 “Test Methods for Fire Tests of Roof Coverings”.
g. Provide roof panel assemblies with UL Class 4 Impact Rating in accordance with UL 2218 “Impact Resistance of Prepared Roof Covering Material”.
h. Panels shall be one piece for slope lengths less than 39'-6". Endlaps, if required, shall be 8" and occur at a purlin.
i. Panel finish shall be acrylic coated Galvalume® AZ55 coating in accordance with ASTM A792.

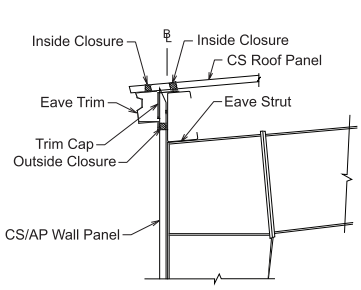
OR

i. Substrate shall be Galvalume® AZ50 coating in accordance with ASTM A792. Sheets shall be coated with a fluoropolymer topcoat containing not less than 70% polyvinylidene fluoride (PVDF) over primer with total DFT of 0.8–1.0. The reverse side shall be coated with pigmented. Exterior color to be selected from Chief standard color choices.

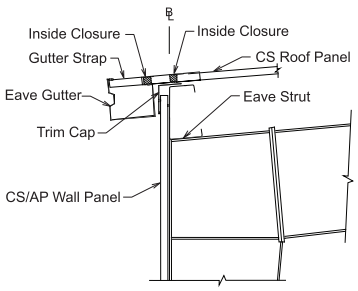
Exterior wall panel

a. Rollformed profile shall be CS (Chief Standard) or AP (Architectural Panel) configuration as manufactured by Chief Buildings. Panels shall have 1 1/8" deep major ribs spaced at 12" on center, with minor ribs between major ribs. Each panel shall provide a net coverage width of 36".
b. Manufactured from 26 gauge or 24 gauge, 50,000 PSI or 80,000 PSI material.
c. Provide wall panel assemblies (when installed with mastic in the walls) with permanent resistance to air leakage through assembly of not more than 0.006 cfm/sf of fixed wall area when tested according to ASTM E283 at a static pressure differential of 6.24 psf.
d. Provide wall panel assemblies (when installed with mastic in the walls) with no water penetration as defined in the test method when tested according to ASTM E331 at a static pressure differential of 12.0 psf.
e. Substrate shall be Galvalume® AZ50 coating in accordance with ASTM A792.
f. Sheets shall be coated with a fluoropolymer topcoat containing not less than 70% polyvinylidene fluoride (PVDF) over primer with total DFT of 0.8–1.0. The reverse side shall be coated with pigmented polyester. Exterior color to be selected from Chief standard color choices.

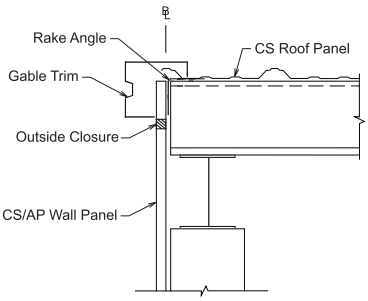
Eave Trim



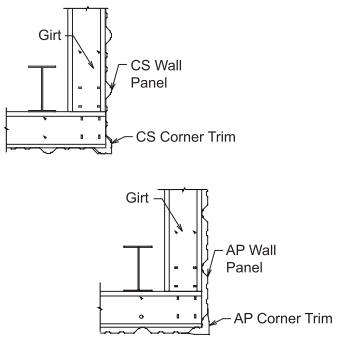
Eave Gutter



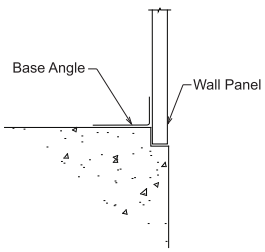
Gable Trim



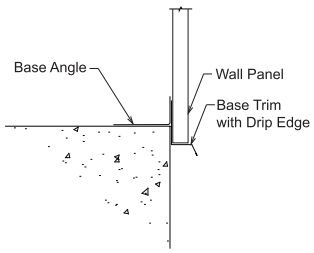
Outside Corner



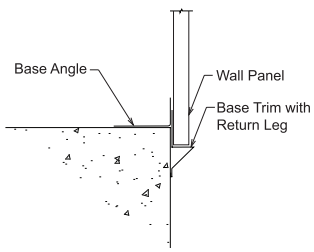
Notch in Concrete



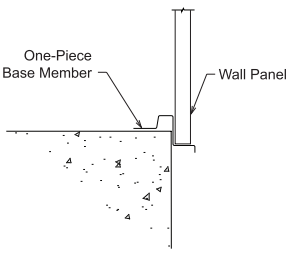
Base Trim with Drip Edge



Base Trim with Return Leg



One Piece Base Member



Natural Ledge

Welcome to Sunset Stone

Natural Cobble

Cobble

- 2½" to 8" high
- 8" to 22" long
- 1½" to 2" thick

Custom Cobble

Custom Cobble

Ponderosa Cobble

Gold Rundle Cobble

Vail Valley Cobble

Venetian Cobble

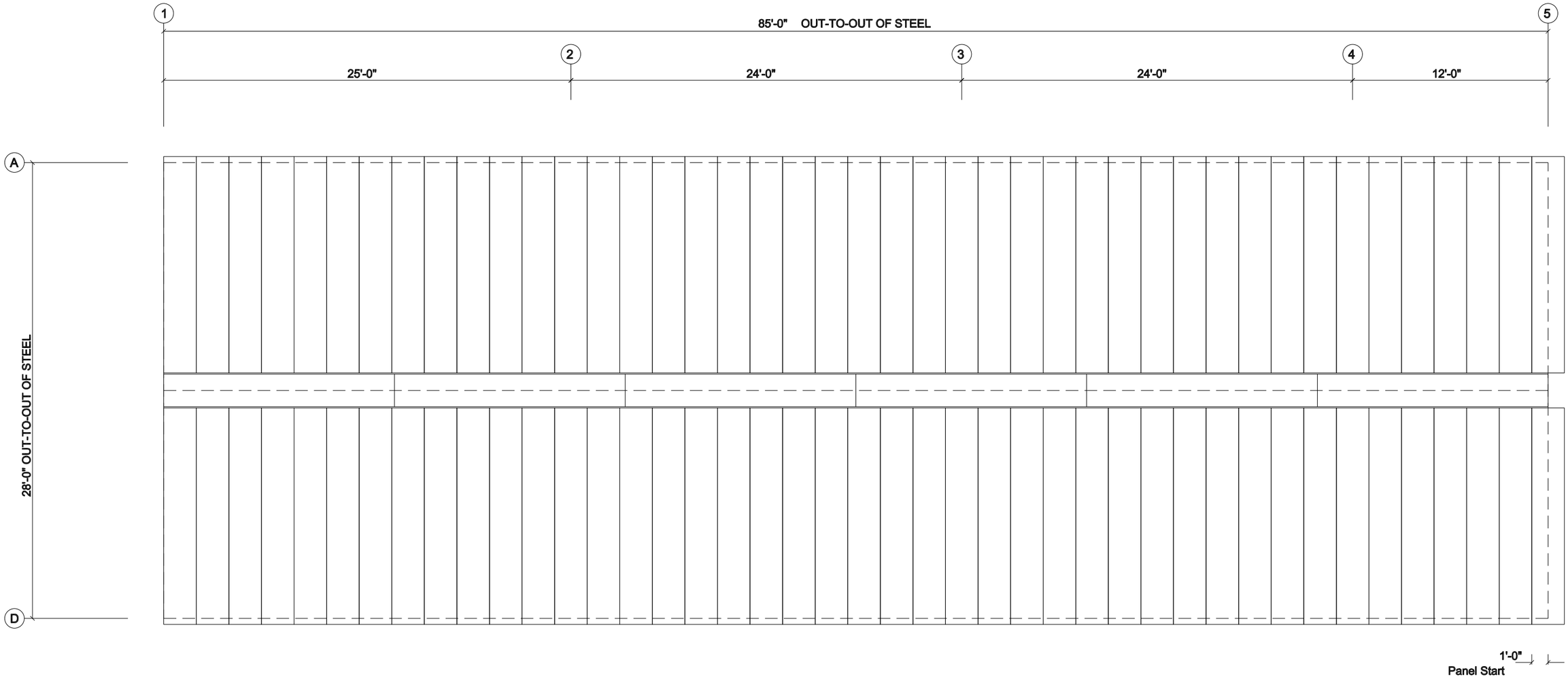
Cheyenne Cobble

Country Cobble

Alpine Cobble

Solterra Cobble

Colorado Cream Cobble



ROOF SHEETING PLAN

PANELS: 24 Ga. MSC - Galvalume (GM)

PRELIMINARY

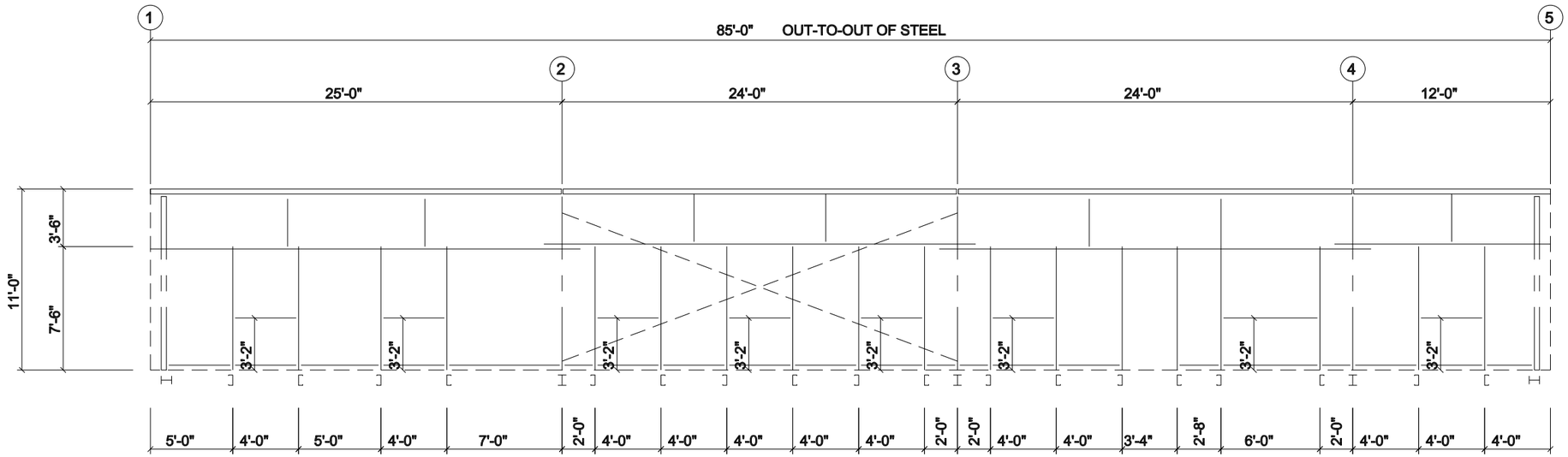
- Preliminary drawings for sales and estimating purposes only.
- Subject to change during order process.

NOT FOR CONSTRUCTION

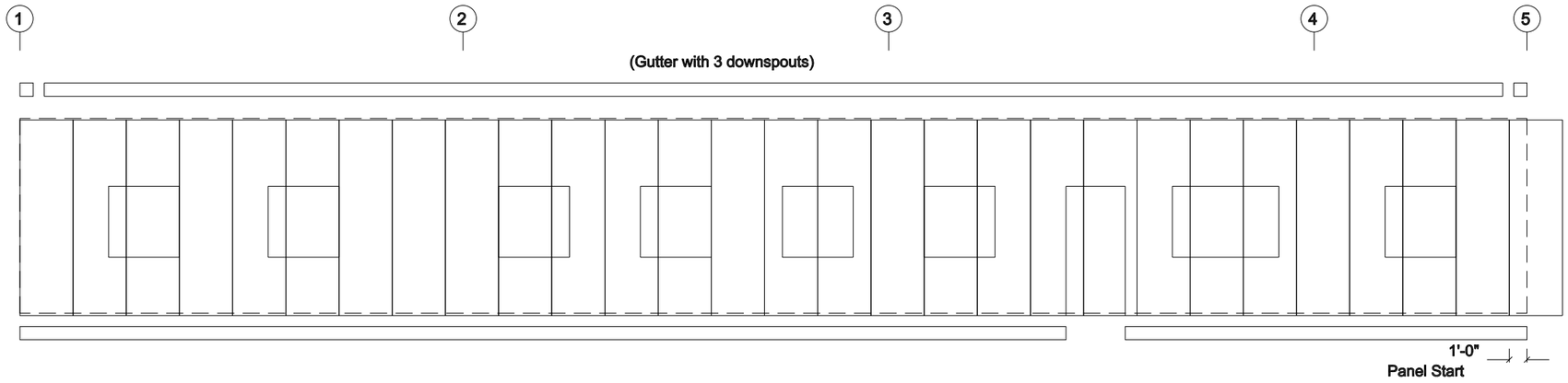
Drawing	ROOF SHEETING
Buyer	Mountain West Constructors, LLC
Customer	Connell Resources Wellington, CO 80549
Project Name	Connell Office - Wellington Batch Plant

DATE DRAWN	QUOTE NO.
11/ 1/22	FJ85301A

CHIEF BUILDINGS



SIDEWALL FRAMING: FRAME LINE D



SIDEWALL SHEETING & TRIM: FRAME LINE D

PANELS: 26 Ga. AP - Std.PVDF-FEVE Finish

GIRT DEPTH: 8.00

PRELIMINARY

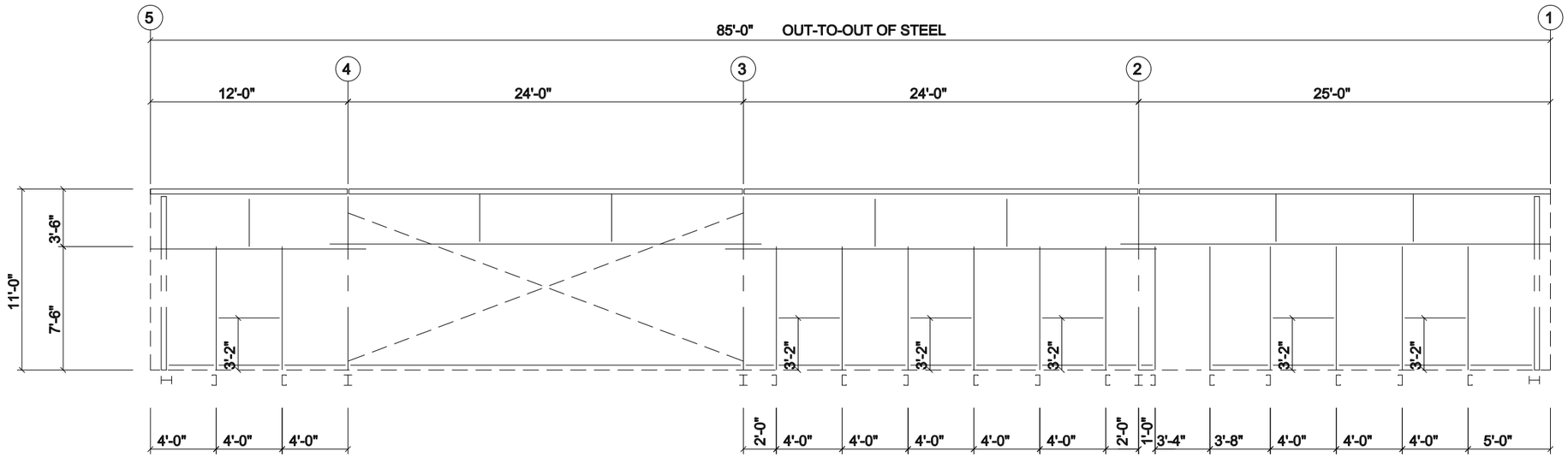
- Preliminary drawings for sales and estimating purposes only.
- Subject to change during order process.

NOT FOR CONSTRUCTION

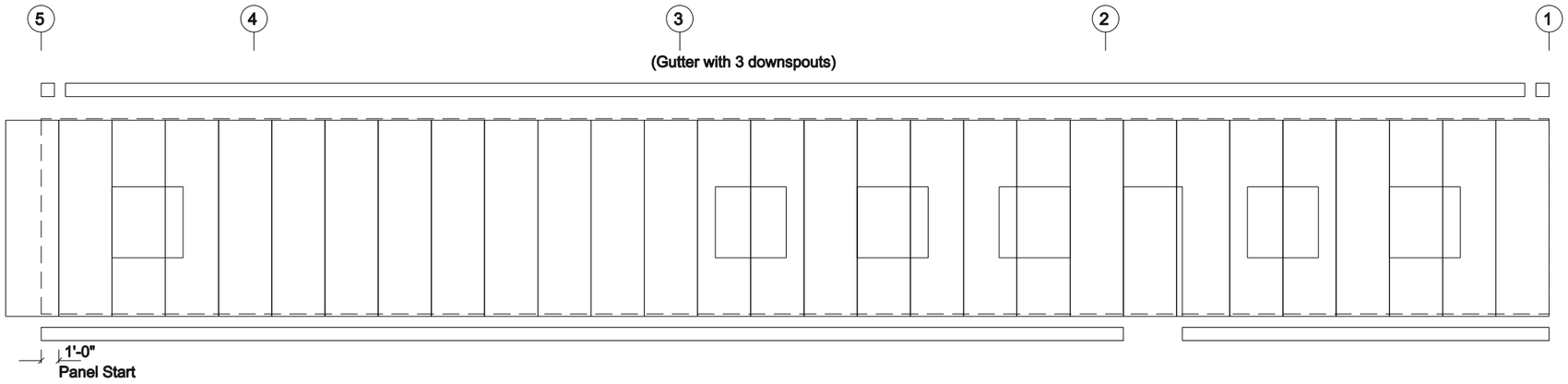
Drawing	SIDEWALL DRAWING
Buyer	Mountain West Constructors, LLC
Customer	Connell Resources Wellington, CO 80549
Project Name	Connell Office - Wellington Batch Plant

CHIEF BUILDINGS

DATE DRAWN	QUOTE NO.
11/ 1/22	FJ85301A



SIDEWALL FRAMING: FRAME LINE A



SIDEWALL SHEETING & TRIM: FRAME LINE A

PANELS: 26 Ga. AP - Std.PVDF-FEVE Finish

GIRT DEPTH: 8.00

PRELIMINARY

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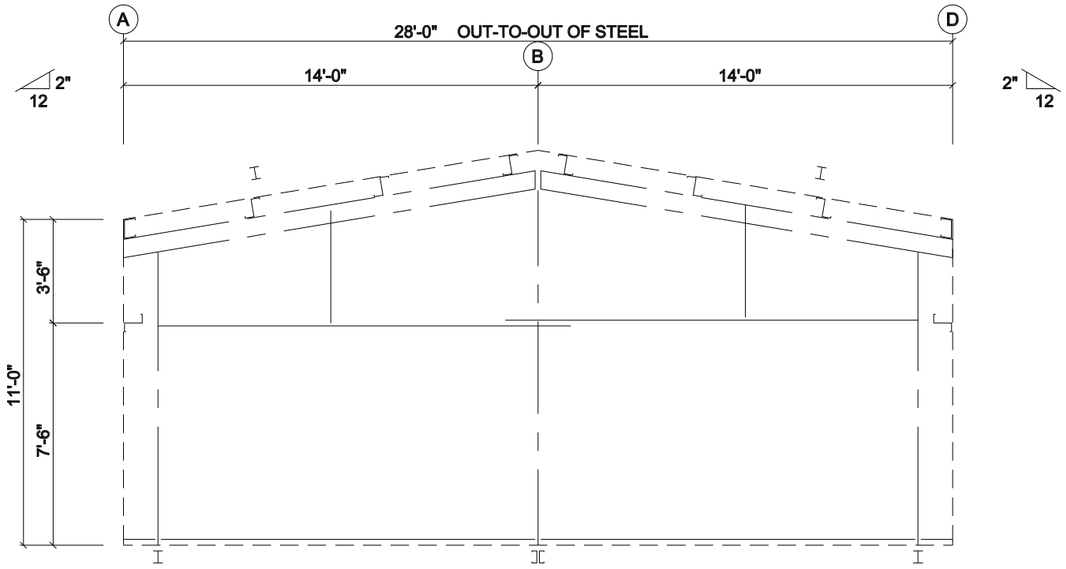
NOT FOR CONSTRUCTION

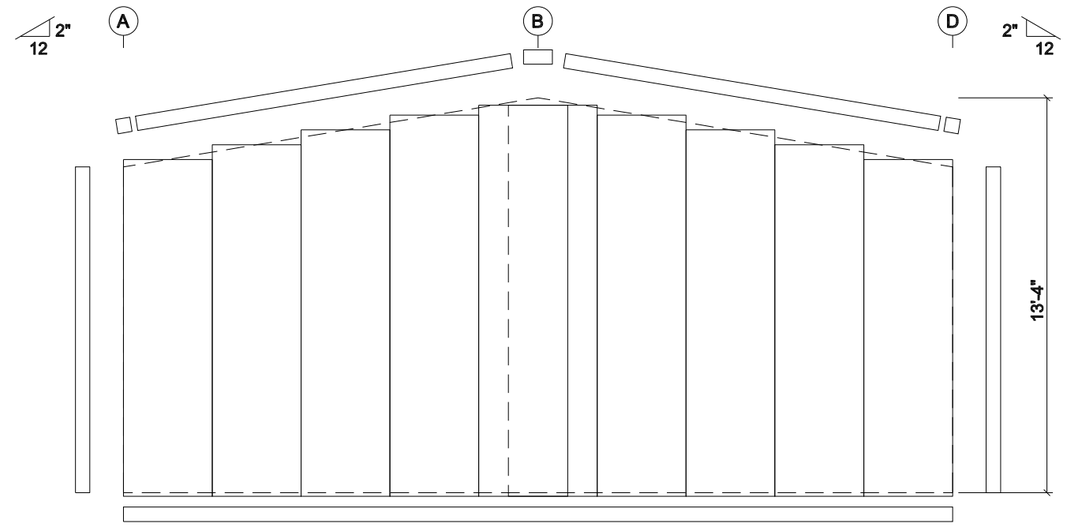
Drawing	SIDEWALL DRAWING
Buyer	Mountain West Constructors, LLC
Customer	Connell Resources Wellington, CO 80549
Project Name	Connell Office - Wellington Batch Plant

CHIEF BUILDINGS

DATE DRAWN	QUOTE NO.
11/ 1/22	FJ85301A



ENDWALL FRAMING: FRAME LINE 1



ENDWALL SHEETING & TRIM: FRAME LINE 1

PANELS: 26 Ga. AP - Std.PVDF-FEVE Finish

GIRT DEPTH: 8.00

PRELIMINARY

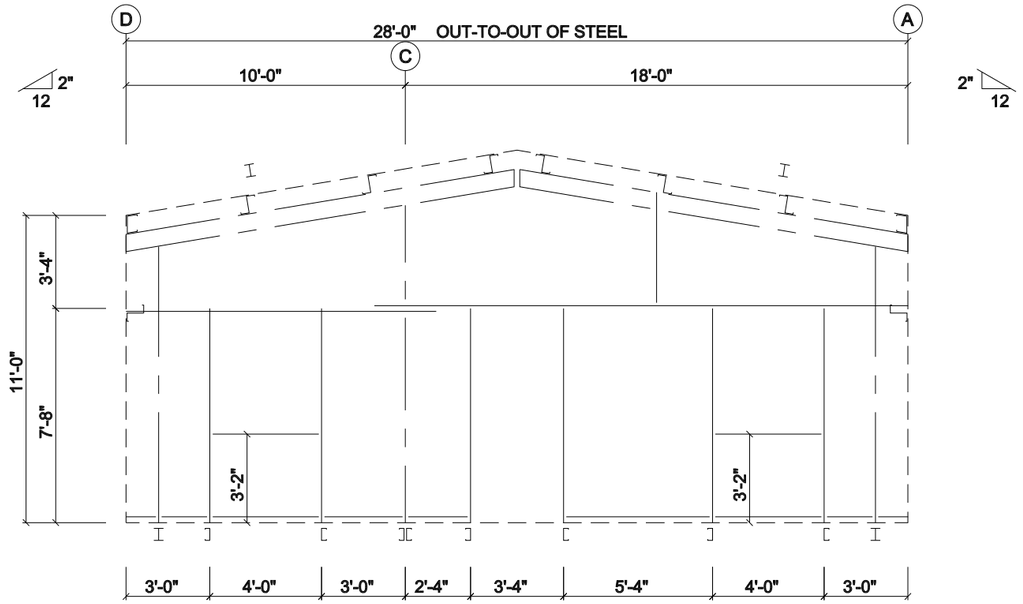
- Preliminary drawings for sales and estimating purposes only.
- Subject to change during order process.

NOT FOR CONSTRUCTION

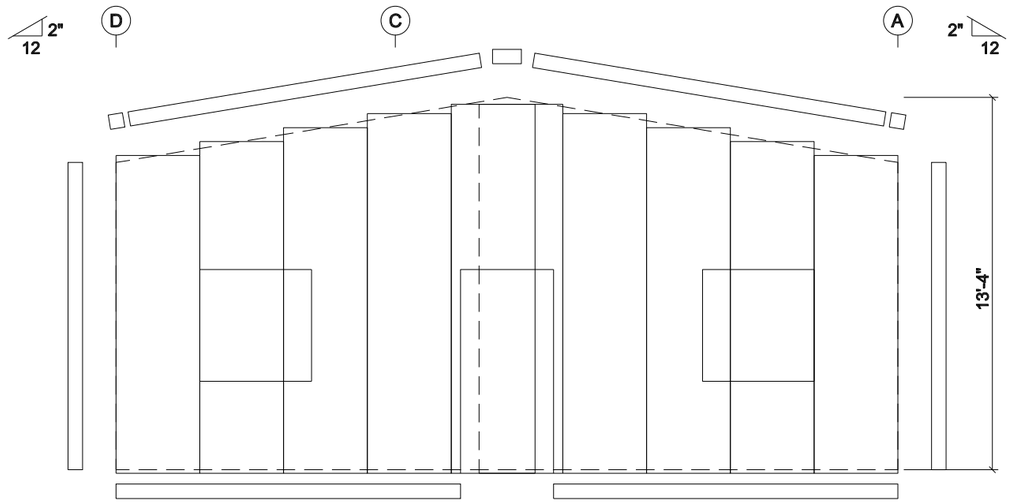
Drawing	ENDWALL DRAWING
Buyer	Mountain West Constructors, LLC
Customer	Connell Resources Wellington, CO 80549
Project Name	Connell Office - Wellington Batch Plant

CHIEF BUILDINGS

DATE DRAWN	QUOTE NO.
11/ 1/22	FJ85201A



ENDWALL FRAMING: FRAME LINE 5



ENDWALL SHEETING & TRIM: FRAME LINE 5

PANELS: 26 Ga. AP - Std.PVDF-FEVE Finish

GIRT DEPTH: 8.00

PRELIMINARY

- Preliminary drawings for sales and estimating purposes only.
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NOT FOR CONSTRUCTION

Drawing	ENDWALL DRAWING
Buyer	Mountain West Constructors, LLC
Customer	Connell Resources Wellington, CO 80549
Project Name	Connell Office - Wellington Batch Plant

CHIEF BUILDINGS

DATE DRAWN	QUOTE NO.
11/ 1/22	FJ85204A

December 21, 2022

Ditesco Project & Construction Services
2133 S Timberline Road, Ste 110
Fort Collins, Colorado 80525
Office: 970-690-1889
Jill.Burrell@ditescoservices.com

RE:
Connell Resources Wellington Asphalt Batch Plant
East County Road 66 and Burlington Northern RR
Wellington, Colorado

Attn: Ms. Jill Burrell, P.E.

Dear Jill;

Thank you for the site plan application submittal for the Connell Resources site in the Town of Wellington. A thorough review was performed of the submittal package with the following comments generated. Please adjust the plans and resubmit the complete package as soon as possible if we are to meet our deadlines for the February 6th Planning Commission date. (Please note, incomplete or missing information may further contribute to unnecessary delays for your project)

.

- Attached is a pretreatment questionnaire for your execution and resubmittal;
- **An application fee of $4,000 (four-thousand dollars) is required;**
- Once the critical issues are adequately resolved, we can then schedule the Planning Commission hearing (2.6.2023);

The following comments are provided to assist you in the preparation of the plan set for the Planning Commission public hearing.

General Information Submittal Comments:

- The application packet was received on Monday November 14, 2022, the submittal packet was reviewed for completeness on Wednesday November 16, and the project was forwarded to commence preliminary review processes on Tuesday November 22, 2022(the review period will conclude on 12-21-2022, the external referral review period concluded on 12-7-22)..
- The site is zoned I- Industrial, and an asphalt batch plant facility is a Use by Right.
- Per the 10-27-2022 Board of Adjustment hearing, two (2) variances (operation setback and silo height) were granted by the Board, however additional conditions for approvals (COA) were also requested.
- Please provide documentation verifying the on-site mineral rights owner was properly notified in accordance with state law.
- As this proposal must be considered by the Planning Commission in a public meeting, it will be vital ALL pertinent information is provided for their review. Please provide:

    - Details, cross-sections, etc... of berming;
    - Visual analysis illustratives/renderings of the viewsheds into the site;
    - Include the photometrics plan with manufacturer cut-sheets;
    - Architectural sheets indicating colors, materials (stone/brick wainscot on all structures),
- Please adjust the plan set packet to ensure the submittal is prepared and submitted consistent with the Town's Land Use Code, specifically the Site Plan Checklist.
- It is staffs' understanding the buffering/landscape berm and street tree landscaping would extend the full length of the western property line not partially as currently depicted on the plans.
- Staff understands extending the earthen berm to the southwest corner of the property with street trees/landscaping and drainage facilities may be challenging but this was a condition of approval (#3). It was the BOA's intent to screen and buffer the local residents (Buffalo Ridge) from the asphalt plant's day-to-day operations.
- The drainage plans/study indicate the on-site detention basin is located in the property's southwest corner, a new roadway is also proposed in this area, please ensure the drainage basin has its' own dedicated structural embankment and does not rely upon the future roadway embankment for containment.

BOARD of ADJUSTMENT Conditions of Approval:

The COAs are as follows:

1. *Planning Commission Approval of the Site Plans;*
2. *The height variance is limited to one structure (silo);*
3. *Install and maintain a 15-ft earthen berm with landscaping on the west side;*
4. *Submit evidence of satisfaction of all applicable state and local permits, licenses, and operating plans for initial installation and continued maintenance;*
5. *Signage along roadways and company policy to limit engine braking;*
6. *No signage on silo;*
7. *Limit water use to non-potable water sources except for standard domestic water source for office;*

- Please disseminate the redlines and review comments to the pertinent subconsultants as deemed necessary. Also please ensure the re-submittal package is complete and consistent through-out with proper sheet title blocks, sheet labeling/sheet numbering, requested information provided, etc….
- Please refer to Appendix D of the Wellington Fire District 2018 International Fire Code for specific Wellington fire code criteria. Please see the link below: http://www.wfpd.org/_files/ugd/e858a7_9db171029d31483289e52654eefef47f.pdf
- Pending re-review of the submittal package, the Planning Commission hearing will be scheduled once the plan set is ready for their consideration.

Please provide a revised Site Plan package with the necessary documents for Planning Commission reviews. This plan set should include all components of the Site Plan Checklist, (Civil CDs are a separate submittal).

Site Plan Comments: (Section 2.12)

- Please refer to Section 2.12.2-B for Site Plan submittal packet information, the submittal packet should include:
    - a completed site plan checklist;
    - a site plan map/exhibit,
    - a horizontal plan;

    - a landscape plan and irrigation plan;
    - architectural elevations & colored rendering(s)/illustrative with color chips and/or material board;
    - project narrative of how the proposed structures are consistent with the Town's Development Standards, Chapter 5;
    - a grading & drainage plan w/drainage study;
    - a traffic impact study;
    - a utility plan;
    - a photometrics plan with legend and manufacturer cut-sheets & details;
- Please revise the Sheet Index on sheet 1, and each individual sheet—...to coordinate sheet labelling, 1 of 34, 2 of 34, etc…, and sheet title blocks, for consistency throughout the plan set.
- Expand the Sheet Index to include the architectural sheets, the landscape sheets, irrigation sheets and photometrics sheet, etc… as needed.
- Please ensure the parking ratios, calculations and counts (Table 5.05.7-1) are provided on the site plan and are consistent with the Town standards.
- Please provide a bicycle rack for those employees/patrons wishing to commute on bicycles per Section 5.05.13.
- Please provide a Site Data Chart with itemized total lot area and coverages-- provide building/structure footprint totals, proposed landscape total area, total site impervious area, etc….
- Please provide a legend for the site plan symbols shown, symbols are provided but with no indication of what they represent.
- Per the site plan, LCR 66 is shown as part of the subject property, is this accurate, please provide documentation for the public's legal use of LCR 66. (A plat may be required to memorialize the ROW and other features).
- Please provide a typical dimensioned accessible parking spaces with loading aisle.
- Provide traffic circulation arrows on the plans, please show turning radii for accessing loading areas (per the BOA hearing, please design the semi traffic flows to minimize the need for backing up and the resulting "white noise").
- It appears the gates at the entry accesses may be too close to the public road for safe vehicular operations in the event a semi-truck driver waits for a gate to open, they will be "stacking" into the public roadway thus blocking vehicular movement, please address this potential conflict on the plans or in the project narrative.
- Please extend the earth berm on the west property line along the future W 1st Street to the southwest corner of the property.
- Even though signage is a separate application process, please indicate approximate sign location(s) on the plans, (Condition #6- no signage allowed on the silos).
- Sidewalks are typically required as part of the street improvements, the sidewalk along LCR 66 is proposed on the site plan, however the sidewalk along the future 1st Street is not shown, how does the applicant propose satisfying this criteria?

Architectural Comments:

- Please provide site perspectives from the east, west, north and south, showing how the proposed storage lean-to structure, berming and landscape will effectively buffer/screen the site operations.
- Please provide architectural information for each of the proposed structures and colored renderings for each of the buildings—staff assumes a consistent theme through-out the site.
- Please select, specify and provide a materials and colors board/samples indicating the architectural material & color theme.

- Please provide trash enclosure locations on the site plan with an enlarged detail of the trash enclosures' architectural treatment.
- Please also provide the HVAC/RTU (roof-top units) or GMU (ground-mounted units)—if any on the elevations. RTUs and ground mounted units must be screened from public views.
- Please provide openings and penetrations including man doors, garage/docking stations, etc…. on the building footprint.
- Please provide setback dimensions of the building footprint distance from property lines.
- Please provide a typical cross-section detail of the screening/buffering berm proposed for the southwest corner of the property. (Berm must be 15-ft high with a maximum of 4:1 slope).

Landscape – Irrigation Plan Comments:

- Per Section 5.04.14-A, industrial sites with public-facing building entries such as the Connell administrative office building are required to have 15% of the area dedicated for landscaping.
- As the Connell Resources office site will be adequately landscaped, it does not need to be screened by the 15-ft earthen berm.
- Please consider re-configuring the screen/buffering berm to screen the plant's daily operations while allowing the Connell Resources office building visibility to the general public. (Reduce berm heights to 3-4-5-ft with shrubs, trees earth forms for parking lots screening and accents to compliment the building (with the brick or stone wainscots)
- Currently landscaping is shown as a perimeter screen accenting the earthen berm, however, please note street trees are also required on this site at a rate of (1) one tree per 40 linear feet (LF) of ROW.
- Per Section 5.04.14-C.1, the required perimeter landscape screen is (1) tree per 40-LF of site perimeter, with approximately 2,400-LF of road frontage (61) trees will be required of which 25% must be evergreen trees.
- As this is an industrial use site, options may be available to mitigate/satisfy the Towns' Landscape Code, such as off-site landscaping.
- Please adjust the Landscape Data Chart to reflect both street/ROW landscaping, and perimeter landscaping requirements.
- Please consider adding more tree species such as Pinus ponderosa, Pinus edulis, Quercus spp, etc…. for tree diversity.
- Please explore options for modifying the berm, sidewalk/ROW elements relationship and alignment and configuration to maximize screening effects, please refer to the redlined landscape plan.
- In lieu of the conventional engineered berms and landforms, please consider natural, aesthetically pleasing meandering natural earth forms.
- Please provide a landscape water use chart with landscape material & related water use calculations. (High VS Medium VS Low VS Xeric/Very Low).
- Please provide water use ratings (High-X; Medium-XX; Low-XXX; and Very Low/Xeric-XXXX) for each plant species specified in the Plant Schedule.
- Please note hydro-zones are required for water conservation (Grouping similar water-use plant species together for most-efficient irrigation practices).
- Please ensure all new and existing utilities including overhead power lines—if any on site are to be buried.
- Please provide horticultural information for the proposed plants that are not on the Town's recommended plant list. Any plant specie (Juniperus) not on the Town's preferred plant list should be at the very minimum classified as "Low" or "Very Low" water use.

- Please add more landscape materials around the administration office for shade and screening of on-site operation activities.
- Please provide sight distance triangles at the site's entries.
- Please note it shall be the responsibility of the owner to install, water and maintain the plant materials in accordance with these approved plans.
- Please note a dedicated POC/tap and meter is required for the irrigation system.
- Please provide more information for establishing the native grasses, currently the plan note says "Native seed to be irrigated by Contractor for establishment" explain how this is to occur.
- Please note Netafim with inline emitters 18" O.C. is only allowed in plant root zones, all other drip poly lateral runs where plant materials are not present shall be standard poly line. Netafim is recommended for tree canopy drip areas and dense plantings only.
- Main line pressure is a concern, 40-50 psi may be inadequate for proper emitter operations once the equipment and piping friction losses are taken into account, please specify an emitter make and model that functions properly at a lower PSI.
- With the slope and grade of the site, pressure compensating emitters are recommended.
- Provide a winterization note on the plans.

Other:

- Please provide a photometrics plan with fixture unit quantities in a legend.
- Please ensure all light fixtures are flat lens and true cut-off models to eliminate potential glare.
- All site lighting including night-time uses required for safety measures,(night-time activities should be limited) should meet Town's photometric standards & code.
- As this is a large site with areas that will not be used in day-to-day operations, how will potential weeds and blown trash and debris be managed??

Referral Review Comments:

- Please review and address all referral agency review comments:
  - Fencing plan will need to be reviewed by BNSF to ensure it complies with BNSF standards. Replace any impacted BNSF ROW fencing.
  - If grading on BNSF property is required, grading plan will need to be reviewed by BNSF, and permits will be required to occupy BNSF property as well as a BNSF supplied flagger will be required and paid for by agency or contractor
  - If access to BNSF property is required, an agreement with BNSF will be required as well as safety badging for all employees on BNSF property
  - Suggest monitoring and reducing the WB CR66 speed coming off that crest and crossing the tracks. Increased truck traffic across this crossing at high speed will rapidly degrade the crossing surface.
  - For CDOT comments the only revision we have for the TIS is to have the applicant's traffic engineer state whether the acceleration lanes onto I-25 (especially southbound) are up to the full Access code standards since this is predominantly a heavily-laden truck traffic generator.
  - The site plan shows a proposed berm being installed close to the existing OH power line. If the berm causes a compliance issue with the NESC clearances, Connell will be responsible for the costs to resolve the issue.

Thank you for the opportunity to comment on the site plans. These comments are provided for your use in refining and preparing the site plan package for the forthcoming Planning Commission hearing.

If you have any questions or comments, please do not hesitate to contact us.

Thank You;

Paul Whalen

TOWN OF WELLINGTON

Paul Whalen, AICP/PLA
Senior Planner
Phone: 970.568.3381
Email: whalenp@wellingtoncolorado.gov
Web: www.wellingtoncolorado.gov
8225 Third Street, Wellington, CO 80549

Connell Resources Asphalt Plant Referral Comments:

BURLINGTON-NORTHERN/SANTA FE RAILROAD COMMENTS:

BNSF Railway has reviewed these submittals. BNSF has not reviewed any design details or calculations for structural integrity or engineering accuracy. BNSF accepts no responsibility for errors or omissions in the design or execution of the project. If a contractor needs to work within 25 feet of BNSF track or within BNSF property, the contractor must contact BNSF Real Estate/Permitting consultant Jones Lang LaSalle (JLL) for a permit. Their contact information can be found on our website at www.bnsf.com. If any changes are made to the plans affecting BNSF property, plans must be resubmitted for review.

- Fencing plan will need to be reviewed by BNSF to ensure it complies with BNSF standards. Replace any impacted BNSF ROW fencing.
- If grading on BNSF property is required, grading plan will need to be reviewed by BNSF, and permits will be required to occupy BNSF property as well as a BNSF supplied flagger will be required and paid for by agency or contractor
- If access to BNSF property is required, an agreement with BNSF will be required as well as safety badging for all employees on BNSF property
- Suggest monitoring and reducing the WB CR66 speed coming off that crest and crossing the tracks. Increased truck traffic across this crossing at high speed will rapidly degrade the crossing surface.

Thanks,

Rafer Nichols, PE
Manager Public Projects (AZ, CO & NM)
BNSF **Railway**
rafer.nichols@bnsf.com
Office: (303) 480-6586

CDOT REGION 4 COMMENTS:

For CDOT comments the only revision we have for the TIS is to have the applicant's traffic engineer state whether the acceleration lanes onto I-25 (especially southbound) are up to the full Access code standards since this is predominantly a heavily-laden truck traffic generator. This should just be an exercise in Google Earth measuring I'd suspect.
We had a similar situation with an off-site truck stop in the last few years where the cross street didn't have any issues but the acceleration lane onto I-25 was too short and it was a big safety issue.

Thanks,
Tim Bilobran

POUDRE VALLEY REGIONAL ELECTRIC ASSOCIATION

Paul,

The site plan shows a proposed berm being installed close to the existing OH power line. If the berm causes a compliance issue with the NESC clearances, Connell will be responsible for the costs to resolve the issue.

Thanks,

Matt Organ
Distribution Design Supervisor
Poudre Valley Rural Electric Association, Inc.
o: 970.282.6436
pvrea.coop | Facebook | Twitter | Instagram | YouTube

LARIMER COUNTY PUBLIC HEALTH REVERRAL REVIW:

Hello Paul,

I just received a forwarded email regarding the Connell's Wellington Asphalt Plant requesting comments. I will be your health dept contact for this referral.

Please also feel free to send any other referral requests that you are interested in Health Dept comments my way in the future. We'd appreciate the opportunity to collaborate on projects with Wellington.

Thank you and look forward to working with you!

Lea

Lea Schneider
Environmental Health Planner

LARIMER COUNTY | HEALTH AND ENVIRONMENT

1525 Blue Spruce Drive, Fort Collins, Colorado 80524-2004, 970.498.6775, www.larimer.org/health/ehs/

TO: Paul Whalen
Senior Planner
Town of Wellington

FROM: Lea Schneider
Environemtnal Health Planner
Larimer County Department of Public Health & Environment

DATE: December 21, 2022

SUBJECT: Connell's Wellington Asphalt Plant Site Plan Referral Review

Larimer Department of Health and Environment (LCDHE) has reviewed the site plan application materials provided in the referral email dated November 29, 2022. In addition, LCDHE met with Connell Resources, Inc. on December 21, 2022. The following LCDHE comments include requirements of associated regulations as well as recommendations for the Town to consider for additional public health protections when evaluating the application for compatibility to the residential areas.

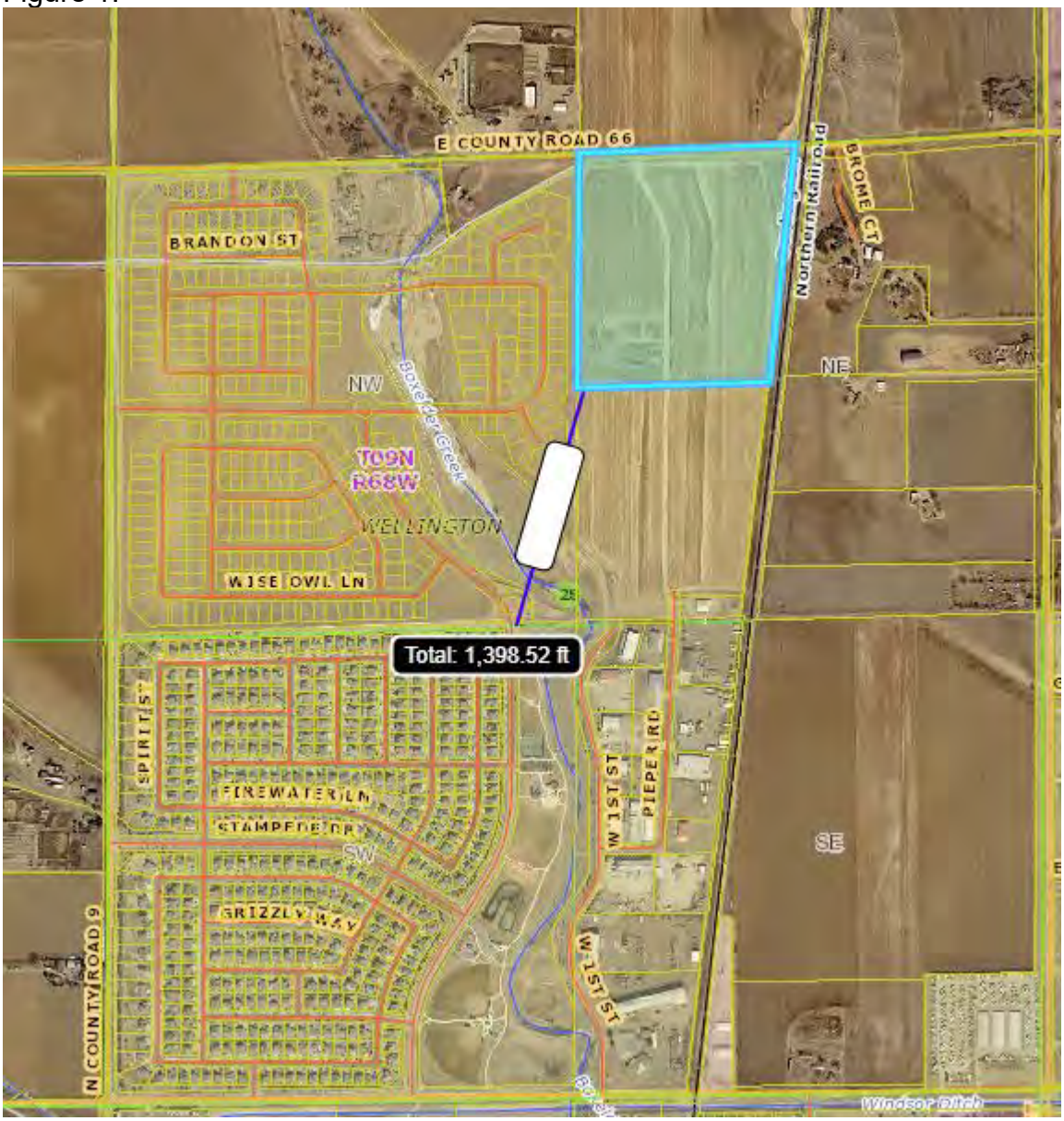
As a result of the submitted materials and meeting with Connell Resources, Inc., it is understood that Connell's existing asphalt batch plant operating near Timnath, Colorado, is proposed to be relocated to Parcel 8928000019 on East County Road 66 between North County Roads 7 and 9. The proposed improvements for the Site Plan include an office building, storage lean-to structure, welding and mechanical shop, garage, washing and fueling areas; landscaping and screening; paved parking, access and truck service roads; the relocated batch plant with associated cold storage bins, storage tanks/silos, resource stockpiles.

The operation will import and stockpile sand and aggregate resources via haul trucks for use in asphalt production, as well as process reclaimed asphalt pavement (RAP) on-site. Public utilities will supply water and sewer for new structures, while raw/well water will be transported from off-site for dust control during operations. Normal operating hours are between 7am to 6pm, Monday through Saturday with occasional work outside of normal operating hours for special projects such as evening construction for major traffic corridor infrastructure.

Though the property for the asphalt operation is zoned for I-Industrial uses under the zoning designation of Town of Wellington, there are residential uses in the area as shown in the Larimer County Assessor map shown below in Figure 1. A platted undeveloped residential community appears to be adjacent to the west and an existing developed residential community and outdoor recreational area to the south which are less than 1500 feet from the south property line of the asphalt property. The unincorporated parcels near the plant are zoned O-Open which is intended for rural

residential and agriculture uses. For this reason, it is recommended that the Town consider the residential compatibility as part of this review.

Figure 1.



Noise. Asphalt operations include noise generating activities such as road traffic, imported materials haulers, dump trucks for asphalt, off-road construction equipment with backup alarms moving aggregate resources around the site, crushing activities for RAP, conveyor belts moving material to the batch plant. For this reason noise impacts are recommended to be evaluated as part of this review process. It is not known if the Town of Wellington has a local noise ordinance, but Larimer County and the State of Colorado have standards for noise.

The County has adopted a noise ordinance (Ordinance No. 97-03) which specifies maximum sound levels of 55 dbA from 7am to 7pm at unincorporated residential

property lines as defined in the Ordinance. The ordinance is available on the County's website at: http://legacy.larimer.org/policies/noise.htm

In the absence of a Town of Wellington noise ordinance, the Colorado Revised Statute – ARTICLE 12 – Noise Abatement establishes noise levels at the property lines based on the use of adjacent properties which include residential areas except the adjacent parcel to the south which is also zoned I-Industrial.

Some site mitigations have been proposed including earthen berms of at least 10 feet to be installed along the north and west property lines; one-way haul truck movement on the site; location of noise producing activity to the northeast of the property; upgrading batch plant equipment. The Health Department recommends that the Town request a Predictive Sound Analysis with noise contour mapping to demonstrate that the proposed berms and additional mitigation strategies are adequate to protect future developed properties to the west and the existing residential uses to the north, but also to the east and the developed Buffalo Creek subdivision to the south/southeast.

It is also recommended that the operator signage include contact information such as a phone number and/or email for neighbors to report concerns directly to the operator in order to respond quicker to feedback for repairing or adjusting the noise-inducing activity.

Air Quality for Operations. Hot mix asphalt plants release air pollutants that are regulated by the Air Pollution Control Division (APCD) at the Colorado Department of Public Health and Environment (CDPHE). The primary pollutants of concern include particulate matter, carbon monoxide, nitrogen oxides, volatile organic compounds, and/or sulfur oxides. These criteria pollutants are regulated to meet the Environmental Protection Agency's National Ambient Air Quality Standards (NAAQS) which can be harmful to public health and the environment when not properly controlled. Additional noncriteria pollutants regulated by APCD include hazardous air pollutants (HAPS) as defined in the Air Quality Control Commission (AQCC) regulations..

Connell Resources, Inc. currently holds an APCD permit (00LR0746) for the asphalt batch plant proposed to be relocated to Wellington. This facility is routinely inspected by Larimer County Department of Health and Environment as contractors of APCD. A new APEN will need to be applied for and reviewed by APCD in order to establish new limitations and controls as part of the final construction (operating) permit for the new site. It is recommended that the Town request copies of the future applications and dust control plan for further evaluation on adequate controls for the residential uses.

LCDHE will continue to inspect the facility under the new air permit even within the Town of Wellington. Due to the lack of open mining on the property, aggregate material arriving pre-processed, and the current asphalt plant permit emission thresholds being in compliance with the NAAQS, it is not known if air emission dispersion modeling will be required for the future air permitting and will be evaluated by APCD at the time of APEN submittal.

To further evaluate the emission levels in relation to public health, compliance with NAAQS, and residential and recreation area compatibility, it is recommended that the

Town consider requesting emission dispersion modeling independent of the APCD permitting process to predict potential pollutant exposure. Air dispersion models are tools to approximate concentrations from one or more facilities or sources of air pollutants. When an air pollutant is emitted into the atmosphere, it is transported and dispersed by various atmospheric processes. Algorithms and equations have been developed to approximate (model) these atmospheric processes and have been incorporated into various computer codes (computer models). APCD typically uses the results from these computer models in their review of qualifying APEN/air permit applications. A modeled prediction is used to demonstrate if the emitting source will be in compliance with the NAAQS (as well as Colorado Ambient Air Quality Standards - CAAQS). If the model predicts an exceedance of the NAAQS and/or CAAQS, the applicant has the opportunity to adjust the facility emissions through operating hours, source parameters, source configuration, and other mitigation strategies in order to demonstrate compliance with all state and federal standards. Modeling is a good opportunity to examine control measures and potentially demonstrate compatibility with the residential and outdoor recreational uses.

Odors. Hot asphalt operations can produce odors depending on equipment, fuels, materials and processing. As part of compliance with the future air permit from APCD, the operation will be required to prevent excessive odors to comply with Colorado's Air Quality Control Commission Regulation 2 for Odor Emission. The regulation limits the emission of odorous air within areas used predominantly as residential or commercial purposes. This property in review is surrounded by a mix of commercial and residential uses as well as public recreation, therefore the more strict residential threshold for odors shall be complied with. Please note that it is a violation if odors are detected at property lines after the odorous air has been diluted with seven (7) or more volumes of odor free air using a nasal ranger operated by certified staff. Larimer County staff are certified in odor compliance and will evaluate complaints. Please note that compliance with APCD permitting and Regulation 2, as well as properly maintained and operating equipment will reduce the amount of emissions and therefore odors released from the property but does not create an odor-free operation.

Wetlands. No infromation was noted in the application materials regarding the intermittent waterway identified on the Larimer County Assessor's topography map. In referencing the Wetland Mapper developed by the U.S. Fish and Wildlife Service, the intermittent waterway has a preliminary identification as a riverine wetland. It is not known if there were earlier applications and/or discussions related to the topic of potential wetlands and a need for delineation.

Fugitive Dust during Construction. Colorado's air quality laws include requirements for controlling fugitive dust emissions during construction activities. Projects that are fewer than 25 acres and less than six months are not required to complete an APEN, but are still required to control fugitive dust and off-site transport. Additional information is avaible on the APCD website: https://cdphe.colorado.gov/apens-and-air-permits/air-permits-for-non-oil-gas

Water Quality. Potential water quality impacts associated with asphalt batch plants include sediments from in the truck wash down and stormwater runoff, and chemicals associated with the asphalt biding materials, fluids associated with trucks/off-road construction equipment, machinery and processing operations.

In this particular case, the submitted Ditesco drainage report indicates that a detention pond will be constructed in the southwest corner of the parcel with the intent to drain off-site. It is not known if there is a retention pond or other infrastructure to support the truck wash down area or other process water from the site.

Depending on the aforementioned process water and stormwater management, the non-extractive operations may be required to apply for either a 'Process and Stormwater Discharge Permit' or, if no process water will be discharged, a 'Stormwater Discharge Permit' from the Water Quality Control Division of the Colorado Department of Public Health and Environment. Please refer to the Water Quality Control Division's website: https://www.colorado.gov/pacific/cdphe/wq-commerce-and-industry-permits

A requirement for obtaining either permit is the preparation of a stormwater management plan. These plans must include identification of potential sources of pollution (including sediment, chemicals used in the mining operation, fuels, etc.) and selection of best management practices that will be implemented to control the potential pollutants. Under the terms of a state permit, the applicant is required to perform routine inspections and to prepare an annual report to address compliance with the stormwater management plan.

Fuel Storage Tanks. The Site Plan proposes the installation of on-site fuel storage and related pumping equipment. These items are regulated by the Colorado Department of Labor and Employment, Oil Inspection Section. Additional criteria may be required by the local fire authority. Information on their tank compliance plan submittal process is available at:
https://ops.colorado.gov/Petroleum/TankCompliance

December 6, 2022

Connell Batch Project

RE: Site Plan Application.

To whom it may concern:

The items in the list below are the minimum requirements and must be addressed during site design. Nothing in this review is intended to approve any aspect of these plans or this project that does not strictly comply with all applicable codes and standards. Any changes that are made to the plans will require additional review and comment by the Fire District.

- Fire Flow Requirement for Buildings – Per 2018 IFC, appendix B as amended.
- Fire Hydrant Location and Distribution – Per 2018 IFC, appendix C as amended.

  Specifically: After review of plans, this site may require additional fire hydrants and shall follow Section B105 spacing between hydrants.
- Fire Apparatus Access Road – Per 2018 IFC, appendix D as amended.

We have attached a copy of the Wellington Fire Protection District Resolution #2019-02 with the amendments for the 2018 IFC.

Please do not hesitate to contact our office with questions pertaining to this letter.

Best regards,

Everitt Pettit

Everitt Pettit
Deputy Fire Marshall Wellington
Fire Protection District

Wellington Fire Protection District

8130 3rd St, P.O. BOX 10, Wellington CO 80549
Phone: (970) 568-3232 Website: www.WFPD.org

WELLINGTON FIRE PROTECTION DISTRICT
RESOLUTION #2019-02

A RESOLUTION ADOPTING THE 2018 EDITION OF THE INTERNATIONAL FIRE CODE, AS AMENDED, REGULATING AND GOVERNING CONDITIONS HAZARDOUS TO LIFE AND PROPERTY FROM FIRE AND EXPLOSION, AND PROVIDING FOR THE ISSUANCE OF PERMITS FOR HAZARDOUS USES OR OPERATIONS.

WHEREAS, the Board of Directors of the Wellington Fire Protection District (District) has previously adopted the 2012 International Fire Code and relative Appendices, as amended.

WHEREAS, the Board of Directors deems it necessary to adopt the following code for the purpose of establishing rules of conduct and standards for the protection of life, health, property, security and welfare of the inhabitants of the District; and

WHEREAS, the Board of Directors has considered the effect of fire code enforcement within the boundaries of the District and has determined that enforcement of the proposed code would not cause undue hardship or suppression of economic growth within the District; and

WHEREAS, the Board of Directors has studied the necessity for a realistic and reasonable level of fire protection to be provided by the District.

NOW, THEREFORE, be it resolved by the Board of Directors of the District in the County of Larimer, State of Colorado, that:

1. The District Board of Directors adopts the 2018 International Fire Code and relative Appendices, as amended, (EXHIBIT A).

ADOPTED AND APPROVED this 15th day of May 2019.

WELLINGTON FIRE PROTECTION DISTRICT

By _____
President/Chair

ATTEST:

By _____

LARIMER COUNTY | ENGINEERING DEPARTMENT

P.O. Box 1190, Fort Collins, Colorado 80522-1190, 970.498.5700, Larimer.org

MEMORANDUM

TO: Paul Whalen, Town of Wellington Planning Department

FROM: Steven Rothwell, Larimer County Engineering Department

DATE: January 9, 2023

SUBJECT: Connell Batch Plant – Wellington Site Plan Referral

Project Description/Background:

This is a referral from the Town of Wellington for an Asphalt Plant for Connell Resources. The project is located southwest of the LCR 66 and the BNSF rail line intersection.

Review Criteria:

Larimer County appreciates the opportunity to review this project and recognizes that this project is different than a project subject to Larimer County regulations. Many of the recommendations stated below are based on issues and concerns that commonly arise with similar projects in the County. We have requested information and made recommendations that we feel are essential to this project and its impacts to the site and surrounding areas. Requirements specific to Larimer County infrastructure, such as unincorporated roadways, have been provided as well.

Engineering Comments:

The site is outside of a Growth Management Area and therefore would need to comply with the Larimer County Rural Area Street Standards (LCRARS).

TIS Review:

1. The Traffic Impact Study (TIS), included with this application has been conducted unitizing the Town of Wellington's Standard Design Criteria and Standard Construction Requirements. Larimer County will require that the TIS be revised to follow the Criteria shown in Appendix F of the Larimer County Rural Area Roadway Standards (LCRARS) as most offsite intersections impacted by this development fall within the unincorporated area.
2. Larimer County requests clarification on the following TIS scoping parameters.
    - Trip distribution – Clarification on finished product (Where is it going?) Are we to assume that all trips hauling to and from the sight with the finished product are to head east via CR66, proceed north on CR7, west along CR70, and then exit the County's roadway system onto I-25?

- How will these haul routes be enforced? Are specific conditions of approval being proposed?
- The trip generation appears low for a plant of this capacity, how were these numbers determined?
- Are the peak numbers averaged over the entire year or are they representative of peak season?
- Were bicyclists considered in the evaluation of the proposed haul routes? CR70→CR7→CR66→CR9 is a frequented route for both road and gravel cyclists. We have significant concerns with regards to the safety of cyclists with an increase in heavy truck traffic of this magnitude.

3. Under the current criteria, the TIS states that
4. Larimer County will require that the following intersections be evaluated using LCRARS Appendix F criteria.
   - (CR70&CR7, CR66&CR7, CR66&CR9, CR66&Site Access, CR9&62E, CR9&HWY1)
5. CDOT should also be made aware of this project as it may have implications on their planned HWY 1 realignment at CR9 and CR62E.

<u>Adjacent and/or Offsite Roadway Improvements:</u>

1. Larimer County's Land Use Code Article 4 requirements specific to Adequate Public Facilities require that roadway segments that experience vehicular traffic volumes in excess of 400- trips/day be paved. The existing plus proposed traffic volumes for CR66 exceed this threshold. Paving will be required for the segment of CR66 from the current town limits (west of Boxelder Creek) to CR7. The paved roadway section will need to consist of a 28-ft paved surface to accommodate a minimum of two 12-ft lanes and two 2-ft shoulders. It is strongly recommended that this section be carried through to CR7.
2. Additional considerations will need to be given for Cyclists along CR66. Shoulders wider than the required 2-ft may be needed to provide a safe corridor for cyclists adjacent to heavy haul trucks.
3. The existing railroad crossing will need to be updated. It appears that this issue is already being considered.
4. Under the current criteria, the TIS states that a northbound right-turn lane approaching the LCR70/LCR7 intersection will be required in the short-range projections, and a southbound right-turn lane approaching the LCR7/LCR66 intersection will be required in the long range (2045) projections. Improvements required by either short-range or long-range projections are to be completed at the time of development. Expectations for long term build out by others is not acceptable.
5. Depending on the requested revisions to the TIS, offsite improvements may be required at several the intersections highlighted previously.

Annexations and Maintenance Agreements:

1. Larimer County requests that County Road 66 (CR66) be annexed from its current annexation limits due west of the Boxelder Creek crossing to the eastern limits of the subject parcel (Railroad Crossing).
2. It is recommended that the Town of Wellington coordinate with Larimer County's Road and Bridge Department to discuss possible revisions to any existing CR66 Road Maintenance Agreements between the Town and the County as a result of this proposal.

Drainage and Erosion Control Issues:

1. Staff will require that measures be taken to control erosion and sedimentation during all phases of construction. We will also require that, after the temporary activity is complete, all disturbed areas are repaired to a condition that is equal to or better than the existing condition. A plan for addressing Erosion and Sediment Control will be needed for all work being completed in or adjacent to unincorporated areas.
2. This proposal lies within the Boxelder Drainage Basins and is subject to its requirements. The Boxelder Basin Master Plan assumes that developed flows be restricted to a release rate of no greater than 0.2 cfs/acre. Due to the site's proximity to Boxelder Creek. Larimer County requests that the Boxelder specific release rate be adhered to.

Floodplain:

1. There is a FEMA Floodplain Zone AE (Floodway) and FEMA Floodplain Zone AE (Flood Fringe) near the proposed site for Boxelder Creek.

   Any development within the floodplain will require an approved floodplain development permit and potentially a variance from the County Engineer with a recommendation for approval from the Flood Review Board.

   Please note that the definition of development for floodplain regulatory purposes "includes any manmade change to improved and unimproved real estate, including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, excavating, or drilling operations."

Construction and Permitting:

1. The current set of Construction Plans have been reviewed and redlines by Larimer County Engineering. See attached. We may have additional comments and/or redlines with future submittals.
2. The provided Geotechnical Report recommends that a 6-in asphalt (HMA) section be provided over a 6-in Aggregate Base Coarse (ABC) with 12-in of Stabilized subgrade. The construction plans show 5-in HMA over 6-in ABC with an untreated subgrade. Moving forward, please update the construction plans to reflect the recommendations provided in the Geotechnical Report.

3. Any access construction on County Road 66 or work in the County right-of-way, will require an Access or Right-of-Way Construction Permit from this office. Access information and permits can be obtained by contacting Scott Hamilton, Access & Utility Permit Coordinator, at (970) 498-5709.
4. If one acre or more of land is disturbed with this development, the applicant is required to apply for a Stormwater Construction Permit from the Colorado Department of Health and Environment.
5. The site has drainage and/or wetlands showing on the USGS topo mapping. It is the applicant's responsibility to confirm with the US Army Corps of Engineers, whether these water bodies are within their regulatory authority, and whether any of their permits are applicable for your work in and around the banks of the channel and/or wetland. The local Corps contact for this district is shown below.

   Aaron R. Eilers
   U.S. Army Corps of Engineers – Omaha District
   Denver Regulatory Office
   9307 South Wadsworth Blvd
   Littleton, CO 80128
   (303) 979-4120
   aaron.r.eilers@usace.army.mil

Appeals and Variances:
The applicant has not included any appeals or variance requests to Larimer County Specific Development Standards or Criteria at this time.

Staff Recommendation:
We appreciate the opportunity to provide comments on this proposal. Please feel free to contact either myself at (970) 498-5715 or e-mail me at srothwell@larimer.org or our County Engineer, Mark Peterson, at (970) 498-5714 or by email at petersmr@co.larimer.co.us if you have any questions. Thank you.

cc: whalenp@wellingtoncolorado.gov
petersmr@co.larimer.co.us
rmcdaniel@larimer.org
shambotl@co.larimer.co.us
tjuergens@larimer.org
File

Attachments:
LCRARS Appendix F Standards
Construction Plans (LC Redlines)

Air Pollution Control Division
Small Business Assistance Program

Fact Sheet – Environmental Regulations for Hot Mix Asphalt Plants

In order to protect and preserve Colorado's public health and valuable resources, hot mix asphalt plants (or facilities) must adhere to strict air, water, and waste requirements administered by the Colorado Department of Public Health and Environment (CDPHE). As Colorado moves forward, so has the need for asphalt materials. Today, over 12 million tons of hot mix asphalt are produced by over 60 hot mix asphalt facilities in Colorado each year.

This fact sheet provides an overview of the asphalt production process and the environmental requirements that apply to hot mix asphalt facilities in Colorado.

The Asphalt Production Process

Hot mix asphalt paving materials are a mixture of aggregate, sand, asphalt binder, and may include recycled asphalt pavement. The hot mix asphalt process involves mixing the crushed aggregate with asphalt cement (a product of oil refining that acts to glue the aggregates together) to form a hot asphalt mixture that can be laid down as a smooth road surface.

Air Emissions

Controlling the emission of harmful pollutants into the air is the guiding principle behind the state's air quality standards. Stringent limits are set for a range of pollutants based on their known effects to human health and the environment. Technology and control systems are available to hot mix asphalt facilities so that they comply with the air quality standards of the State of Colorado. Operation and Maintenance Plans are submitted by the permittee to ensure and document that their controls are working in the most efficient manner. In addition, dust control plans are required to be in place to control fugitive dust from material storage and handling areas and from trucks traveling on haul roads.

Hot mix asphalt plants have the potential to emit: volatile organic compounds (VOCs), carbon monoxide (CO), nitrogen oxides (NO_x), sulfur dioxide (SO_2 - if sulfur is present in the fuel), and particulate matter (PM). Asphalt plants are required to install controls or take other measures to reduce harmful air emissions. These measures and controls include counter-flow mixing equipment technology, baghouse systems to control particulate emissions, enclosed or partially enclosed conveyor systems, and top-of-silo emission recovery systems. In addition, best management practices to minimize emissions during hot mix asphalt production have been established by the asphalt industry. These best management practices include guidance on facility operation and maintenance to maximize efficiency and minimize emissions. Natural gas is a common fuel for asphalt plants. Therefore, the emissions from a plant fueled by natural gas are similar to a household furnace.

➢ New Source Performance Standards (NSPS): CFR 40, Subpart I - Standards of Performance for Hot Mix Asphalt Facilities

All Colorado hot mix asphalt plants are required to comply with federal requirements called *New Source Performance Standards* provided in Colorado Regulation No. 6, Part A, Subpart I, *Standards of Performance for Hot Mix Asphalt Facilities*. The performance standard limits the particulate emissions from the hot mix asphalt plant. To show that the hot mix asphalt plant can meet the air emission limits, the owner/operator must conduct a performance test for particulates, opacity, and sometimes CO emissions. Generally, the test is conducted within six months after the hot mix asphalt plant receives an initial approval to construct the plant.

➢ Air Emission Reporting Requirements

An Air Pollution Emission Notice (APEN) is a form used to report a facility's emissions. Operators of hot mix asphalt plants are required to submit an APEN to the Air Pollution Control Division if air emissions exceed the Reporting thresholds presented in Table 1. The APEN form is titled, "Hot Mix Asphalt – Specialty APEN" and is available through the APCD and online at: www.colorado.gov/pacific/cdphe/specialty-apens

Table 1
APEN Reporting Thresholds

	Attainment (Ton per year)	Nonattainment (Ton per year)
Criteria Pollutants (NOx, Ozone)	2	1
Other Criteria Pollutants (CO, SOx, PM, PM-10, etc.)	2	1
Non-Criteria Pollutant (HAPs & other reportable pollutants)	≥ 250 pounds per year of any individual non-criteria reportable pollutant	

Once submitted, the APEN is valid for five years. The APEN includes information on the location and ownership of the site and detailed information on the site-specific process equipment and air pollution control measures. The APCD uses the information provided on the APEN to write an air permit for the plant if it is needed.

➢ *Air Permits*

All hot mix asphalt plants must submit an APEN form and obtain an air permit if emissions are equal to or greater than reporting levels listed in Table 2.

Table 2
AIR PERMIT Reporting Thresholds

Pollutant	Uncontrolled Actual Emissions (tons per year)	
	Attainment Area	Non-attainment Area
VOC	5	2
PM 10, PM 2.5	5	1
TSP, CO, SOx, NOx	10	5
Non-Criteria Pollutant (HAP)	10 per each pollutant	

Your air permit defines the type of air pollution control measures that will be used, sets air pollutant emission limits, includes recordkeeping requirements, and requires you to mark the air permit number on each piece of equipment subject to the air permit. Take the time to review your air permit and be familiar with your regulatory requirements.

An Air Permit Includes…

- Limits on annual asphalt production
- Required air pollution controls
- Opacity (visual emissions) limitations
- Recordkeeping requirements
- Operating and maintenance requirements
- Other key areas that may need to be addressed e.g., methods for controlling fugitive dust at the site.

In Colorado, Construction Permits are issued in two phases: "Issuance 1" and "Final Approval to Operate".

- Issuance 1 of a permit allows the plant to be constructed and begin operation. The source must self-certify to Issuance 1 of the permit once in operation within 180 days of receiving the first issued permit.
- After the owner certifies that the operation is in compliance with the conditions of Issuance 1 of the permit, the Division issues a "Final Approval to Operate" letter to operate under the conditions of Construction Permit Issuance 1. This letter confirms the completion of the self-certification requirements of that permit. The source is issued an invoice for processing time for this letter, and must pay the invoice within 30 days of receipt. Please note that if the permit processing fee is not paid within 30 days of receipt, you will be in violation of your permit conditions and may result in revocation of the permit.
- If the source modifies an existing permit, the source will be issued Construction Permit Issuance 2 (Issuance number determined by modification sequence). The source may have to self-certify to the new Issuance if required by the permit.

The final approval air permit is valid for the life of the equipment. In the event of a change of ownership or equipment, a revised APEN form must be filed and will result in a new Issuance number.

Air Inspections and Enforcement

The APCD enforcement staff conducts routine inspections of Colorado HMA plants to ensure that plant operators are properly maintaining the required air pollution equipment, keeping records, and complying with all conditions of the air permit. Most hot mix asphalt plants are inspected every 3 to 5 years, while others are inspected annually. The APCD also responds to citizen complaints on dust, odor, or noise problems at HMA plants. When a permit violation or noncompliance issue leads to enforcement proceedings, corrective action is required and fines up to $15,000 per day can be levied against plants.

Frequently Asked Question:

When I drive by an asphalt plant, what is it that I see coming from the plant?

Often this is steam produced from the moisture in the aggregate when dried. This steam may be mistaken for smoke, especially in cold weather. Visual emissions of smoke are regulated and restricted.

Stormwater/Colorado Discharge Permit System (CDPS)

Almost all Colorado hot mix asphalt plants are required to obtain a Stormwater General Permit for Light Industrial Activity or to be covered under a Stormwater General Permit for Construction Activities if the plant is dedicated to a specific construction site covered by this permit.

Stormwater refers to runoff resulting from rain or snowmelt events. When stormwater comes into contact with plant operations or storage piles, it can become contaminated with sediments, oil and grease, or other pollutants that could impact Colorado waterways. The Stormwater General Permit requires a hot mix asphalt plant to develop and implement a Stormwater Management Plan (SWMP) that includes best management practices to prevent the discharge of pollutants in stormwater runoff. In addition, spills of oil or fuel of greater than 25 gallons, or spills of any size that reach State waters, must be reported to CDPHE. Spill remediation and monitoring is required.

Stormwater and process water permits are issued under the Colorado Discharge Permit System (CDPS) administered by the CDPHE Water Quality Control Division (WQCD).

Solid and Universal Waste

A typical hot mix asphalt plant does not generate hazardous waste and generates very little solid and universal waste. Some wastes, such as petroleum-contaminated soils, may be reused in the asphalt production process. All wastes must be properly managed and disposed of.

Community Right to Know

On March 1 of each year, every hot mix asphalt production facility is required by state and federal law to report the storage of regulated onsite chemicals. This information is sent to emergency planning organizations. Concerned citizens can obtain this public information from state and federal agencies.

Questions?

The air, water, and waste environmental programs at CDPHE work together to answer questions and help businesses understand and comply with environmental regulations. If you have questions on the requirements for hot mix asphalt plants in Colorado, please contact the resources listed below:

- **Air Emission Reporting and Permitting:**
  Small Business Assistance Program (SBAP)
  (303) 692-3175 or (303) 692-3148
  www.colorado.gov/pacific/cdphe/small-business-assistance-program-sbap

- **Wastewater and Stormwater Permitting:**
  Water Quality Control Division
  (303) 692-3500
  www.colorado.gov/pacific/cdphe/clean-water

- **Solid and Universal Waste Management:**
  Generator Assistance Program (GAP)
  (303) 692-3415 or Hotline: (303) 692-3320
  www.colorado.gov/pacific/cdphe/hm

Asphalt plant

Aimee Smith <[redacted]>

Mon 3/6/2023 4:03 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

To whom it may concern,

I am unable to attend the meeting tonight but would like it known that I think having an asphalt plant is extremely detrimental to everyone's health and well-being. Those are toxins being put into the air that we all breathe increasing the risk of lung disease, cancers, and health issues. I have lived in Wellington for 20+ years and like it because the air is cleaner and it is less populated. We already have water shortages and unhealthy water now we may risk exposure to bad air.
As a nurse and holistic nutritionist, all of these exposures increases are risk of disease and peoples lives aren't worth having a plant. Please take these things into consideration and reject this plant for the sake of all residents!

Sincerely,
Aimee Smith
Viewpointe neighborhood.

Sent from my iPhone

ASPHALT PLANT

Lloyd J. Thomas, Ph.D. <[redacted]>

Mon 3/6/2023 3:07 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

To whom It May Concern,

I just now saw a copy of the letter regarding the proposed asphalt plant I cannot make the meeting on this short notice, but I am horrified our town would even consider such a plant. We are a bedroom community and such a plant would pose a myriad of toxins and noises I certainly hope the town is not that desperate for revenue that you would sacrifice the residents' health. Count me and my wife as a definite NO

Concerned and Unhappy,

Lloyd J. Thomas, Ph.D.
3421 Polk Circle West
Wellington, CO 80549

Asphalt Plant

Brittany Cowan <[redacted]>

Mon 3/6/2023 2:47 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

We are unable to come to tonight's planning meeting, but want to make it known that our family is NOT in support of the plan for an asphalt plant near Wellington.

Thank you for all you do and we hope you take this into consideration to keep our town safe for all members.

Thank you,
Jade and Brittany Cowan

Please add to the Connell Resources Packet

Ben Leistikow <[redacted]>
Mon 3/6/2023 2:38 PM
To: Paul Whalen <whalenp@wellingtoncolorado.gov>;Cody Bird <birdca@wellingtoncolorado.gov>

Cody and Paul,

I'm submitting the attached letter and documentation to be added to the packet for the Connell Resources Planning Board meeting. Please let me know if there are questions.

Thank You
Ben Leistikow
[redacted]

March 2, 2023

Dear Planning Board,

The intent of this letter is that the Connell site plan doesn't meet the more stringent requirements that apply to toxic chemicals and so cannot be located at the proposed location. Land use code 4.03.21,B, regarding the production and curating of toxic chemicals requires these sites to be located at least 2,640 feet from any residential district, religious land use, medical care facility, or school.

Batch asphalt plants produce toxic chemicals in the forms of HAPs and PAHs and produce asphalt which is also toxic until it hardens per OSHA. The toxicity of each HAP can be found in the Agency for Toxic Substances and Disease Registry (ATSDR). The Merriam-Webster dictionary states that to cure or curing is to prepare or alter especially by chemical or physical processing for keeping or use. Batch asphalt plants physically change aggregate and chemicals to be asphalt so that if can be used in roads, which seems to meet the definition of curating.

Webster dictionary describes curate as to select for distribution and Vocabulary.com describes curate as organize and oversee items. The Connell plant team will be overseeing the production of asphalt and distributing it around the area so it also meets these requirements.

This batch asphalt plant produces and curates toxic chemicals. The planning board should not approve this plan due to the producing and curating setback of 2,640 feet. There is no variance for this specific setback.

Thanks for your consideration,
Ben Leistikow

Toxic Organic Micropollutants and Associated Health Impacts

- Muhammad Ijaz,
- Toqeer Ahmed &
- Alishbah Iftikhar Ahmad

- Chapter
- First Online: 28 June 2022

- **152** Accesses

Part of the Emerging Contaminants and Associated Treatment Technologies book series (ECAT)

Abstract

Toxic organic micropollutants (TOMPs) are produced during any incombustion process e.g., industrial plants and road transport. These chemicals are highly toxic and some of these are carcinogens. These include poly aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), polychlorinated dibenzodioxins (dioxins), polychlorinated dibenzofurans (furans), and polybrominated diphenyl ethers (PBDEs). PAHs are emitted from municipal incinerators, coal gasification plants, aluminum industries, and coal tar and asphalt production facilities. PCBs have been used as a coolant in electric transformers and capacitors. Other uses include as a plasticizer in plastics, paints, dyes, carbonless copy papers and during heat transfer. The main sources of dioxins and furans are incinerators, industrial processes, incomplete combustion, and volcanic eruption. PBDEs are flame retardants and have been used in plastics, electronic enclosures, cell phones, personal computers, textiles, foam-based packaging, adhesives, and paint products.

There is no threshold limit for these pollutants as these can cause health damages even in small quantities. PCBs have been declared as Group I carcinogens by the International Agency for Research on Cancer (IARC). PCBs are also linked with adverse effects on kidney, liver, endocrine, and neurological systems. PAHs are genotoxins with irreversible genetic damage to humans. Exposure to PAHs leads to risk of lung, bladder, and skin cancers. Dioxins and furans cause cancer, endocrine disruption, effects on reproductive systems, and impairment of immune system. PBDEs are associated with neurodevelopment, liver and thyroid dysfunction, and endocrine disruption.

https://link.springer.com/chapter/10.1007/978-3-030-96523-5_9

Once released into the environment, these micropollutants undergo physical, chemical, and biological processes such as atmospheric transport, volatilization, deposition, partitioning, and bioaccumulation. There is a need to implement regulatory measures for safe handling, transport, and use of organic micropollutants and to reduce the health impacts through appropriate treatment.

Keywords

- **Carcinogenic**
- **Health impacts**
- **Organic micropollutants**
- **Toxicity**

References

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  CrossRef CAS Google Scholar

Rev ew > Env ron Mo Mutagen. 2005 Mar-Apr;45(2-3):106-14. do : 10.1002/em.20095.

Carcinogenic polycyclic aromatic hydrocarbon-DNA adducts and mechanism of action

W am M Ba rd [1], Lou sa A Hooven, Br nda Mahadevan

Aff at ons

PM D: 15688365 DO : 10.1002/em.20095

Abstract

Po ycyc c aromat c hydrocarbons (PAHs) are a c ass of w despread env ronmenta carc nogens. Most of our know edge of the r mechan sms of metabo c act vat on to DNA-b nd ng "u t mate carc nogen c" metabo tes has come from ana ys s of the DNA nteract on products formed by these h gh y react ve ntermed ates. Stud es of the r ro e n form ng DNA-b nd ng ntermed ates dent ca to those formed n v vo from the PAH tse f have a so a owed dent f cat on of the part cu ar cytochrome P450 enzymes nvo ved n act vat ng var ous structura c asses of carc nogen c PAHs. t has been estab shed that PAHs, after metabo c act vat on n v vo, are capab e of nduc ng mutat ons n oncogenes and, by nduc ng mu t p e mutat ons, may resu t n tumors. PAHs a so cause changes n ce u ar gap- unct on commun cat on s m ar to those caused by the tumor promoter 12-O-tetradecanoy phorbo -13-acetate. Thus, PAHs may a so act through a promot ona mechan sm n add t on to serv ng as tumor n t ators. Prev ous stud es on these mechan sms are descr bed and summar zed.

Related information

MedGen
PubChem Compound
PubChem Compound (MeSH Keyword)
PubChem Substance

LinkOut - more resources

Full Text Sources
W ey

Other Literature Sources
The Lens - Patent C tat ons

Miscellaneous
NC CPTAC Assay Porta

3/3/23 Town Planning Meeting

Kimjosh Cruz-Rodenbeck <[redacted]>

Mon 3/6/2023 2:24 PM

To: Calar Chaussee <chausseec@wellingtoncolorado.gov>;Rebekka Dailey <daileyrm@wellingtoncolorado.gov>;Jon Gaiter <gaiterjm@wellingtoncolorado.gov>;Brian Mason <masonb@wellingtoncolorado.gov>;David Wiegand <wiegandd@wellingtoncolorado.gov>;Shirrell Tietz <tietzs@wellingtoncolorado.gov>;Cody Bird <birdca@wellingtoncolorado.gov>

To the Mayor, Trustees and Adjustment Board of the Town of Wellington,

I am one of your con tituent who live in the Buffalo Creek Subdivi ion I would like to take thi opportunity to express my disappointment in the process that has led to the town approving the height and distance from residential zoning variances awarded to the proposed asphalt plant that is to go into the commercially zoned land just north of the Wellington Community Park.

I heard about the asphalt plant only AFTER the variances had been approved. I was not afforded an opportunity to sit in on the meeting in which this approval happened, make public comment about the then proposed asphalt plant or even know that it was in the works. The only way I found out about it was through my HOA after the fact. I am not ure what the legal requirement for public notification are, but I feel like the town ha let all of u down, if not legally, then morally. An asphalt plant within 2 miles of two schools and the largest park in town where the most vulnerable members of our community congregate for hours a day does not seem like an appropriate location for a plant that we already know will spew out toxic chemicals into our air.

I have sought out research on all sides of the issue, hoping to find independent research that indicates that asphalt plants cause zero harm to those who are exposed to them over the long term. The only research I have found that says it's safe is paid for by the asphalt industry. All other research, domestic and international, has documented harmful effect to tho e who live, work and go to chool near a phalt plant

I implore all of you to put the brakes on this project. Give your constituents an appropriate opportunity to voice their concerns by properly advertising all meetings regarding the asphalt plant. You represent US. You are duty bound to make ure WE are a educated a po ible on thi pivotal deci ion for OUR town

Based on my current understanding of the research, I know that I do NOT want an asphalt plant anywhere in the town of Wellington. I don't want my children playing near it, going to school near it or living near it. We already have issues with the water in thi town Plea e don't give u i ue with our air al o

Respectfully,
Kim Cruz-Rodenbeck

Re: Asphalt Plant in Wellington

Amanda Barry <[redacted]>

Mon 3/6/2023 2:08 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Cody,

I apologize for this email not being any more eloquent or detailed than I'd like it to be, but I am just now seeing the notice of today's town planning meeting about the proposed hot asphalt plant behind Wellington Community Park, and I don't have time to articulate all of which I'd like to express by the 3pm deadline. It's important to me to at least quickly express that my wife and I do not support having said asphalt plant here, or anywhere else nearby that isn't REMOTE.

To keep it direct, our main reasons are exactly what is listed on this flyer that was left at our door. The health impact, air and noise pollution, loss of property value, etc. Literally everything laid out on this flyer is what we would argue if we were able to attend the town meeting.

Last year alone, I was floored at how many Air Quality warnings and notices we got for Wellington as the climate currently stands. We do not need anything else adding to the cause of the preexisting conditions.

My wife and I don't have any children of our own, but there are a number of children in our housing community that ACTUALLY play outside, riding bikes, scooters, and running around. They play at the park that will be directly impacted by this asphalt plant. That's a lot of lungs, breathing a lot of air, that will breathe in a lot of unnecessary toxins if this plant starts up. Additionally, when our nieces and nephews visit, we will be very uncomfortable having them run around outside, and won't want to bring them to that park. We also have outdoor animals that we'd prefer breathe the cleanest air possible.

For the sake of, and well being of, all humans, animals, and our planet, we respectfully demand that this plant be forbidden from operating in our town.

Please let us know if there is anything else we can do. Thank you for your time.

Infinitely,

Amanda Barry and Ashley Cummings
Residents of Wellington, CO

P.S. How can I keep myself up to date with this? Will there be reports published that I can access to follow the progress?

Asphalt Plant Email Planning Committee

Dave Perricone <[redacted]>
Mon 3/6/2023 2:06 PM
To: Cody Bird <birdca@wellingtoncolorado.gov>

Dear Planning Board,

The intent of this letter is to bring attention to the land use code 4 03 21,B, 1 It states that any Industrial or Manufacturing, Heavy use producing and curating toxic chemicals or conducting animal slaughtering shall be located at least 2,640 feet from any residential district, religious land use, medical care facility, or school The town has due diligence to find the correct unbiased research and data to make sure the land use code is properly followed What research and data were used to make the decision that this Heavy Industrial Batch (hot) Asphalt Plant does not meet the criteria for producing and curating toxic chemicals?

I contacted the Colorado Health Department to answer my questions and those answers conflict with decisions made by the town Batch Asphalt plants do produce, discharge and curate toxic chemicals in the forms of HAPs and PAHs. The Colorado Health Department describes these toxic chemicals as Hazardous Air Pollutants (HAPs). The main HAPs are Formaldehyde, Acetaldehyde, Benzene, Toluene, Ethylbenzene, and Xylene I also found that Hydrogen Sulfide, Chromium, Cadmium, and Arsenic can also be found as toxic pollutants at various levels in asphalt plant emissions The town can even calculate how many pounds of formaldehyde this plant will produce and discharge in an area that has a Community Park, neighborhoods, Library, and 2 Schools. If this plant uses recycled asphalt, it can emit higher levels of HAPs and PAHs due to the recycled asphalt composition

According to the Toxicology and Environmental Epidemiology Department of the Colorado Department of Public Health and Environment, current regulations for this type of asphalt plant only assess particulate matter emissions There is no information about the levels of HAPs and PAHs that would surround this plant and or changes that would happen with distance. Additionally, this plant will be producing hot asphalt which is a toxic chemical product, it is only nontoxic when it is fully hardened and not releasing toxic fumes OSHA has a section on asphalt (Bitumen) fumes and explains that when exposed to this petroleum product, health effects from exposure include headache, skin rash, sensitization, fatigue, reduced appetite, throat and eye irritation, cough, and cancer.

Pregnant women and children are the most susceptible to breathing these known HAPs and PAHs. The American Journal of Obstetrics studies revealed that PAHs, can be found in the placenta and exposure is associated with adverse pregnancy outcomes. The CDC has found an association between Benzene and spina bifida during maternal exposure Formaldehyde is a known carcinogen, and according to the National Library of Medicine is linked to spontaneous abortions, congenital malformations, and premature birth. Children face more risks from toxic chemical pollution because they have a faster breathing rate which leads to absorbing more toxic chemicals than adults and are outside for longer periods of time.

This batch asphalt plant produces and curates' toxic chemicals. The planning board should not approve this plan due to the production and curating setback of 2,640 feet There is no variance for this specific setback

Wellington has ample space and there is absolutely no reason this plant should be active so close to the neighborhoods of the town.

Thanks for your consideration,
David Perricone
6601 Viburnum St
Wellington, CO 80549

From: Brickey - CDPHE, Jonathan jonathan.brickey@state.co.us
Subject: Questions on asphalt plant pollutant emission
Date: Jan 6, 2023 at 2:58:33 PM
To: ayla.leistikow@gmail.com
Cc: cdphe_toxcall - CDPHE, CDPHE cdphe_toxcall@state.co.us

Ayla,

My name is Jonathan Brickey, and I'm a unit supervisor with the Colorado Air Pollution Control Division. You had submitted some questions about asphalt plants, and I believe I can help with at least one: "Do batch asphalt plants process and curate toxic chemicals?"

While there is no state definition of "toxic chemicals" specifically, we do regulate Hazardous Air Pollutants (HAPs), which are defined in our regulations as:

"[A]ir pollutant that presents through inhalation or other routes of exposure, a threat of adverse human health effects (including, but not limited to, substances that are known to be, or may reasonably be anticipated to be carcinogenic, mutagenic, teratogenic, neurotoxic, that cause reproductive dysfunction, or that are acutely or chronically toxic) or adverse environmental effects whether through ambient concentrations, bioaccumulation, deposition, or otherwise and that has been listed pursuant to Section 112 of the Federal Act, or Section 25-7-109.3 of the state Act."

When it comes to asphalt plants, the main HAPs emitted into the air are formaldehyde, acetaldehyde, and benzene, toluene, ethylbenzene and xylene (collectively known as BTEX), along with smaller amounts of other HAPs.

The exact amount of projected HAPs emissions depends on the type of asphalt plant and what type of fuel is burned by the plant. Projected emissions are based on "emission factors", which are multiplied by the total amount of produced asphalt to estimate the emission rate. Here's a table of HAP emission factors used for

asphalt production:

		HAP Emission Factors (lb HAP/ton of asphalt produced)							
Plant Type	Fuel	Formaldehyde	Acetaldehyde	Benzene	Toluene	Ethylbenzene	Xylene	Quinone	Hexane
Batch Mix	Natural Gas	0.00074	0.00032	0.00028	0.001	0.0022	0.0027	0.00027	ND
Batch Mix	Diesel Fuel Oil	0.00074	0.00032	0.00028	0.001	0.0022	0.0027	0.00027	ND
Batch Mix	Waste Oil	0.00074	0.00032	0.00028	0.001	0.0022	0.0027	0.00027	ND
Drum Mix	Natural Gas	0.0031	ND	0.00039	0.00015	0.00024	0.0002	ND	0.00092
Drum Mix	Diesel Fuel Oil	0.0031		0.00039	0.0029	0.00024	0.0002		0.00092
Drum Mix	Waste Oil	0.0031	0.0013	0.00039	0.0029	0.00024	0.0002	0.00016	0.00092

(From AP-42 Chapter 11.1, available here)

For example, if a batch mix asphalt plant operating on natural gas produces 500,000 tons of asphalt, they will emit:

500,000 tons asphalt x 0.00074 lb formaldehyde/ton asphalt =
370 lbs of formaldehyde

I can't speak to the specific adverse health effects of each HAP, but I'm sure CDPHE's Toxicology and Environmental Epidemiology Office can better assist with those questions. In general, it's safe to say that toxic substances can impact your health, but whether they can harm you depends on what you're exposed to, how you're exposed, how much, how long, and how often you are exposed. For specifics, I recommend you reach out to their office directly at cdphe_toxcall@state.co.us or (303)692-2606. You can also access their office's website here.

Thanks,

Jonathan Brickey, P.E. *(he/him)*
Construction Permitting Unit Supervisor
Construction Permitting Unit II

COLORADO
Air Pollution Control Division
Department of Public Health & Environment

From: cdphe_toxcall - CDPHE, CDPHE cdphe_toxcall@state.co.us
Subject: Re: Asphalt batch plant
Date: Jan 12, 2023 at 1:47:07 PM
To: Ayla Leistikow ayla.leistikow@gmail.com

Ayla,

Thanks so much for contacting us, we have some information to answer the questions you have asked.

1. What are the adverse health effects of the main asphalt plant HAPs (formaldehyde, acetaldehyde, benzene, toluene, ethylbenzene, and xylene.)?

This EPA resource- Health Effects Notebook for Hazardous Air Pollutants - has fact sheets on each of the HAPs you listed above. **Keep in mind that any kind of health effect is dependent on:**

- **what you are exposed to**
- **how you are exposed**
- **how much, how long, and how often you are exposed**

Also, not everyone has the same risk. Age, gender, genetics, lifestyle, and other factors play a role in how exposure to a toxic substance impacts health.

2. Do asphalt plants release PAHs? If so, what are the adverse health effects?

PAHs are found in asphalt and would be emitted during operations at an asphalt plant. The Agency for Toxic Substances and Disease Registry (ATSDR) has a fact sheet on PAHs. Again, the risks someone might face from PAHs are dependent on all the factors described above.

3. How far can the HAPs (also PAHs if applicable) be detected from the asphalt plant?
Current regulations for batch mix asphalt plants only assess particulate matter emissions, so we don't have information about the levels of HAPs/PAHs expected surrounding a facility like this or how that changes with distance. Currently, our Air Pollution Control Division includes reportable amounts of HAPs in the permits and operators pay fees based on these amounts. Recent regulations have focused more attention on air toxics in Colorado, to find out more please see our air toxics website and join our air toxics mailing list.

Thank you,
Mallory

--
TOXCALL

Toxicology and Environmental Epidemiology Office
Colorado Department of Public Health and Environment

P 303.692.2606 | F 303.728.0904
4300 Cherry Creek Drive South, Denver, CO 80246
cdphe_toxcall@state.co.us | www.colorado.gov/cdphe

On Mon, Jan 9, 2023 at 2:48 PM Ayla Leistikow <ayla.leistikow@gmail.com> wrote:
Hello,
I have questions regarding batch mix asphalt plant operating off gas.

1. What are the adverse health affects of the main asphalt plant HAPs (formaldehyde, acetaldehyde, benzene, toluene, ethylbenzene, and xylene.)?

2. Do asphalt plants release PAHs? If so what are the adverse health affects?

3. How far can the HAPs (also PAHs if applicable) be detected from the asphalt plant?

Thank you so much for taking the time to answer my questions.

Thanks,
Ayla

RE: Asphalt Plant

Jeff Meyer <[redacted]>
Mon 3/6/2023 1:53 PM
To: Cody Bird <birdca@wellingtoncolorado.gov>

Alrighty Thank you
I am a resident of Buffalo Creek.

JEFF MEYER
Senior Production Scheduler
970-215-5034
jmeyer@newbelgium.com

NEW BELGIUM. BREWING

From: Cody Bird <birdca@wellingtoncolorado.gov>
Sent: Monday, March 6, 2023 1:18 PM
To: Jeff Meyer <[redacted]>
Subject: Re: Asphalt Plant

Thank you for the reply. It would be helpful if the person(s) desiring to send the comments sent from their email just to avoid the confusion. As I mentioned in my prior email, it would also be useful to understand the context in which the individuals are sending the comments (resident, business, or other relationship to Wellington)

Thank you for your understanding and thank you for providing feedback on this application case.

TOWN OF WELLINGTON

Cody Bird, AICP
Planning Director

Town of Wellington
(970) 568-3554
birdca@wellingtoncolorado.gov
wellingtoncolorado.gov

From: Jeff Meyer <[redacted]>
Sent: Monday, March 6, 2023 12:30 PM
To: Cody Bird <birdca@wellingtoncolorado.gov>
Subject: RE: Asphalt Plant

Hello Cody,

Dave sent it to me and I sent it your way If it needs to come from his email I can ask him to do so

---

From: Cody Bird <birdca@wellingtoncolorado.gov>
Sent: Monday, March 6, 2023 12:19 PM
To: Jeff Meyer <[redacted]>
Subject: Re: Asphalt Plant

*** Please be mindful of security when opening external emails. Contact IT Support if unsure! ***

Hello,

Thank you for the correspondence I have received your email and will include it in the information provided to the Planning Commission.

I received a similar email twice from jmeyer@newbelgium.com - one has a signature block for Jeff Meyer, the second says David Perricone Just seeking clarification for whom is sending each since they appear to be from the same email address. It would also be useful if you could include your property address and identify if you are a Town of Wellington resident, business owner or other.

Kind regards,

TOWN OF WELLINGTON

Cody Bird, AICP
Planning Director

Town of Wellington
(970) 568-3554
birdca@wellingtoncolorado.gov
wellingtoncolorado.gov

From: Jeff Meyer <[redacted]>
Sent: Monday, March 6, 2023 12 09 PM
To: Cody Bird <birdca@wellingtoncolorado.gov>
Subject: Asphalt Plant

Dear Planning Board,

The intent of this letter is to bring attention to the land use code 4 03 21,B, 1 It states that any Industrial or Manufacturing, Heavy use producing and curating toxic chemicals or conducting animal slaughtering shall be located at least 2,640 feet from any residential district, religious land use, medical care facility, or school The town has due diligence to find the correct unbiased research and data to make sure the land use code is properly followed What research and data were used to make the decision that this Heavy Industrial Batch (hot) Asphalt Plant does not meet the criteria for producing and curating toxic chemicals?

I contacted the Colorado Health Department to answer my questions and those answers conflict with decisions made by the town Batch Asphalt plants do produce, discharge and curate toxic chemicals in the forms of HAPs and PAHs. The Colorado Health Department describes these toxic chemicals as Hazardous Air Pollutants (HAPs). The main HAPs are Formaldehyde, Acetaldehyde, Benzene, Toluene, Ethylbenzene, and Xylene I also found that Hydrogen Sulfide, Chromium, Cadmium, and Arsenic can also be found as toxic pollutants at various levels in asphalt plant emissions The town can even calculate how many pounds of formaldehyde this plant will produce

and discharge in an area that has a Community Park, neighborhoods, Library, and 2 Schools If this plant uses recycled asphalt, it can emit higher levels of HAPs and PAHs due to the recycled asphalt composition.

According to the Toxicology and Environmental Epidemiology Department of the Colorado Department of Public Health and Environment, current regulations for this type of asphalt plant only assess particulate matter emissions. There is no information about the levels of HAPs and PAHs that would surround this plant and or changes that would happen with distance Additionally, this plant will be producing hot asphalt which is a toxic chemical product, it is only nontoxic when it is fully hardened and not releasing toxic fumes. OSHA has a section on asphalt (Bitumen) fumes and explains that when exposed to this petroleum product, health effects from exposure include headache, skin rash, sensitization, fatigue, reduced appetite, throat and eye irritation, cough, and cancer

Pregnant women and children are the most susceptible to breathing these known HAPs and PAHs The American Journal of Obstetrics studies revealed that PAHs, can be found in the placenta and exposure is associated with adverse pregnancy outcomes The CDC has found an association between Benzene and spina bifida during maternal exposure. Formaldehyde is a known carcinogen, and according to the National Library of Medicine is linked to spontaneous abortions, congenital malformations, and premature birth Children face more risks from toxic chemical pollution because they have a faster breathing rate which leads to absorbing more toxic chemicals than adults and are outside for longer periods of time

This batch asphalt plant produces and curates' toxic chemicals The planning board should not approve this plan due to the production and curating setback of 2,640 feet. There is no variance for this specific setback.

Thanks for your consideration,
David Perricone

Re: Asphalt Plant in Wellington

Amanda Barry <[redacted]>

Mon 3/6/2023 2:08 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Cody,

I apologize for this email not being any more eloquent or detailed than I'd like it to be, but I am just now seeing the notice of today's town planning meeting about the proposed hot asphalt plant behind Wellington Community Park, and I don't have time to articulate all of which I'd like to express by the 3pm deadline. It's important to me to at least quickly express that my wife and I do not support having said asphalt plant here, or anywhere else nearby that isn't REMOTE.

To keep it direct, our main reasons are exactly what is listed on this flyer that was left at our door. The health impact, air and noise pollution, loss of property value, etc. Literally everything laid out on this flyer is what we would argue if we were able to attend the town meeting.

Last year alone, I was floored at how many Air Quality warnings and notices we got for Wellington as the climate currently stands. We do not need anything else adding to the cause of the preexisting conditions.

My wife and I don't have any children of our own, but there are a number of children in our housing community that ACTUALLY play outside, riding bikes, scooters, and running around. They play at the park that will be directly impacted by this asphalt plant. That's a lot of lungs, breathing a lot of air, that will breathe in a lot of unnecessary toxins if this plant starts up. Additionally, when our nieces and nephews visit, we will be very uncomfortable having them run around outside, and won't want to bring them to that park. We also have outdoor animals that we'd prefer breathe the cleanest air possible.

For the sake of, and well being of, all humans, animals, and our planet, we respectfully demand that this plant be forbidden from operating in our town.

Please let us know if there is anything else we can do. Thank you for your time.

Infinitely,

Amanda Barry and Ashley Cummings
Residents of Wellington, CO

P.S. How can I keep myself up to date with this? Will there be reports published that I can access to follow the progress?

To Voice STRONG OPPOSITION TO: Proposed Hot Asphalt Plant Behind Wellington Community Park

Larry Rice <[redacted]>

Mon 3/6/2023 1:43 PM

To Cody Bird <birdca@wellingtoncolorado gov>
Cc: Shirrell Tietz <tietzs@wellingtoncolorado.gov>;David Wiegand <wiegandd@wellingtoncolorado.gov>;Brian Mason <masonb@wellingtoncolorado.gov>;Jon Gaiter <gaiterjm@wellingtoncolorado.gov>;Rebekka Dailey <daileyrm@wellingtoncolorado.gov>;Calar Chaussee <chausseec@wellingtoncolorado.gov>

Dear Mr. Bird,

Simply and to the point, we are two Wellington residents who reside and each own homes in Buffalo Creek subdivision to the west of the proposed Hot Asphalt Plant that is being considered for construction behind Wellington Community Park. Individually, we want to express in the strongest means possible that we oppose any such development in our community! Why? It plain terms that anyone can understand: IT STINKS! The smell, full of toxic gases and emissions. The eyesore (really, does anyone want to look out and see this ugly construction site?). The increased in heavy truck traffic within our town (as if we need any MORE traffic). The reduction in property values (who would like to have their home situated downwind of the asphalt fumes?). Noise pollution (yes, there are residents of Wellington who appreciate its small-town tranquility).

And why is this hot asphalt plan even being considered to be located in Wellington? Hmmm….let's think about that for a second. Money? Greed? Short-sighted, ill-informed thinking? All of the above? We think "all of the above."

We implore you, Mr. Bird, and the rest of the town trustees, including the mayor, to stop this ill-conceived idea from going any further. Do NOT allow this asphalt plan to be situated anywhere within Wellington. Not only for us current residents, but for those who might want to call Wellington their home in the future. It's just a plain bad idea that should have never have been considered in the first place. It's time to stop it now. Wellington does not need it. We do not need it!

Thanks you for your time and consideration. Please do the right thing.

Sincerely,

Larry Rice
Jim Raymond

Buffalo Creek Estates

Sundance at Daubert Farm Holdings, LLC
308 Commerce Drive, Unit A
Fort Collins, CO 80524
Phone: 970-493-6262

March 6, 2023

Planning Department
Attention: Cody Bird
8225 Third Street
Wellington, CO 80549
birdca@wellingtoncolorado.gov

Re: Connell Resources

Dear Planning Department,

Sundance at Daubert Farm Holdings, LLC is the owner of the land immediately west of the proposed Connell site. We currently have a single-family home subdivision planned for this site and plan to construct it in the future. We have had several meetings and conversations with representatives from Connell, as well as several meetings and conversations with Cody Bird of the Wellington Planning Department. In every meeting we found all parties willing to work together to produce a plan that would work well for everyone. We have known from the very beginning that the land immediately east of our site would be developed into an industrial commercial facility. I am familiar with Connell's current plant located on I-25 just south of the Harmony exit. I have always been impressed with their efforts to make the plant as aesthetically pleasing as possible. We feel there are far worse potential users for this site than Connell. We also think Connell will be a good neighbor to our community. We fully support Connell's proposal for their plant and believe the effect it will have on our community will be minimal. We ask that you please approve this proposal.

Thank you for your time.

Sincerely,

John G. Giuliano
Managing Member

Asphalt Plant

Mary Kerin <[redacted]>

Fri 3/3/2023 2:32 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Dear Cody,

I am hoping that you and the other Trustees will say no to the asphalt plant. It is too much of a health risk to the park, the town and the nearby residents. Thank you for your consideration.

James Kerin

FW: Disappointed to say the least

Patti Garcia <garciapa@wellingtoncolorado.gov>
Mon 3/6/2023 9:44 AM
To: [redacted] <[redacted]>
Cc: Cody Bird <birdca@wellingtoncolorado.gov>

Hi Rachel –

The Planning Commission has the site plan for the Connell Asphalt Plant on their agenda on Monday night. Appeals of decisions made by the Planning Commission are made to the Board of Trustees so the Mayor and Trustees are not permitted to comment on this item as it could be considered ex-parte communications if there is an appeal.

I wanted to respond to you so that you understood why the Mayor or Trustees did not respond to your email.

Patti

TOWN OF WELLINGTON

Patti Garcia
Town Administrator
Mobile: (970) 473-6033
Email: garciapa@wellingtoncolorado.gov
Web: www.wellingtoncolorado.gov
8225 3rd Street, Wellington, CO 80549

Begin forwarded message:

From: Rachel Hayes <[redacted]
Date: March 5, 2023 at 12:09:12 MST
To: Shirrell Tietz <tietzs@wellingtoncolorado.gov>, David Wiegand <wiegandd@wellingtoncolorado.gov>, Brian Mason <masonb@wellingtoncolorado.gov>, dailerrm@wellingtoncolorado.gov, Calar Chaussee <chausseec@wellingtoncolorado.gov>, Cody Bird <birdca@wellingtoncolorado.gov>
Subject: Disappointed to say the least

Hi
My family and I moved here to Wellington because it was small and not too populated 3 years ago. Now we are highly disappointed with the towns increase in size, expansion and attempts to allow Marijuana growers and now an asphalt plant in our backyard. LITERALLY!
very sad and now we were just made aware (today/Sunday)of a meeting tomorrow Monday evening to discuss this further.

It's something that would make us sell and try to leave before it's complete as that is not where we want to raise our family/kids... we also have a school that was build near our homes out of convenience even though there are three plus school buildings. Now the elementary schools are separated making it so our kids DO NOT go to school near our house because it makes no sense to have our daughter go to school at one school for a couple of years then transfer to another school building and then a couple more years to a middle school / high school where our 6th grader would

join high school kids
Very disappointing… hoping this does not happen as again we would be forced out of this small town so you can enjoy the money and new building and construction site you want
Thanks
Rachel Hayes , LPC

Sent from my iPhone

Asphalt Plant Packet

Ayla Leistikow <[redacted]>

Fri 3/3/2023 7:30 AM

To: Cody Bird <birdca@wellingtoncolorado.gov>;Paul Whalen <whalenp@wellingtoncolorado.gov>

7 attachment (3 MB)

planningboard.pdf; Pub@hem.pdf; COMPOUND SUMMARY.pdf; and Dboase Rogistry.pdf; From cdphe_toxcall - CDPHE, CDPHE cdphe_toxcall@state.co.us.pdf; From Brickey - CDPHE, Jonathan jonathan.brickey@state.co.us.pdf; Health Risks Associated With Benzene Exposure in.pdf;

Cody,

Please add this attached letter and documents to the Connell Asphalt Plant packet. Let me know if you have any questions.

Thanks,
Ayla

Dear Planning Board,

The intent of this letter is to bring attention to the land use code 4.03.21,B, 1. It states that any Industrial or Manufacturing, Heavy use producing and curating toxic chemicals or conducting animal slaughtering shall be located at least 2,640 feet from any residential district, religious land use, medical care facility, or school. The town has a due diligence to find the correct unbiased research and data to make sure the land use code is properly followed. What research and data were used to make the decision that this Heavy Industrial Batch (hot) Asphalt Plant does not meet the criteria for producing and curating toxic chemicals?

I contacted the Colorado Health Department to answer my questions and those answers conflict with decisions made by the town. Batch Asphalt plants do produce, discharge and curate toxic chemicals in the forms of HAPs and PAHs. The Colorado Health Department describes these toxic chemicals as Hazardous Air Pollutants (HAPs). The main HAPs are Formaldehyde, Acetaldehyde, Benzene, Toluene, Ethylbenzene, and Xylene. I also found that Hydrogen Sulfide, Chromium, Cadmium, Arsenic can also be found as toxic pollutants at various levels in asphalt plant emissions. The town can even calculate how many pounds of formaldehyde this plant will produce and discharge in an area that has a Community Park, neighborhoods, Library and 2 Schools. If this plant uses any recycled asphalt, it can emit higher levels of HAPs and PAHs due to the recycled asphalt composition.

According to the Toxicology and Environmental Epidemiology Department of the Colorado Department of Public Health and Environment, current regulations for this type of asphalt plant only assess particulate matter emissions. There is no information about the levels of HAPs and PAHs that would surround this plant and or changes that would happen with distance. Additionally, this plant will be producing hot asphalt which is a toxic chemical product, it is only nontoxic when it is fully hardened and not releasing toxic fumes. OSHA has a section on asphalt (Bitumen) fumes and explains that when exposed to this petroleum product, health effects from exposure include headache, skin rash, sensitization, fatigue, reduced appetite, throat and eye irritation, cough, and cancer.

Pregnant women and children are the most susceptible to breathing these known HAPs and PAHs. The American Journal of Obstetrics studies revealed that PAHs, can be found in the placenta and exposure is associated with adverse pregnancy outcomes. The CDC has found an association with Benzene and spina bifida during maternal exposure. Formaldehyde is a known carcinogen, and according to the National Library of Medicine is linked to spontaneous abortions, congenital malformations, and premature birth. Children face more risks from toxic chemical pollution because they have a faster breathing rate which leads to absorbing more toxic chemicals than adults, and are outside for longer periods of time.

This batch asphalt plant produces and curates toxic chemicals. The planning board should not approve this plan due to the producing and curating setback of 2,640 feet. There is no variance for this specific setback.

Thanks for your consideration,
Ayla Leistikow

From: Brickey - CDPHE, Jonathan jonathan.brickey@state.co.us
Subject: Questions on asphalt plant pollutant emission
Date: Jan 6, 2023 at 2:58:33 PM
To: [redacted]
Cc: cdphe_toxcall - CDPHE, CDPHE cdphe_toxcall@state.co.us

Ayla,

My name is Jonathan Brickey, and I'm a unit supervisor with the Colorado Air Pollution Control Division. You had submitted some questions about asphalt plants, and I believe I can help with at least one: "Do batch asphalt plants process and curate toxic chemicals?"

While there is no state definition of "toxic chemicals" specifically, we do regulate Hazardous Air Pollutants (HAPs), which are defined in our regulations as:

"[A]ir pollutant that presents through inhalation or other routes of exposure, a threat of adverse human health effects (including, but not limited to, substances that are known to be, or may reasonably be anticipated to be carcinogenic, mutagenic, teratogenic, neurotoxic, that cause reproductive dysfunction, or that are acutely or chronically toxic) or adverse environmental effects whether through ambient concentrations, bioaccumulation, deposition, or otherwise and that has been listed pursuant to Section 112 of the Federal Act, or Section 25-7-109.3 of the state Act."

When it comes to asphalt plants, the main HAPs emitted into the air are formaldehyde, acetaldehyde, and benzene, toluene, ethylbenzene and xylene (collectively known as BTEX), along with smaller amounts of other HAPs.

The exact amount of projected HAPs emissions depends on the type of asphalt plant and what type of fuel is burned by the plant. Projected emissions are based on "emission factors", which are multiplied by the total amount of produced asphalt to estimate the emission rate. Here's a table of HAP emission factors used for

asphalt production:

		HAP Emission Factors (lb HAP/ton of asphalt produced)							
Plant Type	Fuel	Formaldehyde	Acetaldehyde	Benzene	Toluene	Ethylbenzene	Xylene	Quinone	Hexane
Batch Mix	Natural Gas	0.00074	0.00032	0.00028	0.001	0.0022	0.0027	0.00027	ND
Batch Mix	Diesel Fuel Oil	0.00074	0.00032	0.00028	0.001	0.0022	0.0027	0.00027	ND
Batch Mix	Waste Oil	0.00074	0.00032	0.00028	0.001	0.0022	0.0027	0.00027	ND
Drum Mix	Natural Gas	0.0031	ND	0.00039	0.00015	0.00024	0.0002	ND	0.00092
Drum Mix	Diesel Fuel Oil	0.0031		0.00039	0.0029	0.00024	0.0002		0.00092
Drum Mix	Waste Oil	0.0031	0.0013	0.00039	0.0029	0.00024	0.0002	0.00016	0.00092

(From AP-42 Chapter 11.1, available here)

For example, if a batch mix asphalt plant operating on natural gas produces 500,000 tons of asphalt, they will emit:

500,000 tons asphalt x 0.00074 lb formaldehyde/ton asphalt =
370 lbs of formaldehyde

I can't speak to the specific adverse health effects of each HAP, but I'm sure CDPHE's Toxicology and Environmental Epidemiology Office can better assist with those questions. In general, it's safe to say that toxic substances can impact your health, but whether they can harm you depends on what you're exposed to, how you're exposed, how much, how long, and how often you are exposed. For specifics, I recommend you reach out to their office directly at cdphe_toxcall@state.co.us or (303)692-2606. You can also access their office's website here.

Thanks,

Jonathan Brickey, P.E. *(he/him)*
Construction Permitting Unit Supervisor
Construction Permitting Unit II

COLORADO
Air Pollution Control Division
Department of Public Health & Environment

From: cdphe_toxcall - CDPHE, CDPHE cdphe_toxcall@state.co.us
Subject: Re: Asphalt batch plant
Date: Jan 12, 2023 at 1:47:07 PM
To: Ayla Leistikow [redacted]

Ayla,

Thanks so much for contacting us, we have some information to answer the questions you have asked.

1. What are the adverse health effects of the main asphalt plant HAPs (formaldehyde, acetaldehyde, benzene, toluene, ethylbenzene, and xylene.)?

This EPA resource- Health Effects Notebook for Hazardous Air Pollutants - has fact sheets on each of the HAPs you listed above. **Keep in mind that any kind of health effect is dependent on:**

- **what you are exposed to**
- **how you are exposed**
- **how much, how long, and how often you are exposed**

Also, not everyone has the same risk. Age, gender, genetics, lifestyle, and other factors play a role in how exposure to a toxic substance impacts health.

2. Do asphalt plants release PAHs? If so, what are the adverse health effects?

PAHs are found in asphalt and would be emitted during operations at an asphalt plant. The Agency for Toxic Substances and Disease Registry (ATSDR) has a fact sheet on PAHs. Again, the risks someone might face from PAHs are dependent on all the factors described above.

3. How far can the HAPs (also PAHs if applicable) be detected from the asphalt plant?
Current regulations for batch mix asphalt plants only assess particulate matter emissions, so we don't have information about the levels of HAPs/PAHs expected surrounding a facility like this or how that changes with distance. Currently, our Air Pollution Control Division includes reportable amounts of HAPs in the permits and operators pay fees based on these amounts. Recent regulations have focused more attention on air toxics in Colorado, to find out more please see our air toxics website and join our air toxics mailing list.

Thank you,
Mallory

--
TOXCALL

Toxicology and Environmental Epidemiology Office
Colorado Department of Public Health and Environment

P 303.692.2606 | F 303.728.0904
4300 Cherry Creek Drive South, Denver, CO 80246
cdphe_toxcall@state.co.us | www.colorado.gov/cdphe

On Mon, Jan 9, 2023 at 2:48 PM Ayla Leistikow <ayla.leistikow@gmail.com> wrote:
Hello,
I have questions regarding batch mix asphalt plant operating off gas.

1. What are the adverse health affects of the main asphalt plant HAPs (formaldehyde, acetaldehyde, benzene, toluene, ethylbenzene, and xylene.)?

2. Do asphalt plants release PAHs? If so what are the adverse health affects?

3. How far can the HAPs (also PAHs if applicable) be detected from the asphalt plant?

Thank you so much for taking the time to answer my questions.

Thanks,
Ayla

PubChem

COMPOUND SUMMARY

Benzene

Cite Download

PubChem CID

241

Structure

2D 3D Crystal

Find Similar Structures

Chemical Safety

Flammable Irritant Health Hazard

Laboratory Chemical Safety Summary (LCSS) Datasheet

Molecular Formula

C_6H_6

Synonyms

benzene
benzol
71-43-2
Cyclohexatriene
benzole

More...

Molecular Weight

78.11

Dates

Modify	Create
2023-01-07	2004-09-16

Description

Benzene is a clear, colorless, highly flammable and volatile, liquid aromatic hydrocarbon with a gasoline-like odor. Benzene is found in crude oils and as a by-product of oil-refining processes. In industry benzene is used as a solvent, as a chemical intermediate, and is used in the synthesis of numerous chemicals. Exposure to this substance causes neurological symptoms and affects the bone marrow causing aplastic anemia, excessive bleeding and damage to the immune system. Benzene is a known human carcinogen and is linked to an increased risk of developing lymphatic and hematopoietic cancers, acute myelogenous leukemia, as well as chronic lymphocytic leukemia. (NCI05)

▸ NCI Thesaurus (NCIt)

Benzene is a colorless liquid with a sweet odor. It evaporates into the air very quickly and dissolves slightly in water. It is highly flammable and is formed from both natural processes and human activities. Benzene is widely used in the United States; it ranks in the top 20 chemicals for production volume. Some industries use benzene to make other chemicals which are used to make plastics, resins, and nylon and synthetic fibers. Benzene is also used to make some types of rubbers, lubricants, dyes, detergents, drugs, and pesticides. Natural sources of benzene include volcanoes and forest fires. Benzene is also a natural part of crude oil, gasoline, and cigarette smoke.

▸ CDC-ATSDR Toxic Substances Portal

Benzene appears as a clear colorless liquid with a petroleum-like odor. Flash point less than 0 °F. Less dense than water and slightly soluble in water. Hence floats on water. Vapors are heavier than air.

▸ CAMEO Chemicals

Contents

1 Structures
2 Names and Identifiers
3 Chemical and Physical Properties
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9 Pharmacology and Biochemistry
10 Use and Manufacturing
11 Identification
12 Safety and Hazards
13 Toxicity
14 Associated Disorders and Diseases

Glob Pediatr Health. 2018 Aug 17;5:2333794X18789275. doi: 10.1177/2333794X18789275. eCollection 2018.

Health Risks Associated With Benzene Exposure in Children: A Systematic Review

Mark A D'Andrea [1], G Kesava Reddy [1]

Affiliations

PMID: 30148190 PMCID: PMC6100118 DOI: 10.1177/2333794X18789275

Free PMC article

Abstract

Currently, there is a paucity of studies evaluating the adverse health effects of benzene exposure in children or clinical findings of those children who have been exposed. However, emerging studies show that benzene exposure can cause deleterious health effects in children. The objective of this study was to evaluate and summarize published studies on the adverse health effects of benzene exposure in children. More than 77 articles were examined and only the articles that dealt with adverse health effects on pediatric populations were included in the study. The evaluation of those studies provided current understanding of the health effects of benzene exposure in children. Findings from the currently available studies reveal that benzene exposure is associated with abnormalities in hematologic, hepatic, respiratory, and pulmonary functions in children. Published studies clearly support the need for further assessment of the potential adverse effects of benzene exposure in children, and clinical and laboratory findings of these children.

Keywords: Illness symptoms; benzene poisoning; blood disorders; chemical exposure; health impact; hematological toxicity; hepatotoxicity; pediatric populations; psychological effects; respiratory function.

Figures

Figure 1. A schematic illustration of benzene...

Figure 2. A flow chart illustrating the...

Related information

PubChem

COMPOUND SUMMARY

Formaldehyde

Cite Download

See also: Paraformaldehyde (related); Formaldehyde Solution (related); Formaldehyde, dimer (related).

PubChem CID

712

Structure

2D 3D Crystal

Find Similar Structures

Chemical Safety

Corrosive Acute Toxic Irritant Health Hazard

Laboratory Chemical Safety Summary (LCSS) Datasheet

Molecular Formula

CH_2O or H_2CO

Synonyms

formaldehyde
formalin
methanal
Paraformaldehyde
50-00-0

More...

Molecular Weight

Cadmium

CAS ID#: 7440-43-9

Affected Organ Systems: Cardiovascular (Heart and Blood Vessels), Developmental (effects during periods when organs are developing), Gastrointestinal (Digestive), Neurological (Nervous System), Renal (Urinary System or Kidneys), Reproductive (Producing Children), Respiratory (From the Nose to the Lungs)

Cancer Classification: Please contact NTP, IARC, or EPA with questions on cancer and cancer classification.

Chemical Classification: Inorganic substances

Summary: Cadmium is a natural element in the earth's crust. It is usually found as a mineral combined with other elements such as oxygen (cadmium oxide), chlorine (cadmium chloride), or sulfur (cadmium sulfate, cadmium sulfide).

All soils and rocks, including coal and mineral fertilizers, contain some cadmium. Most cadmium used in the United States is extracted during the production of other metals like zinc, lead, and copper. Cadmium does not corrode easily and has many uses, including batteries, pigments, metal coatings, and plastics.

Public Comments
Received Prior to 2pm - 3-6-2023

Paul Whalen

From: Ayla Leistikow <[redacted]>
Sent: Friday, March 3, 2023 7:30 AM
To: Cody Bird; Paul Whalen
Subject: Asphalt Plant Packet
Attachments: planningboard.pdf; Pub@hem.pdf; COMPOUND SUMMARY.pdf; and Dboase Rogistry.pdf; From cdphe_toxcall - CDPHE, CDPHE cdphe_toxcall@state.co.us.pdf; From Brickey - CDPHE, Jonathan jonathan.brickey@state.co.us.pdf; Health Risks Associated With Benzene Exposure in.pdf

Cody,

Please add this attached letter and documents to the Connell Asphalt Plant packet. Let me know if you have any questions.

Thanks,
Ayla

03/06/2023 Town Planning Meeting Asphalt Plant

Daniel Otamendi <[redacted]>

Mon 3/6/2023 12:50 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Good Afternoon Cody,

I am a resident of the Bufflao Creek Community and I am opposed to the Connel Asphalt Plant so near to the Wellington Community Park and our neighborhood. Attached is a document with a few more details.

Thank you,
Daniel Otamendi and Family

We are the Otamendis, and we reside at 9076 Smoke Signal Way in the Buffalo Creek Community. We are strongly opposed to the placement of the Connell Asphalt Plant.

Batch asphalt plants release Hazardous Air Pollutants (HAPs) and Polycyclic Aromatic Hydrocarbons (PAHs). The Environmental Protection Agency has a Health Effects Notebook for Hazardous Air Pollutants. This notebook contains fact sheets for HAPs released from batch asphalt plants: Benzene, Formaldehyde, Acetaldehyde, Toluene, Ethylbenzene, and Xylene. HAPs are known or suspected to cause cancer or other serious health and environmental effects.

- **Benzene**: Benzene exposure can cause drowsiness, dizziness, headaches, as well as eye, skin, and respiratory tract irritation, and, unconsciousness. Long-term breathing in air (inhalation) containing benzene causes blood disorders. EPA has classified benzene as a known human carcinogen (cancer causing).
- **Formaldehyde**: Short-term and long-term inhalation exposure to formaldehyde can result in respiratory symptoms, and eye, nose, and throat irritation. EPA considers formaldehyde a probable human carcinogen.
- **Acetaldehyde**: Short-term exposure to acetaldehyde results in irritation of the eyes, skin, and respiratory tract. Symptoms of long-term exposure resemble those of alcoholism. Acetaldehyde is considered a probable human carcinogen.
- **Toluene**: Inhalation of toluene can cause fatigue, sleepiness, headaches, and nausea. At high levels of exposure, it can cause Central Nervous System dysfunction, attention deficits, and developmental effects.
- **Ethylbenzene**: Short-term exposure to ethylbenzene results in throat and eye irritation, chest constriction, and neurological effects such as dizziness.
- **Xylene**: Short-term inhalation exposure to xylene results in irritation of the eyes, nose, and throat, gastrointestinal effects, and neurological effects. Long-term inhalation of xylene results in headache, dizziness, fatigue, tremors, and lack of coordination, as well as respiratory, cardiovascular, and kidney effects.

PAHs are found in asphalt and would be emitted during operations at an asphalt plant. The Agency for Toxic Substances and Disease Registry (ATSDR) has a fact sheet on PAHs. The Department of Health and Human Services (DHHS) has determined that some PAHs may be cancer causing.

Current CDPHE regulations for batch mix asphalt plants only assess particulate matter emissions, so the levels of HAPs and PAHs expected surrounding a facility like this or how that changes with distance is unknown.

Health effects are dependent on what you are exposed to, how you are exposed, and how much, how long, and how often you are exposed – residents of the Buffalo Creek community and people visiting the Wellington Community park will be exposed (short and long-term) to these toxic chemicals.

Letter for the Planning Meeting Tonight

Meghan Molin <[redacted]>
Mon 3/6/2023 12:12 PM
To: Cody Bird <birdca@wellingtoncolorado.gov>

Cody, can you please ensure that this makes it to the meeting tonight? I cannot attend in public. I wanted to write a letter so that it's in the public record, anyhow.

Thank You!

To Whom It May Concern:

I am writing out of professional concern for what I see as a lack of standard municipal planning surrounding the approval of the new (proposed) Connell plant in Wellington, Colorado. I am a LEED certified architectural designer, and hold a Bachelors in Environmental Science and a Masters Degree in Architecture. I have worked with local municipalities in a formal manner as a project manager for building projects, and have personally navigated local municipality planning (Fort Collins, Larimer County) processes for projects similar to Connell. I feel confident that Wellington is requiring far less in the planning process than our surrounding municipalities, and that our lack of rigor in requirements for the Connell approval process could potentially lead to public health hazard, or potentially down the road extra work and money for the town.

My main areas of concern can be addressed in the planning phase of this project, but will require a delay in approval of the project. My hope is that by implementing these requirements, Wellington will have a better idea what this project will mean in a short and long-term impact for the site and the town from an environmental standpoint, be better equipped to monitor the industry and potential health hazards, and finally have an appropriate plan for remediation tied directly to the project approval and on record.

First and foremost, a standard almost unilaterally for Industrial projects is an Environmental Impact Study. Often done by a third party to the project, this is a vital resource for Wellington to understand the short and long-term effects of this particular project on this particular site. Other local municipalities would have required it with an application, and it would have been a guide for conversation and a contingency for approval. The Environmental impact study would also be used in drafting the terms of a remediation plan… neither of which Wellington now includes in their process. The danger here is that if an accident occurs, or this project requires extensive remediation, Wellington will likely have to foot the bill. We have a large aquafer beneath our town. Ground water contamination is a very real issue, and should be of utmost priority for the town to protect. Knowing what impact this industry will have on the earth, air, sound and water of the site are of *vital* importance. It will give you real and measurable guardrails to contain this project and its potential impact on our town for years to come. Connell *is* part of a regulated industry. But the industry is regulated *because* there is room for both catastrophic accident regarding hazardous materials, and because there are byproducts from their business that impact public health. If the potential for public disaster did not exist, the industry would not have to be highly regulated.

Which brings me to a second point, and one that Wellington needs to consider. Other municipalities are involved in reviewing reports of the regulated industries. Wellington should not simply trust *any* corporation, entity, or person to be above board operating within acceptable parameters. I reviewed this letter with an architect friend of mine who deals in Industrial projects, and he assured me that his projects are required to send their testing results to both their regulating entities *and* to the municipality where they are housed (Fort Collins requires this, for instance). The municipalities review the data independently (with the help of the guidelines given in their environmental impact study, or procured through the State. Some

research will be needed to determine Wellington's understanding of state, county, and EPA allowances of these readings) and also have a plan of operation written in public record for what steps will be taken if testing doesn't meet that criteria. I would have the same concern on any site simply because this is sound practice, but because of the location of this proposed project—and the fact that the setback variance was allowed to be dropped to eight hundred feet from the closest housing development—there is very little room for error here. There is no buffer. Wellington must not only understand the scope of the contamination that potentially could or *will* develop over time on the site, the spread of potential contaminants in the air, potential contaminants in the water but also must monitor them so that our public that sits *so close* to this site will know the very *moment* something isn't meeting health standard. Assuming any corporation will be this transparent is foolhardy. Wellington must also have a plan of action written and agreed to by Connell that shows a chain of action taken by each entity when or if they become non-compliant. It is also wise to ask for the reporting agencies to copy the town when they conduct their own third-party testing, and not only require the on-site monitoring done by Connell.

Thirdly, and potentially most important from a long-term standpoint, I am alarmed that none of the planning approval documents seem to address remediation as a condition of approval of the project in the planning process. I recently attended the meeting about the county landfill with John Kefalas, and asked specifically who had set the terms of the remediation. In that instance, the State Engineering and State Health Department have set the terms of the remediation and the processes related to it, but my point is: it is in place *before the project is built*. Wellington has *got* to break this cycle of reactionary planning. We need to start thinking forward, and a remediation plan is *vital* to allowing industry to grow in a town that is so close to an aquafer, organic farms, livestock, schools, public parks, libraries, and houses. Historically, corporations and industry have done the absolute *bare minimum* to meet remediation requirements. An environmental impact study will allow you to have quantifiably data to use to set the terms of remediation. Research could—and should be—done to learn the terms of remediation that Connell is meeting in Timnath. Research could—and should—be done to learn what scope proper remediation of asphalt plants have looked like in other Colorado towns just to gain some idea of what best practices is. And then we should tie the approval of this project to some sort of specific agreement of the degree to which the site will be remediated, *including* specifics about testing for contaminants (again, using the environmental impact study to identify what needs to be tested for) with a specific set of criteria Wellington wants met. That criteria may end up being more stringent than EPA standards. The point being, we will have that conversation *before* it is time to remediate.

In my professional opinion, Wellington has an opportunity here to stand up for the health of our natural resources and residents. We have an opportunity to go into this project with eyes wide open to the short and long term impacts it will have on the site and the public health. Wellington can become a better steward and partner in reviewing important data, and a better steward of who we will be in the future. We should not push this project through approvals but I encourage the town of wellington to delay the approval of this project for a minimum of 90 days and vote on adding these items/criteria of approval *to* the planning process. These are not

small things. I would rather us decide as a town to do things *right* even if they cost more money, make our friends mad, and take more time. Other municipalities have developed these guardrails because educated decisions often make better decisions.

Thank you,
Meghan Molin

Re: Adjustments Meeting Letter

Cody Bird <birdca@wellingtoncolorado.gov>
Mon 3/6/2023 1:20 PM
To: Dominic Baranyi <[redacted]>

Dominic,

Thank you for the correspondence. I have received your email and will include it in the information provided to the Planning Commission.

Kind regards,

TOWN OF WELLINGTON

Cody Bird, AICP
Planning Director

Town of Wellington
(970) 568-3554
birdca@wellingtoncolorado.gov
wellingtoncolorado.gov

From: Dominic Baranyi <[redacted]>
Sent: Monday, March 6, 2023 12:23 PM
To: Cody Bird <birdca@wellingtoncolorado.gov>
Subject: Re: Adjustments Meeting - Letter

Dominic Baranyi, Finance Committee, 9048 Spirit St in Buffalo Creek -

It is extremely disappointing to be having this meeting tonight with all variance requests green-lit for construction of an Asphalt Plant behind Wellington Community Park. Our options are limited at this point but it's crucial that we are heard during this process. Fair use of land and following existing land codes is one thing, but facilitating variances to a Land Use Code codified recently is deplorable. We actively choose to live in our small town for many reasons, one being that we trust that our local leaders will hear our genuine concerns and do what is right and just for the citizens of Wellington. Building a poisonous asphalt plant that will erode millions of dollars in home equity for the people of Wellington while bringing in no additional revenue for the Town is simply not right. Everyone in Wellington should be concerned about this - our brand new school will be polluted and smell like a combination of manure and asphalt, our Town will not grow to support the cumbersome and expensive Water & Sewer treatment capital projects, and Wellington will be perpetually labeled as a hodunk rest stop on the way to Wyoming. Planning Commission, please, I implore you to find something. Find an "I not dotted" or a "t not crossed," find any technicality or simply find it in your hearts to stop this project at once. Our entire Town is counting on you to do the right thing and to save our brand new school and our neighborhoods from becoming an industrial wasteland.

Asphalt Plant

brooke musial <[redacted]>
Mon 3/6/2023 10:30 AM
To: Cody Bird <birdca@wellingtoncolorado.gov>

Hi,

I can't make the meeting tonight so I wanted to send this email so that you have another voice. I strongly oppose the asphalt plant being built where they are planning to put it currently here in Wellington. I have a very rare cancer gene and prevention is key for me and I do not want my air quality affected more than it already is here in Wellington. I live in the Buffalo Creek neighborhood. My children play at the community park at the end of our street. We do not want to breathe in the pollution when we go outside our home. Multiple studies have shown that living by an asphalt plant increases your risk for cancer. That is my biggest concern, however I also care about it being an eye sore and my property value. There are plenty of open spaces in the Wellington area that they could use instead that are not right on top of a neighborhood. Thank you for your time.

Brooke Musial

Sent from my iPhone

Asphalt Plant

Jeffrey Shaw <[redacted]>

Mon 3/6/2023 10:23 AM

To: Cody Bird <birdca@wellingtoncolorado.gov>

My name is Jeff Shaw and I reside in Buffalo Creek. I am definitely opposed to the construction of the Asphalt Plant. Mainly because of the toxic chemicals it will omit into the air. Many of us folks with small children live here in Buffalo Creek, not to mention the 3 schools that will be within 1 mile of the plant. In addition our property values will decrease because of this. I see no benefit to having this plant anywhere near here.

Jeff Shaw

Asphalt Plant Land Use Code 4.03.21,B,1

catherine lytle <[redacted]>

Mon 3/6/2023 9:15 AM

To: Cody Bird <birdca@wellingtoncolorado.gov>;Shirrell Tietz <tietzs@wellingtoncolorado.gov>;David Wiegand <wiegandd@wellingtoncolorado.gov>;Brian Mason <masonb@wellingtoncolorado.gov>;Jon Gaiter <gaiterjm@wellingtoncolorado.gov>;Rebekka Dailey <daileyrm@wellingtoncolorado.gov>;Calar Chaussee <chausseec@wellingtoncolorado.gov>

Dear Planning Board,

The intent of this letter is to bring attention to the land use code 4.03.21,B, 1. It states that any Industrial or Manufacturing, Heavy use producing and curating toxic chemicals or conducting animal slaughtering shall be located at least 2,640 feet from any residential district, religious land use, medical care facility, or school. The town has due diligence to find the correct unbiased research and data to make sure the land use code is properly followed. What research and data were used to make the decision that this Heavy Industrial Batch (hot) Asphalt Plant does not meet the criteria for producing and curating toxic chemicals?

I contacted the Colorado Health Department to answer my questions and those answers conflict with decisions made by the town. Batch Asphalt plants do produce, discharge, and curate toxic chemicals in the forms of HAPs and PAHs. The Colorado Health Department describes these toxic chemicals as Hazardous Air Pollutants (HAPs). The main HAPs are Formaldehyde, Acetaldehyde, Benzene, Toluene, Ethylbenzene, and Xylene. I also found that Hydrogen Sulfide, Chromium, Cadmium, and Arsenic can also be found as toxic pollutants at various levels in asphalt plant emissions. The town can even calculate how many pounds of formaldehyde this plant will produce and discharge in an area that has a Community Park, neighborhoods, Library, and 2 Schools. If this plant uses recycled asphalt, it can emit higher levels of HAPs and PAHs due to the recycled asphalt composition.

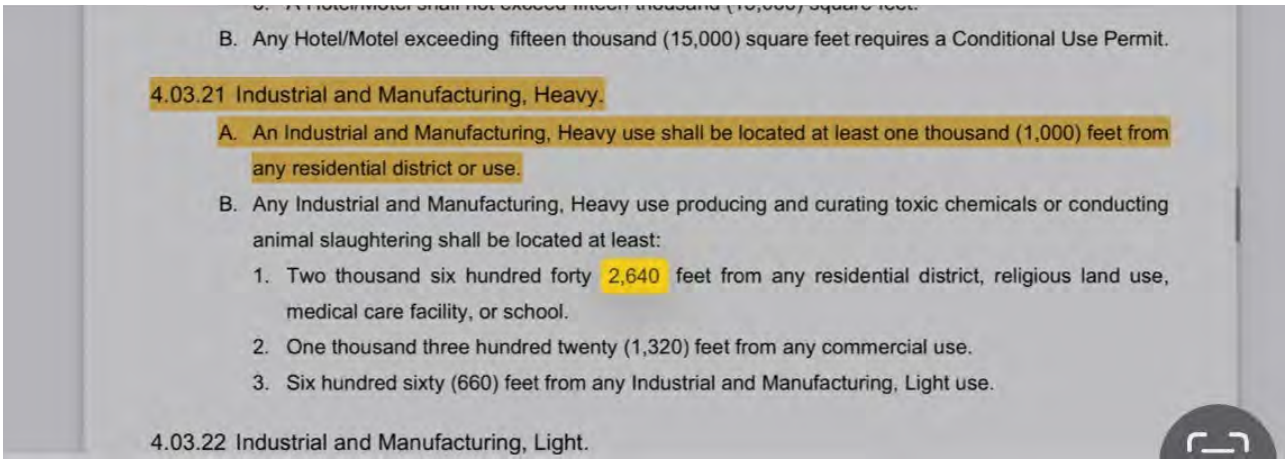
According to the Toxicology and Environmental Epidemiology Department of the Colorado Department of Public Health and Environment, current regulations for this type of asphalt plant only assess particulate matter emissions. There is no information about the levels of HAPs and PAHs that would surround this plant and or changes that would happen with distance. Additionally, this plant will be producing hot asphalt, which is a toxic chemical product, it is only nontoxic when it is fully hardened and not releasing toxic fumes. OSHA has a section on asphalt (Bitumen) fumes and explains that when exposed to this petroleum product, health effects from exposure include headache, skin rash, sensitization, fatigue, reduced appetite, throat and eye irritation, cough, and cancer.

Pregnant women and children are the most susceptible to breathing these known HAPs and PAHs. The American Journal of Obstetrics studies revealed that PAHs, can be found in the placenta and exposure is associated with adverse pregnancy outcomes. The CDC has found an association between Benzene and spina bifida during maternal exposure. Formaldehyde is a known carcinogen, and according to the National Library of Medicine is linked to spontaneous abortions, congenital malformations, and premature birth. Children face more risks from toxic chemical pollution because they have a faster breathing rate which leads to absorbing more toxic chemicals than adults and are outside for longer periods of time.

This batch asphalt plant produces and curates' toxic chemicals. The planning board should not approve this plan due to the production and curating setback of 2,640 feet. There is no variance for this specific setback.

Thanks for your consideration,

Catherine Lytle



B. Any Hotel/Motel exceeding fifteen thousand (15,000) square feet requires a Conditional Use Permit.

4.03.21 Industrial and Manufacturing, Heavy.

A. An Industrial and Manufacturing, Heavy use shall be located at least one thousand (1,000) feet from any residential district or use.

B. Any Industrial and Manufacturing, Heavy use producing and curating toxic chemicals or conducting animal slaughtering shall be located at least:

1. Two thousand six hundred forty 2,640 feet from any residential district, religious land use, medical care facility, or school.
2. One thousand three hundred twenty (1,320) feet from any commercial use.
3. Six hundred sixty (660) feet from any Industrial and Manufacturing, Light use.

4.03.22 Industrial and Manufacturing, Light.

Public Comments
Received Prior to 2pm - 3-6-2023

March 6th Town Planning Meeting

Gary Rightsell <[redacted]>
Mon 3/6/2023 8:36 AM
To: Cody Bird <birdca@wellingtoncolorado.gov>

Hi Cody

My wife and I can NOT make the meeting tonight in person.

We are both AGAINST this proposal for
an ASPHALT PLANT so close to residents!

1) How are they bringing in their chemicals
via the train since they will be building next to the railroad?

2) Seems like the POTENTIAL for another
Ohio Train DERAILMENT NIGHTMARE

3) we will move from Wellington Co
(Buffalo Creek Neighborhood)
if the TOWN MAYOR and its TRUSTEES
approve this REVENUE GRAB called an ASPHALT PLANT !

Cody,
Please feel free to share this w/ meeting if called too!

Thanks for your time!
we would love to read the meeting "minutes" when available?

Gary & Kollette Rightsell
3289 Ambush Dr, Wellington, CO 80549
[redacted]

6 March 2023

Planning Commission
Town of Wellington, CO

Re: Site Plan Applicant Case # 2022SPR03, Connell Resources

Commissioners:

On behalf of our member, Connell Resources, and the Colorado Asphalt Pavement Association, the National Asphalt Pavement Association (NAPA) would like to address concerns regarding applicability of Wellington's Land Use Code < https://www.townofwellington.com/DocumentCenter/View/3859/Land-Use-Code---ADOPTED?bidId= > Section 4.01.21, which differentiates set-back requirements from residential districts based on whether a heavy industrial use facility is "producing and curating toxic chemicals".

Because there is sometimes confusion about the types and amounts of emissions associated with asphalt mix plants (AMPs), we want to set-the-record-straight by providing government-agency documentation and citations, not unverified information from the internet, regarding the following four points:

1) AMP emissions are similar in type and quantity to emissions from common everyday sources;
2) AMP emissions do not create a community health hazard;
3) Asphalt is classified as "non-hazardous"; and
4) AMPs do not 'produce' nor 'curate' toxic chemicals.

AMP emissions are similar in type and quantity to emissions from common everyday sources

As confirmed by Colorado's environmental agency CDPHE, AMPs have been well-characterized regarding their gaseous emission potential, of which over 99.9% are associated with the combustion of fuel used to dry the aggregate (rock) during the pavement mixing process. Such emissions are not dissimilar to combustion-related emissions from everyday processes like residential and school facility heating systems or automobile exhaust. The quantity and type of AMP emissions have also been compared to emissions from fast-food restaurants and gas stations, all located within Wellington's town borders.

For example, a 2018 review < https://www.sanbornhead.com/wp-content/uploads/2021/08/Emissions-Comparison-Report.pdf > identify annual VOC emissions from an AMP are equivalent to 20 residential fireplaces, or that benzene emissions (from the combustion of fuel) are equivalent to those from a single gasoline-filling station or fast-food restaurant. That review also identifies that AMP emissions are but a fraction of ambient air quality concentrations. For example, the concentration of formaldehyde emissions (from the combustion of fuel) 1,000 feet from an AMP facility is a fraction of background ambient air and over 100-times lower than what's found in a conventional home's indoor air (from, e.g., furniture and material off-gassing).

AMP emissions do not create a community health hazard

Between 1998 and 2004, the Agency for Toxic Substances and Disease Registry (ATSDR), which is the federal agency tasked with "protect[ing] communities from harmful health effects related to exposure to natural and man-made hazardous substances," < https://www.atsdr.cdc.gov/about/mission_vision_goals.html > conducted a series of investigations to determine potential health impacts of asphalt emissions on surrounding communities. Seven AMP locations across the country were examined, and one site in Salisbury NC, was put through an extremely rigorous review. < https://www.atsdr.cdc.gov/HAC/pha/APACCarolinaIncandAssociatedAsphaltInc/APAC%20Carolina%20Inc.&%20Associated%20Asphalt%20Inc.%20HC%202-14-07.pdf >

ASPHALT.
AMERICA RIDES ON US.

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GREENBELT, MD 20770

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Phone 301.731.4748
Fax 301.731.4621

AsphaltPavement.org
NAPA@AsphaltPavement.org

In its review, the agency found that:

- "The available data from Salisbury and near other asphalt plants suggests that concentrations of polycyclic aromatic hydrocarbons (PAHs) and volatile organic carbons (VOCs) pose no acute (i.e., short-term) or chronic (i.e., longterm) public health hazard."
- "The data from Salisbury are similar to those found at other asphalt sites."
- "ATSDR sampling from seven sites . . . in the communities surrounding asphalt facilities showed that there do not appear to be any chemicals or compounds at levels that would pose a public health hazard. VOCs and PAHs were detected in very low concentrations, and only H2S, and particulate matter (PM) — as respirable particulates or PM10 and PM2.5 — were slightly elevated."

The PM concentrations detected during ATSDR's review, although 'slightly elevated' above ambient background levels, are consistent with Colorado air-agency permit requirements and would not represent a public health concern. ATSDR also identified that some of the other individual chemical compounds emitted from AMPs due to fuel combustion, like sulfur and nitrogen oxides, could cause eye and lung irritation; and that other chemical (compounds), like carbon monoxide, particulates, and metals, might also pose some concern, "but they are much less likely to produce actual health effects in those exposed offsite." Regardless, all of these components are similarly emitted in everyday combustion sources such as ordinary vehicle exhaust.

Asphalt is classified as "non-hazardous"

One of the public commenters identified that, according to OSHA, asphalt causes cancer. This statement is imprecise. While OSHA's website < https://www.osha.gov/asphalt-fumes > does identify certain potential health impacts associated with 'occupational' exposure to asphaltic material, including, as OSHA indicates, 'skin cancer'; this potential effect is most likely associated with sun exposure during outdoor construction work and was only identified in one of twenty such epidemiologic studies < https://scholars.mssm.edu/en/publications/cancer-risk-in-asphalt-workers-and-roofers-review-and-metaanalysi-2 >. It must also be noted that, especially when browsing the internet, the term 'asphalt' is not necessarily equivalent. For example, roofing asphalt has a much different composition and storage/application temperature compared to paving asphalt, and logically different hazard potential.

Neither USEPA's nor OSHA's hazard classification scheme defines or identifies asphalt as 'hazardous'. In fact, the innocuous nature of the material is recognized by USEPA with regards to the agency's exemption of asphalt pavement mixtures from certain regulations like SPCC < See 40 CFR 112.1(d)(8) https://www.ecfr.gov/current/title-40/chapter-I/subchapter-D/part-112/subpart-A/section-112.1 >. Regarding OSHA, the proper hazard classification for paving asphalt or asphalt mix, whether ambient temperature or at production/application temperature, is 'non-hazardous'.

Of similar confusion, use of the term 'toxic' is generic. In the case of OSHA's hazard classification scheme, it means a material that is fatal after exposure to very small amounts. The term 'carcinogen' is similarly generic. OSHA's hazard classification scheme outlines exactly what evidence is required to label a chemical as a carcinogen. Paving asphalt, either at elevated or ambient temperature, does not exhibit any characteristic or effect that would necessitate any hazard warning label – 'toxic', 'carcinogenic' or other. **Paving asphalt binder and pavement mixtures are classified as non-hazardous**.

AMPs do not 'produce' nor 'curate' toxic chemicals

Wellington's Land Use Code Section 4.03.21 differentiates set-back requirements from residential districts based on whether a heavy industrial use facility is "producing and curating toxic chemicals". Because the Code does not define 'producing' or 'curating', we must look to regulatory agency or other definitions to understand the Code's meaning.

Under USEPA's Toxic Substances Control Act (TSCA) regulation, the agency identifies the term 'manufacture' as a synonymous with 'produce' or production. < https://www.govinfo.gov/content/pkg/CFR-2021-title40-vol33/pdf/CFR-2021-title40-vol33-sec711-3.pdf >. Because AMPs merely mix two or more raw materials together (e.g., asphalt and aggregate), USEPA does not consider such facilities as 'manufacturing' or 'producing' chemical substances regardless of such material hazard or toxicity.

The term 'curating' is a bit more unclear. A dictionary definition of that verb would loosely translate as 'collect for eventual distribution' < https://www.merriam-webster.com/dictionary/curate >. AMPs, similar to other industrial facilities, may purchase, store, and use chemicals (inert, hazardous, toxic, or otherwise) during the production of asphalt pavement mixtures. This is not dissimilar to the storage and use of chemical substances at any of the facilities currently located in Wellington's Industrial Zone District, like the Colorado Color Company, Mountain View Automotive, and others. Similar to these industries, an AMP may store and use a variety of raw materials and chemicals to process or create the finished inert asphalt pavement mixture; these raw materials are in no way being 'curated'.

The National Asphalt Pavement Association appreciates the opportunity to both: set-the-record-straight with accurate, credible, and verifiable information regarding AMP emissions; and review the applicability of Wellington's Land Use Code to site an AMP facility. If you have any further questions, feel free to reach out to me directly.

Respectfully,

Howard Marks
Vice President – EH&S
National Asphalt Pavement Association

Re: Town Planning Meeting for Hot Asphalt Plant

Cody Bird <birdca@wellingtoncolorado.gov>
Mon 3/6/2023 10:58 AM
To: Viss PK <[redacted]>

Kathy and Pete,

Thank you for the correspondence. I have received your email and will include it in the information provided to the Planning Commission.

I hope that you will consider attending the Planning Commission meeting tonight as well to share your comments.

Below are some brief responses to your questions (**in blue**):

Questions:

1. Is this a concluded deal already or is approval still being considered? **Site plans are being considered by the Planning Commission tonight (Monday March 6) at 6:30pm. The Planning Commission will hear the application and public comments at tonight's meeting. The Board of Adjustment has previously approved variances for structure height and setback on October 27, 2022.**
2. What can be done to express our fear for our health if this project goes forward? **The Town has asked for a representative from Larimer County Department of Health and Environment to attend the Planning Commission meeting tonight. County Health, as well as Colorado Department of Public Health and Environment (CDPHE) also require permits and compliance with regulations to operate an asphalt plant. Compliance with applicable County, State and Federal regulations are recommended as requirements of the site plan approval if the site plan is approved.**
3. Is this a permanent structure or just temporary for a specific project? **The applicant is proposing to locate their operations and office here as their primary business location.**

Kind regards,

TOWN OF WELLINGTON
Cody Bird, AICP
Planning Director
Town of Wellington
(970) 568-3554
birdca@wellingtoncolorado.gov
wellingtoncolorado.gov

From: Viss PK <[redacted]>
Sent: Monday, March 6, 2023 9:12 AM
To: Cody Bird <birdca@wellingtoncolorado.gov>
Subject: Town Planning Meeting for Hot Asphalt Plant

Hello Cody,

We live mid block on the last north street (Iron Horse Way) in Buffalo Creek Our backyard faces north and is adjacent to the cornfield. The plant will be visible to us from our back porch, and our kitchen, living room, bathroom and bedroom windows will be exposed

Comments:

- We're very concerned about the toxic chemicals that the plant will be releasing into the air. Pollution this close to our home is alarming. We are in our 70s, and I have asthma. Any amount of poisonous chemicals in the air can be a deadly trigger for an asthma attack.

- We're worried that this plant will bring down our property values This is our greatest investment and seeing it diminish will be a hardship.

Questions:

1. Is this a concluded deal already or is approval still being considered?
2 What can be done to express our fear for our health if this project goes forward?
3. Is this a permanent structure or just temporary for a specific project?

Thank you for including these comments in the presentation packet for tonight's meeting

Kathy and Pete Visser
3266 Iron Horse Way
Wellington, CO 80549
[redacted]

FW: Asphalt Plant

Patti Garcia <garciapa@wellingtoncolorado gov>
Mon 3/6/2023 10 00 AM
To: Cody Bird <birdca@wellingtoncolorado.gov>

From Patti Garc a
Sent Fr day March 3 2023 5 25 PM
To [redacted]
Subject FW Asphalt Plant

H Ayla

The Plann ng Comm ss on has the s te plan for the Connell Asphalt Plant on the r agenda on Monday n ght Appeals of dec s ons made by the Plann ng Comm ss on are made to the Board of Trustees so the Mayor and Trustees are not perm tted to comment on th s tem as t could be cons dered e parte commun cations f there s an appeal

I wanted to respond to you so that you understood why the Mayor d d not respond to your ema l

Patti

TOWN OF WELLINGTON

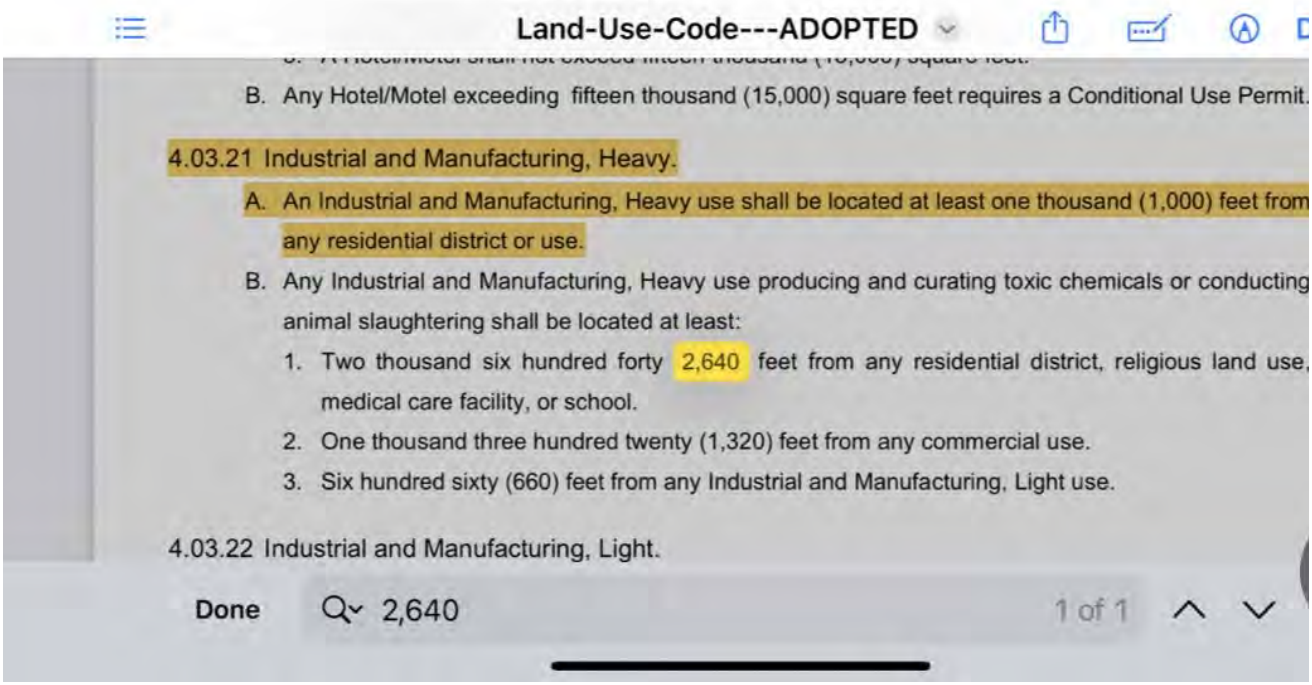
Patti Garcia
Town Administrator
Mobile (970) 473 6033
Email garc apa@wellingtoncolorado gov
Web www well ngtoncolorado gov
8225 3rd Street Well ngton CO 80549

From: Calar Chaussee <chausseec@wellingtoncolorado.gov>
Sent: Friday, March 3, 2023 5:15 PM
To: Patti Garcia <garciapa@wellingtoncolorado gov>
Subject: Fwd: Asphalt Plant

God Bless,
Mayor Chaussee
Ph:(970)652-3261

Begin forwarded message:

> **From:** Ayla Leistikow <[redacted]>
> **Date:** March 3, 2023 at 15:19:12 MST
> **To:** Calar Chaussee <chausseec@wellingtoncolorado.gov>
> **Subject: Asphalt Plant**
>
> Hello!
>
> I am reaching out with concerns regarding the Connell asphalt plant behind the Wellington community park. The planning committee is scheduled to make a decision during their March 6th meeting.
>
> How did the town decide that this heavy industrial plant did not meet the criteria for the land use code for the heavy use, produce and curate setback? No one has been able to give a clear answer. These land use codes are there to protect us and should not be carelessly thrown to the side.
>
> The expectation is that the town should be making these decisions based on research and data from unbiased sources like the Colorado Health Department. Due diligence will also allow the town to be transparent with residents about their decisions. The Colorado Health Department was able to answer my questions, and it conflicts with decisions made by the town.
>
> This town has been burdened by past decisions and the residents have been very clear; we expect better.
>
> Thanks,
> Ayla Leistikow


Land-Use-Code---ADOPTED
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4.03.21 Industrial and Manufacturing, Heavy.
A. An Industrial and Manufacturing, Heavy use shall be located at least one thousand (1,000) feet from any residential district or use.
B. Any Industrial and Manufacturing, Heavy use producing and curating toxic chemicals or conducting animal slaughtering shall be located at least:
1. Two thousand six hundred forty 2,640 feet from any residential district, religious land use, medical care facility, or school.
2. One thousand three hundred twenty (1,320) feet from any commercial use.
3. Six hundred sixty (660) feet from any Industrial and Manufacturing, Light use.
4.03.22 Industrial and Manufacturing, Light.
Done
2,640
1 of 1

FW: Asphalt Plant Land Use Code Violation

Patti Garcia <garciapa@wellingtoncolorado.gov>
Mon 3/6/2023 9:58 AM
To: [redacted] <[redacted]>
Cc: Cody Bird <birdca@wellingtoncolorado.gov>

Hi Maureen –

The Planning Commission has the site plan for the Connell Asphalt Plant on their agenda on Monday night. The email you sent was to the Board of Trustees; the Planning Commission is a separate advisory board and your email will be provided to them. Appeals of decisions made by the Planning Commission are made to the Board of Trustees so the Mayor and Trustees are not permitted to comment on this item as it could be considered ex-parte communications if there is an appeal.

I wanted to respond to you so that you understood why the Mayor and Trustees did not respond to your email.

Patti

TOWN OF WELLINGTON

Patti Garcia
Town Administrator
Mobile: (970) 473-6033
Email: garciapa@wellingtoncolorado.gov
Web: www.wellingtoncolorado.gov
8225 3rd Street, Wellington, CO 80549

From: Maureen Kudola [redacted]
Sent: Sunday, March 5, 2023 9:47 PM
To: Calar Chaussee chausseec@wellingtoncolorado gov
Subject: Fwd: Asphalt Plant Land Use Code Violation

---------- Forwarded message ----------
From **Maureen Kudola** [redacted]
Date: Sunday, March 5, 2023
Subject Asphalt Plant Land Use Code Violation
To: Birdca@wellingtoncolorado.gov
Cc Tietz@wellingtoncolorado gov, wiegandd@wellingtoncolorado gov, gaiterjm@wellingtoncolorado gov, daileyrm@wellingtoncolorado.gov, chausseec@wellingtoncolorado.gov

To the Planning Board,

I would use this letter to ask you to please review Land Use Code 4 03 21,B,1 In regards to the proposed Asphalt Plant site currently under review. For some reason this proposed Asphalt plant is being considered as an Industrial and Manufacturing Heavy Use site that only requires a 1,000' setback from residential areas, rather than an

Industrial and Manufacturing Heavy use plant that produces and curated toxic chemicals, which A Heavy Industrial Hot Asphalt plant clearly is, and requires a 2,640' setback.

Asphalt plants, according to the Colorado Department of Health, produce toxic chemicals in the form of Hazardous Air Pollutants (HAPs) and PAHs Known contaminants produced include but are not limited to, Formaldehyde, Acetadelhyde, Bensene, Toluene, Ethylbenzene, andXylene. This clearly shows the 1,000' setback proposed by the current site is not sufficient according to the Land Use Code

The entire neighborhood of Buffalo Creek would be effected by this inadequate setback, as well as a much frequented community park, the library and two schools. The chemicals noted by the Colorado Department of Health as being produced by asphalt plants adversely effect all people, but especially children and pregnant women, which surely has to be of utmost concern to this board considering the close proximity of two schools.

OSHA has a section on asphalt fumes that noted health effects range from headache, skin rash, fatigue, throat and eye irritation, cough, and even cancer

And aside from the blatant disregard this proposed site has shown the Land Use Code, and the concern for the health of the Wellington community, home values across Buffalo Creek will be negatively effected.

Given all this information it would be highly irresponsible for the town and committee to move forward with the asphalt plant at the current proposed site

Thank you
Maureen Kudola

FW: Asphalt Plant

Patti Garcia <garciapa@wellingtoncolorado.gov>
Mon 3/6/2023 10:00 AM
To: Cody Bird <birdca@wellingtoncolorado.gov>

From: Patti Garcia
Sent: Friday, March 3, 2023 5:24 PM
To: [redacted]
Subject: FW: Asphalt Plant

Hi Mary –

The Planning Commission has the site plan for the Connell Asphalt Plant on their agenda on Monday night. Appeals of decisions made by the Planning Commission are made to the Board of Trustees so the Mayor and Trustees are not permitted to comment on this item as it could be considered ex-parte communications if there is an appeal.

I wanted to respond to you so that you understood why the Mayor did not respond to your email.

Patti

TOWN OF WELLINGTON

Patti Garcia
Town Administrator
Mobile: (970) 473-6033
Email: garciapa@wellingtoncolorado.gov
Web: www.wellingtoncolorado.gov
8225 3rd Street, Wellington, CO 80549

From: Calar Chaussee <chausseec@wellingtoncolorado.gov>
Sent: Friday, March 3, 2023 5 14 PM
To: Patti Garcia <garciapa@wellingtoncolorado.gov>
Subject: Fwd Asphalt Plant

God Bless,
Mayor Chaussee
Ph:(970)652 3261

Begin forwarded message

From: Mary Kerin <[redacted]>
Date: March 3, 2023 at 14 31 19 MST

To: Calar Chaussee chausseec@wellingtoncolorado gov
Subject: Asphalt Plant

Dear Calar,

I am hoping that you and the other Trustees will say no to the asphalt plant. It is too much of a health risk to the park, the town and the nearby residents. Thank you for your consideration.

James Kerin

Asphalt Plant in Wellington

Chris Wiedeman <[redacted]>
Sun 3/5/2023 12:35 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Hi, this is Chris Wiedeman at 8734 Indian Village Dr. and I wanted to express my thoughts on the asphalt plant. As a homeowner in this community, I felt compelled to point out the dangers of having said plant near our neighborhood. I used to work in the industrial combustion industry in the mid 1990's and asphalt plants were often sites that I had to visit and support to make air/fuel ratio adjustments for proper EPA tuning and emissions. Asphalt plants are typically in very rural areas, where they are not within sight of a neighborhood for many reasons.

"Cons" that will directly have an impact: 1) Constant dust from crushing rocks and conveying materials to the point of **brown-out** conditions that will waft through the neighborhood at all hours of the day, 2) Constant noise from the equipment such as, crushers, conveyors, rotary dryers, oil heaters, material movers, haulers (trucks), alarms (buzzers at 130+ dB), etc. 3) Truck traffic bringing in materials and carrying out completed product for road construction, while spilling material on our roads with each truckload. 4) Various noxious smells and fumes from pollutants and toxic chemicals, causing breathing issues to those with lung problems or health issues. 5) This will be an eyesore that will greatly reduce our home values immediately upon construction.

On the "Pros" side: Absolutely nothing. Nothing beneficial will come to this community by putting this plant in this location. Except, the asphalt company will benefit, I guess.

Please take this into consideration. Thank you.
Chris & Danielle Wiedeman
[redacted]

Fw: Town Meeting on Asphalt Plant

Paul White <[redacted]>
Sun 3/5/2023 6:36 AM
To: Cody Bird <birdca@wellingtoncolorado.gov>

Thank you for the flyer letting us know about the meeting on this very important subject. I have two comments on the flyer though

1 Although the flyer says when this meeting is, it does not say where it is taking place

2 At the bottom of the flyer it states "or **don't want** to speak at the meeting " Shouldn't it say "or **wants** to speak at the meeting..."?

Paul White (18-year Wellington Buffalo Creek resident)

Re: Asphalt Plant

Cody Bird <birdca@wellingtoncolorado.gov>
Mon 3/6/2023 10:17 AM
To: Karie Madigan <[redacted]>

Hello Karie and Nick,

Thank you for the correspondence. I have received your email and will include it in the information provided to the Planning Commission. The Commission will receive an email and hard copies of correspondence received prior to the meeting.

While I won't be able to address every one of your questions in great detail, I can respond to a few:

Why does the Town of Wellington feel this proposed location near Buffalo Creek is the best option? **The Town was not involved in identifying or soliciting the proposed applicant or use for this site. The property has been zoned for industrial uses since annexed into the Town in 2000. The owner of the property desires to sell the site, and the applicant, Connell Resources, submitted their application for land use approvals to the Town. The Town is processing the applications following the Town's procedures and standards.**

Why are our concerns (residents) being dismissed? **The Town and Planning Commission desire to hear all resident comments. Land use decisions often include conditions of approval to mitigate potential impacts development of a site may create on adjacent properties. If the Planning Commission approves a site plan, conditions of approval are recommended to address concerns that have been voiced. In addition, there are other County, State and Federal requirements and permits that must be obtained for an asphalt plant to operate. The Town does not have standards or regulations for matters that are regulated by other governmental jurisdictions, and instead relies on those agencies to regulate and enforce those matters.**

Why is there an employee of said asphalt plant on our town board being allowed to vote this in? (I have not done my own research on that, I've heard from neighbors that there is) **I am not aware of any of the Town's Planning Commission that would be voting on this site plan that are employed by the applicant, Connell Resources. I believe there may be a former Board of Trustee member that is employed by the applicant; however, that former Board member is not involved in the vote on this site plan application.**

Why is this the type of revenue the Town of Wellington is looking for? **Similar to the above, the Town is not soliciting this applicant or land use. The application submitted by the applicant is being processed in accordance with the Town's procedures and development standards.**

While the above may not address all of your concerns, I hope that it provides some context to the Town's application procedures and the current application.

I appreciate you sending your comments to staff to include in the Planning Commission's information

Thank you.

TOWN OF WELLINGTON

Cody Bird, AICP
Planning Director

Town of Wellington
(970) 568-3554
birdca@wellingtoncolorado.gov
wellingtoncolorado.gov

From: Karie Madigan <[redacted]>
Sent: Sunday, March 5, 2023 7:29 PM
To: Cody Bird <birdca@wellingtoncolorado.gov>
Subject: Asphalt Plant

Hello Cody,

Thank you for taking emails regarding the proposed asphalt plant located in Wellington. My husband and I will not be able to attend the Town Planning Meeting tomorrow (3/6/2023 at 6:30pm) and I would like to express our concern for the proposed asphalt plant.

My husband and I own our home located at 8818 Crossfire Drive Wellington. We have resided here since 2014 and enjoy our community and neighborhood. When we learned there was a proposed asphalt plant within our neighborhood it definitely raised concern for our health, well-being and of course our home value. Upon research I've have seen numerous documents stating that one should live approximately 2.5 miles away from an asphalt plant to avoid common pollutants to a human. The pollutants of concern are listed in several articles, research documents and EPA guidelines. A simple google search of heath concerns with an asphalt plant near neighborhoods is as follows: Health effects from exposure to asphalt fumes include headache, skin rash, sensitization, fatigue, reduced appetite, throat and eye irritation, cough, and skin cancer.

My questions are WHY?
Why does the Town of Wellington feel this proposed location near Buffalo Creek is the best option?
Why are our concerns (residents) being dismissed?
Why is there an employee of said asphalt plant on our town board being allowed to vote this in? (I have not done my own research on that, I've heard from neighbors that there is)
Why is this the type of revenue the Town of Wellington is looking for?

If there was an asphalt plant being built not even a mile from a park and neighborhood, would you want to live next to that? With the daily operations, wear and tear on our roads (that already have issues) noise, pollution, and projected congestion of traffic flow. I'm sure many of the people in this meeting would agree this is not the area to put this plant. If the Town of Wellington is that concerned about revenue and making our town money, there should be a different location proposed not near a community park and neighborhood. I also think about the businesses that are already established near the projected site. How many of those hard working people want to breathe in the chemicals from the asphalt plant? How many of those businesses will look for other locations to operate from? Then revenue can be lost for the Town of Wellington if business move out because of this.

I hope this was the correct platform to express my concerns, if not, I apologize. Long story short, we are not in favor of this plant being proposed at this location or frankly any location near homes, parks and schools. I really hope the board takes what is being expresses seriously and vote to not allow this. Our town has so much potential and to pollute it with this plant just seems irresponsible and greedy.

Thank you for all you do and I appreciate you taking the time to read this.

Karie Madigan-Lewis and Nick Lewis
Homeowners

Asphalt Plant

Gilda Gallagher <[redacted]>

Sun 3/5/2023 8:42 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Hi Cody,
Please add my name to the list of residents opposed to the asphalt plant. My husband should be able to attend the meeting, but I cannot.
Thank you,
Gilda Gallagher

Sent from my iPhone

Town Meeting for Hot Asphalt Plant

Troy Richmond <[redacted]>

Sat 3/4/2023 8:49 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Hi Cody, I would like to request details on the town meeting. I am unsure if I will be able to attend on Monday. Do you have a map of the proposed location?

Thank you,
Troy Richmond
3351 Crazy Horse Drive

FW: Asphalt Plant Land Use Code 4.03.21,B,1

Patti Garcia <garciapa@wellingtoncolorado.gov>
Mon 3/6/2023 9:57 AM
To: [redacted] <[redacted]>
Cc: Cody Bird <birdca@wellingtoncolorado.gov>

Hi Katie –

The Planning Commission has the site plan for the Connell Asphalt Plant on their agenda on Monday night. The email you sent was to the Board of Trustees; the Planning Commission is a separate advisory board and your email will be provided to them. Appeals of decisions made by the Planning Commission are made to the Board of Trustees so the Mayor and Trustees are not permitted to comment on this item as it could be considered ex-parte communications if there is an appeal.

I wanted to respond to you so that you understood why the Mayor and Trustees did not respond to your email.

Patti

TOWN OF WELLINGTON

Patti Garcia
Town Administrator
Mobile: (970) 473-6033
Email: garciapa@wellingtoncolorado.gov
Web: www.wellingtoncolorado.gov
8225 3rd Street, Wellington, CO 80549

From: Katie Meyer <[redacted]>
Sent: Monday, March 6, 2023 7 28 AM
To: Cody Bird <birdca@wellingtoncolorado.gov>; Shirrell Tietz <tietzs@wellingtoncolorado.gov>; David Wiegand wiegandd@wellingtoncolorado gov ; Brian Mason masonb@wellingtoncolorado gov ; Jon Gaiter <gaiterjm@wellingtoncolorado.gov>; Rebekka Dailey <daileyrm@wellingtoncolorado.gov>; Calar Chaussee chausseec@wellingtoncolorado gov
Cc: patferrier@coloradoan.com; Jeff Meyer <[redacted]>; [redacted]
Subject: Asphalt Plant Land Use Code 4 03 21,B,1
Importance: High

Dear Planning Board,

The intent of this letter is to bring attention to the land use code 4.03.21,B, 1. It states that any Industrial or Manufacturing, Heavy use producing and curating toxic chemicals or conducting animal slaughtering shall be located at least 2,640 feet from any residential district, religious land use, medical care facility, or school. The town has due diligence to find the correct unbiased research and data to make sure the land use code is properly followed. What research and data were used to make the decision that this Heavy Industrial Batch (hot) Asphalt Plant does not meet the criteria for producing and curating toxic chemicals?

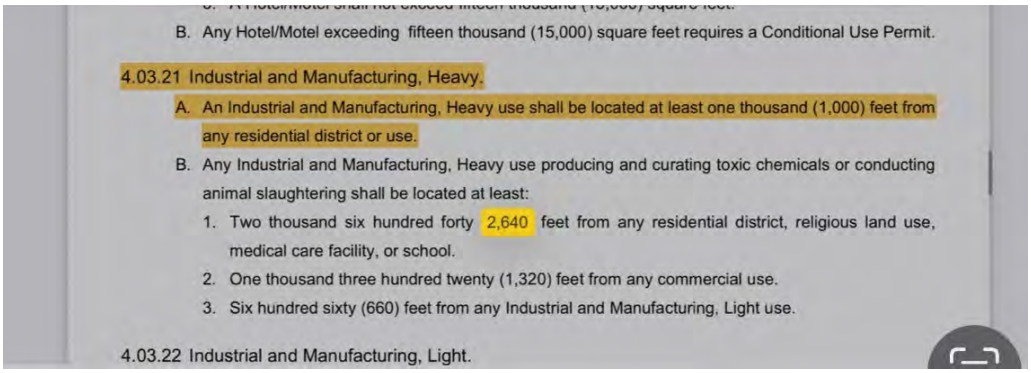
I contacted the Colorado Health Department to answer my questions and those answers conflict with decisions made by the town. Batch Asphalt plants do produce, discharge, and curate toxic chemicals in the forms of HAPs and PAHs The Colorado Health Department describes these toxic chemicals as Hazardous Air Pollutants (HAPs) The main HAPs are Formaldehyde, Acetaldehyde, Benzene, Toluene, Ethylbenzene, and Xylene. I also found that Hydrogen Sulfide, Chromium, Cadmium, and Arsenic can also be found as toxic pollutants at various levels in asphalt plant emissions. The town can even calculate how many pounds of formaldehyde this plant will produce and discharge in an area that has a Community Park, neighborhoods, Library, and 2 Schools If this plant uses recycled asphalt, it can emit higher levels of HAPs and PAHs due to the recycled asphalt composition.

According to the Toxicology and Environmental Epidemiology Department of the Colorado Department of Public Health and Environment, current regulations for this type of asphalt plant only assess particulate matter emissions. There is no information about the levels of HAPs and PAHs that would surround this plant and or changes that would happen with distance Additionally, this plant will be producing hot asphalt, which is a toxic chemical product, it is only nontoxic when it is fully hardened and not releasing toxic fumes. OSHA has a section on asphalt (Bitumen) fumes and explains that when exposed to this petroleum product, health effects from exposure include headache, skin rash, sensitization, fatigue, reduced appetite, throat and eye irritation, cough, and cancer

Pregnant women and children are the most susceptible to breathing these known HAPs and PAHs The American Journal of Obstetrics studies revealed that PAHs, can be found in the placenta and exposure is associated with adverse pregnancy outcomes The CDC has found an association between Benzene and spina bifida during maternal exposure. Formaldehyde is a known carcinogen, and according to the National Library of Medicine is linked to spontaneous abortions, congenital malformations, and premature birth Children face more risks from toxic chemical pollution because they have a faster breathing rate which leads to absorbing more toxic chemicals than adults and are outside for longer periods of time

This batch asphalt plant produces and curates' toxic chemicals The planning board should not approve this plan due to the production and curating setback of 2,640 feet. There is no variance for this specific setback.

Thanks for your consideration,
Katie Meyer



B. Any Hotel/Motel exceeding fifteen thousand (15,000) square feet requires a Conditional Use Permit.

4.03.21 Industrial and Manufacturing, Heavy.

A. An Industrial and Manufacturing, Heavy use shall be located at least one thousand (1,000) feet from any residential district or use.

B. Any Industrial and Manufacturing, Heavy use producing and curating toxic chemicals or conducting animal slaughtering shall be located at least:

1. Two thousand six hundred forty 2,640 feet from any residential district, religious land use, medical care facility, or school.
2. One thousand three hundred twenty (1,320) feet from any commercial use.
3. Six hundred sixty (660) feet from any Industrial and Manufacturing, Light use.

4.03.22 Industrial and Manufacturing, Light.

March 6th

Town Planning Meeting at 6:30 PM for Hot Asphalt Plant behind Wellington Community Park

HEALTH IMPACT, AIR, NOISE POLLUTION, AND LOSS OF PROPERTY VALUE
Asphalt fumes are known toxins. Exposure to these air toxins may cause, cancer, central nervous system problems, liver damage, respiratory problems, and skin irritation.

What are the main Toxic Chemicals?
Formaldehyde, Acetaldehyde, Benzene, Hydrogen sulfide, Chromium, PAHS, Cadmium, Arsenic, Toluene, Ethylbenzene, Xylene, along with smaller amounts of other toxic chemicals. According to the Colorado Department of Public Health and Environment current regulations for emissions only assess particulate matter, not toxic chemicals in the forms of HAPs and PAHs.

Contact the town of Wellington
Trustee: Shirrell Tietz- tietzs@wellingtoncolorado.gov
Trustee: David Wiegand- wiegandd@wellingtoncolorado.gov
Trustee: Brian Mason- masonb@wellingtoncolorado.gov
Trustee: Jon Gaiter- gaiterjm@wellingtoncolorado.gov
Trustee: Rebekka Daily- daileyrm@wellingtoncolorado.gov
Mayor: Calar Chaussee- chausseec@wellingtoncolorado.gov

Do Your Research

- Agency for toxic substances and disease registry (ATSDR)
- OSHA- Asphalt (Bitumen) Fumes
- CDC
- EPA
- National Library of Medicine (PubChem)

If you cannot make the meeting, or don't want to speak at the meeting email Cody Bird at birdca@wellingtoncolorado.gov . Emails will be accepted and added to the meeting packet until 3pm on March 6th.

ADVANCE TANK AND CONSTRUCTION

To: Wellington Town Planning Commission

From: Lisa K. Clay
CEO & General Counsel

Re: Connell Batch Plant Permit

Date of Review: March 6, 2023

Date: March 3, 2023

I write to you regarding the Connell Batch Plant. As a long term employee of Advance Tank, a family member of the original owners, and in house legal counsel since 1991, I wanted to provide some history of the ownership and zoning of the property in question.

Advance Tank (ATC) purchased the property that fronts County Road 64 (Washington Street) back in 1984, when it was still a dirt road. We built our initial two-story office and shop with an Industrial Development Revenue Bond on the front ten acres. In 1999 ATC bought just under 38 acres due north of our facility. ATC wanted room to expand and to start developing space for other industrial businesses. At that time, ATC started working with the Town of Wellington to annex and plat the acreage as the Box Elder Business Park. As one of the few industrial companies in Wellington we wanted to make sure there was property for expansion, but also start a buffer from potential residential zoning. Wellington Point had just been zoned and we had concern that if we did not develop a buffer, we would be an 'ugly' business somewhere down the road to potential homeowners. The annexation and zoning to industrial use happened quickly. It included the property that ATC purchased in 2001 which is approximately 65 acres due north of our initial purchase taking our land ownership to County Road 66.

This land is fully bordered on the East by the railroad and for the front 40+ acres by Box Elder Creek. The back 60 acres was bordered by agricultural land when we purchased it. At the time of our purchase and annexation, we felt this was a great area for the business park because it had some built-in buffers. The Town did too. Unfortunately, in 2019 the Town zoned residential the property to the west of our northern property. And in March of 2022 adopted the Land Use Code with a 1000 foot set back. Both combined, severely hamper the industrial land use zoning. However, the Variance Board saw the merit of allowing the zoning variance in order to allow the original intent for the property to stand.

Since that variance was granted, Connell has met with property owners that surround the property under contract that are within the 1000 foot set back. The issues brought up by those owners have been resolved. Connell has met with the planning department multiple times to work through concerns the department has brought up. Connell reached out to the Buffalo Creek neighborhood to try and

discuss with those concerned what the plant would look like and see if their issues could be addressed. Unfortunately, they declined to meet with Connell. Overall, Connell has shown that they are a company that values working with its neighbors, but the neighbors need to come to the table so a discussion can take place.

ATC is a long term, family owned, business in Wellington. Since coming in 1984 we have grown our footprint by triple, hired Wellington residents with primary jobs, and have worked to support the other local businesses when we can. The industrial zoning of the property to County Road 66 has helped bring other businesses to our community to help with the tax base and primary job numbers for Wellington. Connell Resources is a long standing, locally owned, successful business within Northern Colorado. Connell's facility just South of Costco on I25 is well maintained and landscaped. Connell supports local business and is a generous contributor to the community.

I respectfully ask that you approve Connell's permit. With Advance Tank on the South of the Industrial Park and Connell on the North, Wellington would have two Northern Colorado, mid-size businesses assisting Wellington with much needed tax revenue. As well as companies that are concerned with what happens in Wellington versus a business that comes from out of state. Wellington will gain from issuing the permit because you know the entity you are getting.

Thank you for your time and attention to this matter.

to be added to the packet re: Connell Asphalt plant.

Susanne B. <[redacted]>

Thu 3/2/2023 9:52 PM

To: Paul Whalen <whalenp@wellingtoncolorado.gov>;Cody Bird <birdca@wellingtoncolorado.gov>

I am writing to express my concern regarding the Asphalt plant that Connell Industires has proposed to build close to my development which is Buffalo Creek. I was not made aware of the Asphalt plant and the Town of Wellington deciding to approve this plant until a Newsletter in November of 2022 mentioned this was going to be done. Many of my neighbors as well as myself were never notified of this plant and the approval by the Town of Wellington. I feel this was done in a very underhanded way and with people who will bear the impact of the noise pollution and the health issues that residents in Timnith have developed due to the Asphalt plant that was built near them. This plant is close to a children's playground and the Buffalo Creek community as well as the new school that was just opened this past year.The wind that constantly blows here in Wellington will have an impact on residents and I feel that the Town of Wellington has sold out the people who live close to the proposed plant. Noise pollution and chemicals and also chances of fires are not something I am looking forward to should this plant be allowed to be built. The stress that this has caused is intolerable. It seems to me the Town of Wellington is not concerned about turning Wellington in Commerce City. I would like this email added to the packet.

Susanne Burtis
3234 Wild West Lane
Wellington CO 80549

TOWN OF WELLINGTON
PLANNING COMMISSION
May 1, 2023
6:30 PM

Leeper Center, 3800 Wilson Avenue, Wellington CO

REGULAR MEETING

Individuals wishing to make public comments must attend the meeting in person or may submit comments by sending an email to birdca@wellingtoncolorado.gov. The email must be received by 3:00 p.m. Friday, April 28, 2023. After 3:00 p.m. on April 28, written public comments can not be accepted. The comments will be provided to the Commissioners at the meeting. Emailed comments will not be read during the meeting.

The Zoom information below is for online viewing and listening only.

Please click the link below to join the webinar:
https://us06web.zoom.us/j/86154011660?pwd=VnZxZlRtUHRmNCtVSVpOcDIvYjZlQT09
Passcode: 446308
Webinar ID: 861 5401 1660
Or One tap mobile:
US: +17207072699,,87576162114# or +12532158782,,87576162114# Or Telephone:
US: +1 720 707 2699 or +1 253 215 8782 or +1 346 248 7799

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1. CALL TO ORDER
2. ROLL CALL
3. ADDITIONS TO OR DELETIONS FROM THE AGENDA
4. PUBLIC FORUM
5. CONSIDERATION OF MINUTES
   A. Meeting Minutes of April 3, 2023
6. OLD BUSINESS
   A. Site Plan Review - Connell Resources Asphalt Plant - Continued from March 6, 2023
7. NEW BUSINESS
8. COMMUNICATIONS
9. ADJOURNMENT

The Town of Wellington will make reasonable accommodations for access to Town services, programs, and activities and special communication arrangements Individuals needing special accommodation may request assistance by contacting at Town Hall or at 970-568-3381 at least 24 hours in advance.

Planning Commission Meeting

Date: May 1, 2023
Submitted By: Cody Bird, Planning Director
Subject: Site Plan Review - Connell Resources Asphalt Plant - Continued from March 6, 2023

EXECUTIVE SUMMARY

At the March 6, 2023 regular Planning Commission meeting, the Commission was presented with an application for a site development plan proposed by Connell Resources, Inc. Written public comments were received the day of the meeting and verbal public comments were provided at the meeting and the Commission did not have adequate time to review and evaluate the public comments. Additional questions were raised at the meeting, and the Planning Commission desired additional time to consider the public comments and to have the applicant and Town staff provide additional information related to the topics of question. The agenda item was tabled to the May 1, 2023 regular Planning Commission meeting.

The applicant, Connell Resources, Inc., has submitted a request to continue the consideration of the site development plan to the June 5, 2023 regular Planning Commission meeting (Connell request attached). At the time of this agenda publication, the final studies and reports being prepared by the applicant are not yet available, and the applicant is requesting the continuation to allow additional time for completing the studies and reports to be provided to the Planning Commission.

Prior to receiving the request for continuation from the applicant, Town staff had advised the public that written public comments pertaining to this site plan application would be included in the May 1, 2023 Planning Commission agenda packet to be published April 25, 2023. The written communications received prior to 3:00pm on April 24, 2023 are included in this agenda packet. Written comments will continue to be accepted until 3:00pm Friday, April 28, 2023 and will be published in an amended packet and available here prior to the meeting: https://www.wellingtoncolorado.gov/129/Agendas-Minutes.

Town staff recommends the Planning Commission accept the applicant's request to continue the agenda item to allow time to complete studies and responses, and table the agenda item to the June 5, 2023 meeting. The Planning Commission may still receive public comments at the May 1, 2023 meeting. If the Planning Commission chooses to table the agenda item, there will also be additional opportunities for public comments to be made in writing for a rescheduled date as well as opportunity for verbal public comments at a rescheduled meeting date.

BACKGROUND / DISCUSSION

STAFF RECOMMENDATION

Move to table the site plan review for Connell Resources to the regular meeting of the Planning Commission to be held June 5, 2023 at 6:30pm at the Wilson Leeper Center, 3800 Wilson Ave., Wellington, Colorado.

ATTACHMENTS

1. Connell Continuation Request
2. Public Comments Received - 4/25/2023
3. Public Comments Received - 4/28/2023

Brownstein

Brownstein Hyatt Farber Schreck, LLP
303.223.1100 main
410 Seventeenth Street, Suite 2200
Denver, Colorado 80202

April 25, 2023

Carolynne C. White
Attorney at Law
303.223.1197 direct
cwhite@bhfs.com

VIA EMAIL

Planning Commission of the Town of Wellington
c/o Cody Bird, Planning Director
Leeper Center Board Room
3800 Wilson Avenue
Wellington, CO 80549

RE: Connell Resources – Site Plan Approval for the Wellington Asphalt Plant – Request for Continuance of the May 1, 2023 Hearing Before Planning Commission

Dear Planning Commission and Mr. Bird:

We are writing this letter on behalf of our client, Connell Resources, Inc. ("**Connell**"), the applicant for a site plan for an asphalt mixing plant (the "**Application**") located in the town of Wellington (the "**Town**"), county of Larimer ("**County**"), state of Colorado (the "**State**") along County Road 66 ("**CR 66**"), the North Poudre Irrigation ditch and the BNSF rail line (the "**Property**"). The Application proposes an office building, silos/plant, welding/maintenance shop, fueling facilities and workshop (the "**Project**").

The Application was presented to this Planning Commission (the "**Commission**") on March 6, 2023 (the "**Prior Hearing**"), which was continued to May 1, 2023 to allow Connell and County staff time to provide more information pertaining to the Commission's and the public's questions. During the Prior Hearing, the Commission asked Connell to provide information, studies and reports pertaining to the safety of the Project and specifically, an air dispersion modeling report that would identify any pollutants in connection with the operation of the Project. Connell promptly commissioned the air dispersion modeling report, but unfortunately a final draft of the report is not yet complete.

Connell is therefore requesting a continuance of the May 1, 2023 hearing to ensure that it can provide this Commission with the best available and accurate information, and give this Commission and County staff ample opportunity to review that information. It is our understanding that the next available hearing date is June 5, 2023, and we therefore request that the May 1, 2023 hearing be continued to June 5, 2023.

Thank you for your time and consideration. We look forward to your response.

Sincerely,

Carolynne C. White

cc: Dan Sapienza, esq.

25559596.1

Print

Planning Commission May 1, 2023 Public Comment - Submission #3019

Date Submitted: 4/24/2023

First and Last Name*

Elana Hurwitz

Email Address*

e_kerson@yahoo.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

PO Box 1374 Wellington CO

Public Comment for the Planning Commission May 1, 2023 Meeting

April 24, 2023 Dear Planning Commission Members, As you know, the EPA has designated the Northern Colorado Front Range region as a "nonattainment" area for ozone, and the construction and operation of an asphalt plant in this area would only worsen the air quality problems we already face. To protect and preserve Colorado's public health and valuable resources such as our water, hot asphalt plants must adhere to strict air, water and waste requirements administered by the CO Department. of Health and Environment. (CDPHE) Asphalt plants emit a wide range of pollutants, including volatile organic compounds, particulate matter, and greenhouse gases, all of which contribute to the formation of ground-level ozone. This could have serious health consequences for the residents of Wellington and the surrounding communities. In addition, the transportation of asphalt also poses a risk of water and soil contamination. The potential for spills or leaks during transportation could have serious consequences for local water sources and soil quality. This is particularly concerning given the importance of agriculture in this region. The proposed location of the asphalt plant is in close proximity to two schools, the library, and a community park. The potential impact on the health and well-being of our children and families cannot be ignored. The noise and air pollution generated by the plant and increased truck traffic would have serious consequences for the surrounding homes, schools, and park, affecting the quality of life for the entire community. Furthermore, the impact of the proposed asphalt plant will not be limited to the immediate area surrounding it. Due to the prevailing winds in the region, the emissions and pollution from the plant would likely spread throughout the town, affecting the health and well-being of all residents. This is unacceptable, particularly for a community that values its natural environment and the health of its citizens. To mitigate these impacts, the plant's operators would need to implement robust pollution control measures, including state-of-the-art emissions control technologies and best practices for managing truck traffic. However, it is unclear whether these measures would be sufficient to protect the health and well-being of the surrounding community and environment. While the proponents of the asphalt plant may argue that it will bring economic benefits to the community, we cannot ignore the potential environmental and health costs. The long-term impacts of the pollution generated by the plant and its transportation far outweigh any short-term economic gains. I have questions related to the process of the plant approval: 1. Has there been an Environmental Impact Study done by and independent service? 2. Have the air quality records (New Source Performance Standards, and APEN report/forms) and storage regulation reports of onsite chemicals from the Connell plant in Timnath been reviewed for comparisons? 3. How were the numbers generated for truck trips that they determined for this facility? 4. When the town of Wellington has more road maintenance required to do due to the widening of roads and additional turn lanes and on/off ramp lanes for the plant that are added to the existing roads around the plant, how much will that raise the taxes for the residents in town to pay for this increased road care? 5. Has the plant construction project been approved by the Flood Review board; passed a Geotechnical report recommendations, and have a storm water permit? 6. what are their dust control plans to comply with state requirements for them? 7. How would the storage of materials so that they are not impacting stormwater in runoff planned to be safe, and what would happen if they aren't, how would the plans be enforced? 8. Is there going to be a community revue committee - separate from the planning board, made up of concerned citizens- to oversee the plant's compliance to the regulations for state, Larimer county and town of Wellington regulations? 9. If the final approval air permit from the state Air Pollution Control Division (APCD) is valid for the life of the equipment, what happens if there is an equipment failure? 10. Are there any records from the Timnath plant about inspections routinely done by APCD? And have we see the existing permit to see the emissions information that exists there? 11. What are the Timnath plant's existing documents from the "New Source performance Standards" requirements CO Reg. No. 6 Part A Subpart I? Thank you for your consideration of these questions and concerns. Most Sincerely, Elana Hurwitz Wellington Old Town Resident PO Box 1374 Wellington, CO 80549

Optional File Attachment

EHurwitz_Letter_4_24_23_to.pdf

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Construction_CleanAir.pdf

Optional File Attachment

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April 24, 2023

Dear Planning Commission members

As you know, the EPA has designated the Northern Colorado Front Range region as a "nonattainment" area for ozone, and the construction and operation of an asphalt plant in this area would only worsen the air quality problems we already face.

To protect and preserve Colorado's public health and valuable resources such as our water, hot asphalt plants must adhere to strict air, water and waste requirements administered by the CO Department. of Health and Environment. (CDPHE)

Asphalt plants emit a wide range of pollutants, including volatile organic compounds, particulate matter, and greenhouse gases, all of which contribute to the formation of ground-level ozone. This could have serious health consequences for the residents of Wellington and the surrounding communities.

In addition, the transportation of asphalt also poses a risk of water and soil contamination. The potential for spills or leaks during transportation could have serious consequences for local water sources and soil quality. This is particularly concerning given the importance of agriculture in this region.

The proposed location of the asphalt plant is in close proximity to two schools, the library, and a community park. The potential impact on the health and well-being of our children and families cannot be ignored. The noise and air pollution generated by the plant and increased truck traffic would have serious consequences for the surrounding homes, schools, and park, affecting the quality of life for the entire community.

Furthermore, the impact of the proposed asphalt plant will not be limited to the immediate area surrounding it. Due to the prevailing winds in the region, the emissions and pollution from the plant would likely spread throughout the town, affecting the health and well-being of all residents. This is unacceptable, particularly for a community that values its natural environment and the health of its citizens.

To mitigate these impacts, the plant's operators would need to implement robust pollution control measures, including state-of-the-art emissions control technologies and best practices for managing truck traffic. However, it is unclear whether these measures would be sufficient to protect the health and well-being of the surrounding community and environment.

While the proponents of the asphalt plant may argue that it will bring economic benefits to the community, we cannot ignore the potential environmental and health costs. The long-term impacts of the pollution generated by the plant and its transportation far outweigh any short-term economic gains.

I have questions related to the process of the plant approval:

1. Has there been an Environmental Impact Study done by and independent service?

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10. Are there any records from the Timnath plant about inspections routinely done by APCD? And have we see the existing permit to see the emissions information that exists there?

11. What are the Timnath plant's existing documents from the "New Source performance Standards" requirements CO Reg. No. 6 Part A Subpart I?

Thank you for your consideration of these questions and concerns.

Most Sincerely,

Elana Hurwitz

Wellington Old Town Resident

PO Box 1374 Wellington, CO 80549

§7475. Preconstruction requirements Clean Air Act

(a) Major emitting facilities on which construction is commenced

https://www.govinfo.gov/content/pkg/USCODE-2013-title42/html/USCODE-2013-title42-chap85-subchapI-partC-subparti-sec7475.htm

42 U.S.C.

United States Code, 2013 Edition

Title 42 - THE PUBLIC HEALTH AND WELFARE

CHAPTER 85 - AIR POLLUTION PREVENTION AND CONTROL

SUBCHAPTER I - PROGRAMS AND ACTIVITIES

Part C - Prevention of Significant Deterioration of Air Quality

subpart i - clean air

Sec. 7475 - Preconstruction requirements

From the U.S. Government Publishing Office, www.gpo.gov

§7475. Preconstruction requirements

(a) Major emitting facilities on which construction is commenced

No major emitting facility on which construction is commenced after August 7, 1977, may be constructed in any area to which this part applies unless—

(1) a permit has been issued for such proposed facility in accordance with this part setting forth emission limitations for such facility which conform to the requirements of this part;

(2) the proposed permit has been subject to a review in accordance with this section, the required analysis has been conducted in accordance with regulations promulgated by the Administrator, and a public hearing has been held with opportunity for interested persons including representatives of the Administrator to appear and submit written or oral presentations on the air quality impact of such source, alternatives thereto, control technology requirements, and other appropriate considerations;

(3) the owner or operator of such facility demonstrates, as required pursuant to section 7410(j) of this title, that emissions from construction or operation of such facility will not cause, or contribute to, air pollution in excess of any (A) maximum allowable increase or maximum allowable concentration for any pollutant in any area to which this part applies more than one time per year, (B) national ambient air quality standard in any air quality control region, or (C) any other applicable emission standard or standard of performance under this chapter;

(4) the proposed facility is subject to the best available control technology for each pollutant subject to regulation under this chapter emitted from, or which results from, such facility;

(5) the provisions of subsection (d) of this section with respect to protection of class I areas have been complied with for such facility;

(6) there has been an analysis of any air quality impacts projected for the area as a result of growth associated with such facility;

(7) the person who owns or operates, or proposes to own or operate, a major emitting facility for which a permit is required under this part agrees to conduct such monitoring as may be necessary to determine the effect which emissions from any such facility may have, or is having, on air quality in any area which may be affected by emissions from such source; and

(8) in the case of a source which proposes to construct in a class III area, emissions from which would cause or contribute to exceeding the maximum allowable increments applicable in a class II area and where no standard under section 7411 of this title has been promulgated subsequent to August 7, 1977, for such source category, the Administrator has approved the determination of best available technology as set forth in the permit.

(b) Exception

The demonstration pertaining to maximum allowable increases required under subsection (a)(3) of this section shall not apply to maximum allowable increases for class II areas in the case of an expansion or modification of a major emitting facility which is in existence on August 7, 1977, whose allowable emissions of air pollutants, after compliance with subsection (a)(4) of this section, will be less than fifty

tons per year and for which the owner or operator of such facility demonstrates that emissions of particulate matter and sulfur oxides will not cause or contribute to ambient air quality levels in excess of the national secondary ambient air quality standard for either of such pollutants.

(c) Permit applications

Any completed permit application under section 7410 of this title for a major emitting facility in any area to which this part applies shall be granted or denied not later than one year after the date of filing of such completed application.

(d) Action taken on permit applications; notice; adverse impact on air quality related values; variance; emission limitations

(1) Each State shall transmit to the Administrator a copy of each permit application relating to a major emitting facility received by such State and provide notice to the Administrator of every action related to the consideration of such permit.

(2)(A) The Administrator shall provide notice of the permit application to the Federal Land Manager and the Federal official charged with direct responsibility for management of any lands within a class I area which may be affected by emissions from the proposed facility.

(B) The Federal Land Manager and the Federal official charged with direct responsibility for management of such lands shall have an affirmative responsibility to protect the air quality related values (including visibility) of any such lands within a class I area and to consider, in consultation with the Administrator, whether a proposed major emitting facility will have an adverse impact on such values.

(C)(i) In any case where the Federal official charged with direct responsibility for management of any lands within a class I area or the Federal Land Manager of such lands, or the Administrator, or the Governor of an adjacent State containing such a class I area files a notice alleging that emissions from a proposed major emitting facility may cause or contribute to a change in the air quality in such area and identifying the potential adverse impact of such change, a permit shall not be issued unless the owner or operator of such facility demonstrates that emissions of particulate matter and sulfur dioxide will not cause or contribute to concentrations which exceed the maximum allowable increases for a class I area.

(ii) In any case where the Federal Land Manager demonstrates to the satisfaction of the State that the emissions from such facility will have an adverse impact on the air quality-related values (including visibility) of such lands, notwithstanding the fact that the change in air quality resulting from emissions from such facility will not cause or contribute to concentrations which exceed the maximum allowable increases for a class I area, a permit shall not be issued.

(iii) In any case where the owner or operator of such facility demonstrates to the satisfaction of the Federal Land Manager, and the Federal Land Manager so certifies, that the emissions from such facility will have no adverse impact on the air quality-related values of such lands (including visibility), notwithstanding the fact that the change in air quality resulting from emissions from such facility will cause or contribute to concentrations which exceed the maximum allowable increases for class I areas, the State may issue a permit.

(iv) In the case of a permit issued pursuant to clause (iii), such facility shall comply with such emission limitations under such permit as may be necessary to assure that emissions of sulfur oxides and particulates from such facility will not cause or contribute to concentrations of such pollutant which exceed the following maximum allowable increases over the baseline concentration for such pollutants:

Maximum allowable increase (in

micrograms per cubic meter)

Particulate matter:

Annual geometric mean

19

Twenty-four-hour maximum

37

Sulfur dioxide:

Annual arithmetic mean

20

Twenty-four-hour maximum

91

Three-hour maximum

325

(D)(i) In any case where the owner or operator of a proposed major emitting facility who has been denied a certification under subparagraph (C)(iii) demonstrates to the satisfaction of the Governor, after notice and public hearing, and the Governor finds, that the facility cannot be constructed by reason of any maximum allowable increase for sulfur dioxide for periods of twenty-four hours or less applicable to any class I area and, in the case of Federal mandatory class I areas, that a variance under this clause will not adversely affect the air quality related values of the area (including visibility), the Governor, after consideration of the Federal Land Manager's recommendation (if any) and subject to his concurrence, may grant a variance from such maximum allowable increase. If such variance is granted, a permit may be issued to such source pursuant to the requirements of this subparagraph.

(ii) In any case in which the Governor recommends a variance under this subparagraph in which the Federal Land Manager does not concur, the recommendations of the Governor and the Federal Land Manager shall be transmitted to the President. The President may approve the Governor's recommendation if he finds that such variance is in the national interest. No Presidential finding shall be reviewable in any court. The variance shall take effect if the President approves the Governor's recommendations. The President shall approve or disapprove such recommendation within ninety days after his receipt of the recommendations of the Governor and the Federal Land Manager.

(iii) In the case of a permit issued pursuant to this subparagraph, such facility shall comply with such emission limitations under such permit as may be necessary to assure that emissions of sulfur oxides from such facility will not (during any day on which the otherwise applicable maximum allowable increases are exceeded) cause or contribute to concentrations which exceed the following maximum allowable increases for such areas over the baseline concentration for such pollutant and to assure that such emissions will not cause or contribute to concentrations which exceed the otherwise applicable maximum allowable increases for periods of exposure of 24 hours or less on more than 18 days during any annual period:

MAXIMUM ALLOWABLE INCREASE

(In micrograms per cubic meter) Period of exposure Low

terrain areas

High

terrain areas

24-hr maximum 36 62

3-hr maximum 130 221

(iv) For purposes of clause (iii), the term "high terrain area" means with respect to any facility, any area having an elevation of 900 feet or more above the base of the stack of such facility, and the term "low terrain area" means any area other than a high terrain area.

(e) Analysis; continuous air quality monitoring data; regulations; model adjustments

(1) The review provided for in subsection (a) of this section shall be preceded by an analysis in accordance with regulations of the Administrator, promulgated under this subsection, which may be conducted by the State (or any general purpose unit of local government) or by the major emitting facility applying for such permit, of the ambient air quality at the proposed site and in areas which may be affected by emissions from such facility for each pollutant subject to regulation under this chapter which will be emitted from such facility.

(2) Effective one year after August 7, 1977, the analysis required by this subsection shall include continuous air quality monitoring data gathered for purposes of determining whether emissions from such facility will exceed the maximum allowable increases or the maximum allowable concentration permitted under this part. Such data shall be gathered over a period of one calendar year preceding the date of application for a permit under this part unless the State, in accordance with regulations promulgated by the Administrator, determines that a complete and adequate analysis for such purposes may be accomplished in a shorter period. The results of such analysis shall be available at the time of the public hearing on the application for such permit.

(3) The Administrator shall within six months after August 7, 1977, promulgate regulations respecting the analysis required under this subsection which regulations—

(A) shall not require the use of any automatic or uniform buffer zone or zones,

(B) shall require an analysis of the ambient air quality, climate and meteorology, terrain, soils and vegetation, and visibility at the site of the proposed major emitting facility and in the area potentially affected by the emissions from such facility for each pollutant regulated under this chapter which will be emitted from, or which results from the construction or operation of, such facility, the size and nature of the proposed facility, the degree of continuous emission reduction which could be achieved by such facility, and such other factors as may be relevant in determining the effect of emissions from a proposed facility on any air quality control region,

(C) shall require the results of such analysis shall be available at the time of the public hearing on the application for such permit, and

(D) shall specify with reasonable particularity each air quality model or models to be used under specified sets of conditions for purposes of this part.

Any model or models designated under such regulations may be adjusted upon a determination, after notice and opportunity for public hearing, by the Administrator that such adjustment is necessary to take into account unique terrain or meteorological characteristics of an area potentially affected by emissions from a source applying for a permit required under this part.

(July 14, 1955, ch. 360, title I, §165, as added Pub. L. 95–95, title I, §127(a), Aug. 7, 1977, 91 Stat. 735; amended Pub. L. 95–190, §14(a)(44)–(51), Nov. 16, 1977, 91 Stat. 1402.)

Amendments

1977—Subsec. (a)(1). Pub. L. 95–190, §14(a)(44), substituted "part;" for "part:".

Subsec. (a)(3). Pub. L. 95–190, §14(a)(45), inserted provision making applicable requirement of section 7410(j) of this title.

Subsec. (b). Pub. L. 95–190, §14(a)(46), inserted "cause or" before "contribute" and struck out "actual" before "allowable emissions".

Subsec. (d)(2)(C). Pub. L. 95–190, §14(a)(47)–(49), in cl. (ii) substituted "contribute" for "contrbute", in cl. (iii) substituted "quality-related" for "quality related" and "concentrations which" for "concentrations, which", and in cl. (iv) substituted "such facility" for "such sources" and "will not cause or contribute to concentrations of such pollutant which exceed" for "together with all other sources, will not exceed".

Subsec. (d)(2)(D). Pub. L. 95–190, §14(a)(50), (51), in cl. (iii) substituted provisions relating to determinations of amounts of emissions of sulfur oxides from facilities, for provisions relating to determinations of amounts of emissions of sulfur oxides from sources operating under permits issued pursuant to this subpar., together with all other sources, and added cl. (iv).

Print

Planning Commission May 1, 2023 Public Comment - Submission #3031

Date Submitted: 4/25/2023

First and Last Name*

Hailey Ellis

Email Address*

hailey.ellis623@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

Public Comment for the Planning Commission May 1, 2023 Meeting

My family and I do NOT condone the building of a Hot Mix Asphalt Plant in the Northeast section of the Business Park, 3/4 of a mile from the Buffalo Creek residential area. As a Buffalo Creek resident and first-time mom-to-be, the proximity to this plant is very concerning due to a decrease in home equity values and heightened risk to human health. The economic benefits of building such a plant do not outweigh the costs to residents' livelihoods and health. If the Wellington government is trying to build a community that has the potential for growth and development, with residents' best interests at heart, then the building of this asphalt plant would be decommissioned. I do not see many residents willing to stay and put up with the corruption of the town's government if this plant were to be built.

Optional File Attachment

Health issues with an asphalt plant nearby.pdf

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Health Issues with an Asphalt Plant Nearby

Here are some short quotes and abstracts from articles referencing the health problems that occur with working, and/or living near an Asphalt Plant.

Asphalt and Diesel Exhaust Fumes

> " Over a half-million workers are exposed to fumes from asphalt, a petroleum product used extensively in road paving, roofing, siding, and concrete work. Health effects from exposure to asphalt fumes include headache, skin rash, sensitization, fatigue, reduced appetite, throat and eye irritation, cough, and skin cancer. "

Reference: Asphalt Fumes - United States Department of Labor, Occupational Safety and Health Administration

Reference: Hot Mix Asphalt Plants - Truck Loading and Unloading

> " The primary emission sources associated with Hot Mix Asphalt(HMA) production are the dryers, hot bins, and mixers, which emit particulate matter (PM) and a variety of gaseous pollutants. Other emission sources found at HMA plants include storage silos, which temporarily hold the HMA; truck load-out operations, in which the HMA is loaded into trucks for hauling to the job site; liquid asphalt storage tanks; hot oil heaters, which are used to heat the asphalt storage tanks; and yard emissions, which consist of fugitive emissions from the HMA in truck beds. Emissions also result from vehicular traffic on paved and unpaved roads, aggregate storage and handling operations, and vehicle exhaust. "
>
> " The PM emissions associated with HMA production include the criteria pollutants PM-10 (PM less than 10 micrometers in aerodynamic diameter) and PM-2.5, hazardous air pollutant (HAP) metals, and HAP organic compounds. The gaseous emissions associated with HMA production include the criteria pollutants sulfur dioxide (SO 2), nitrogen oxides (NO x), carbon monoxide (CO), and volatile organic compounds (VOC), as well as volatile HAP organic compounds. "

Reference: EPA - Hot Mix Asphalt Plant Emission Assessment

Summary of Research on Diesel and Asphalt Hazards

Toxic Smell

> "It smells."

> "While a state study indicates the air quality in a neighborhood next to a controversial paving plant meets safety standards, neighbors say their problems with the plant are as much about quality of life as quality of air.
>
> The odor of asphalt coming from the R.C. & Sons paving plant has been a prime complaint of several residents of the nearby Grandview neighborhood."

Bangor Daily News - It smells, but Maine Asphalt Plant meets standards

> " Dr. Mitchell said that tiny particles in asphalt production plant emissions can cause lung damage, exacerbate breathing conditions and ultimately cause more severe problems. "

New York Times Article - Who Wants to Live Near an Asphalt Plant

Noise

Here are typical noise emissions from a Hot-Mix Asphalt Plant.

Noise Level	Distance from Center of Plant
85 dBA	50 feet (measured reference level)
78 dBA	100 feet
70 dBA	200 feet
63 dBA	400 feet
55 dBA	800 feet
46 dBA	1,600 feet
36 dBA	3,200 feet
24 dBA	6,400 feet

We do not know the assumptions that went into the measurements in this noise summary table.

Looking at the California study, we do not know the age or size/capacity of the plant(s) measured.

Remember that newer plants are quieter, and older plants make more noise.

Reference: Full Document - Caltrans - State of California

Overall Health Effects

> " The complex chemical composition of asphalt makes it difficult to identify the specific component(s) responsible for adverse health effects observed in exposed workers. Known carcinogens have been found in asphalt fumes generated at worksites. Observations of acute irritation in workers from airborne and dermal exposures to asphalt fumes and aerosols and the potential for chronic health effects, including cancer, warrant continued diligence in the control of exposures. "

Reference: CDC - Hazard Review - Health Effects of Occupational Exposure to Asphalt

What the Federal Government Regulates on Asphalt Plants and Air Quality

What federal rules apply to asphalt plants?

- Asphalt plant emissions of particulate matter (PM2.5 and PM10, carbon monoxide, sulfur dioxide nitrogen dioxide, and lead must not exceed National Ambient Air Quality Standards (NAAQS) at the property boundary.
- Asphalt plants manufactured after June 11, 1973, are subject to 40 CFR 60 Subpart I-New Source Performance Standards for Hot Mix Asphalt Plants. NSPS, Subpart I limits only the emissions of particulate matter from material handling systems.
- On November 8, 2002 , USEPA removed Asphalt Hot Mix Production from the Source Category List for which development of National Emission Standards for Hazardous Air Pollutants Standar is required.

Reference: North Carolina Division of Air Quality - Air Toxics and Asphalt Plants

Web Sites With More Information

Here are addition web sites that have information on Asphalt Plants and health effects.

- Hot Mix Asphalt Plants - Stakeholders Opinions Report - US EPA
- Fact Sheet - Hot Mix Asphalt Plants - Oregon Department of Environmental Quality
- Preventing Pollution at Hot Mix Plants - A Guide to Environmental Compliance and Pollution Prevention for Asphalt Plants in Missouri - State of Missouri
- Asphalt Plant Pollution - Blue Ridge Environmental Report
- Road Paving Asphalt - State of New Hampshire - Fact Sheet
- Asphalt - Hazardous Fact Sheet - State of New Jersey
- North Carolina Division of Air Quality - Air Toxics and Asphalt Plants

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We are PARC - Protectors of the Ammonoosuc River Corridor in Lisbon, New Hampshire.

You can contact PARC at

PARC
P.O. Box 515
Sugar Hill, New Hampshire.
03586

Fiscal Agent: Peter Nightingale
Phone #: (603) 616-9292

ASPHALT PLANT POLLUTION

Asphalt plants mix gravel and sand with crude oil derivatives to make the asphalt used to pave roads, highways, and parking lots across the U.S. These plants release millions of pounds of chemicals to the air during production each year, including many cancer-causing toxic air pollutants such as arsenic, benzene, formaldehyde, and cadmium. Other toxic chemicals are released into the air as the asphalt is loaded into trucks and hauled from the plant site, including volatile organic compounds, polycyclic aromatic hydrocarbons (PAHs), and very fine condensed particulates.[EPA]

Asphalt Fumes are Known Toxins. The federal Environmental Protection Agency (EPA) states "Asphalt processing and asphalt roofing manufacturing facilities are major sources of hazardous air pollutants such as formaldehyde, hexane, phenol, polycyclic organic matter, and toluene. Exposure to these air toxics may cause cancer, central nervous system problems, liver damage, respiratory problems and skin irritation." [EPA]. According to one health agency, asphalt fumes contain substances known to cause cancer, can cause coughing, wheezing or shortness of breath, severe irritation of the skin, headaches, dizziness, and nausea. [NJDHSS] Animal studies show PAHs affect reproduction, cause birth defects and are harmful to the immune system. [NJDHSS] The US Department of Health and Human Services has determined that PAHs may be carcinogenic to humans. [DHHS]

Health Impacts & Loss of Property Value. The Blue Ridge Environmental Defense League (BREDL), a regional environmental organization, has done two studies on the adverse impacts on property values and health for residents living near asphalt plants. A property value study documented losses of up to 56% because of the presence of a nearby asphalt plant. In another study, nearly half of the residents reported negative impacts on their health from a new asphalt plant. The door-to-door health survey found 45% of residents living within a half mile of the plant reported a deterioration of their health, which began after the plant opened. The most frequent health problems cited were high blood pressure (18% of people surveyed), sinus problems (18%), headaches (14%), and shortness of breath (9%). [BREDL]

Flawed Tests Underestimate Health Risks. In addition to smokestack emissions, large amounts of harmful "fugitive emissions" are released as the asphalt is moved around in trucks and conveyor belts, and is stored in stockpiles. A small asphalt plant producing 100 thousand tons of asphalt a year may release up to 50 tons of toxic fugitive emissions into the air. [Dr. R. Nadkarni] Stagnant air and local weather patterns often increase the level of exposure to local communities. In fact, most asphalt plants are not even tested for toxic emissions. The amounts of these pollutants that are released from a facility are estimated by computers and mathematical formulas rather than by actual stack testing, estimates that experts agree do not accurately predict the amount of toxic fugitive emissions released and the risks they pose. According to Dr. Luanne Williams, a North Carolina state toxicologist, 40% of the toxins from asphalt plant smokestacks even meet air quality standards—and for the other 60% of these emissions, the state lacks sufficient data to determine safe levels.

BE SAFE: Take Precautionary Action to Protect Our Communities from Asphalt Plant Air Pollution

OSHA ARCHIVE

NOTICE: This is an OSHA Archive Document, and no longer represents OSHA Policy. It is presented here as historical content, for research and review purposes only.

Asphalt Fumes

Over a half-million workers are exposed to fumes from asphalt, a petroleum product used extensively in road paving, roofing, siding, and concrete work. When hot asphalt is applied in a molten state, it generates toxic fumes. Workers exposed to asphalt fumes are at risk of developing headaches, rashes, cough, and possibly cancer. There is no OSHA standard for asphalt fumes. OSHA is developing an action plan to reduce worker exposures to this hazard but is not initiating rulemaking at this time.

Hazard Description

NIOSH estimated that over 500,000 workers were potentially exposed to asphalt fumes (1). OSHA estimated in 1992 that over 300,000 construction workers were exposed primarily in road-paving and roofing operations (2). Exposures vary considerably between different types of asphalt work (i.e. roofing vs. paving) and the different worker jobs (i.e. kettle operator vs. paver operator.) More research needs to be performed to determine and control important factors which cause increased worker exposures (i.e. application temperatures, type of equipment used, environmental conditions, workplace practices, and asphalt constituents.)

The acute effects of exposure to asphalt fumes include headache, skin rash, fatigue, reduced appetite, throat and eye irritation, and cough. Asphalt paving workers, for example, have reported breathing problems, asthma, bronchitis, and skin irritation (6). A recent study has shown that some of these effects occur at exposures of 0.5 to 1.3 mg/m3 (3).

Human studies have reported lung, stomach, and skin cancers following chronic exposures to asphalt fumes. However, these studies have been inconclusive, and the possible chronic effects to workers following exposures to asphalt fumes are areas of continuing investigations. One recent summary analysis of the available human studies found a nearly twofold increase in risk of lung and stomach cancer among roofers. Increased risks were also noted for other asphalt workers for lung, stomach, and bladder cancer, and for leukemia (4).

Laboratory studies have shown chemical extracts of asphalt fumes to have cancer-causing and mutagenic properties. For example, painting of asphalt extracts on mouse skin produces tumors that increase with dose (7). Other laboratory studies show DNA changes in mouse lung and skin cells (8) and in human fetal cells exposed to asphalt fume extracts (9). Urinalysis of exposed workers shows mutations in laboratory tests (10).

Current Status

OSHA does not have a standard for asphalt fumes although it proposed a 5 mg/m3 permissible exposure limit (PEL) in 1992 (5). OSHA's quantitative risk assessment estimated a significant risk of lung cancer among exposed workers at levels as low as 0.2 mg/m3.

The American Conference of Governmental Industrial Hygienists (ACGIH) currently recommends a Threshold Limit Value (TLV) of 5 mg/m3 as an 8-hour time weighted average. In 1977, the National Institute for Occupational Safety and Health (NIOSH) recommended a 5 mg/m3 15 minute short-term exposure limit. NIOSH is developing a new Criteria Document for asphalt fumes and expects to make new recommendations for exposure limits within six months.

The International Agency for Research on Cancer (IARC) found:

- "There is sufficient evidence for the carcinogenicity of extracts of steam-refined bitumens, air-refined bitumens and pooled mixtures of steam- and air-refined bitumens in experimental animals."
- There is limited evidence for the carcinogenicity of undiluted steam-refined bitumens and for cracking-residue bitumens in experimental animals.
- There is inadequate evidence for the carcinogenicity of undiluted air-refined bitumens in experimental animals.
- There is inadequate evidence that bitumens alone are carcinogenic to humans."

Rationale

Asphalt fume exposure meets several of the criteria for designation as an OSHA priority. In particular, the known and potential health effects are serious and a large number of workers are potentially exposed, especially considering high industry turnover rates. although the human studies of workplace cancer have limitations, there is considerable experimental evidence of cancer risk. There is also evidence of acute health effects among workers exposed to asphalt fumes.

References

1. NIOSH; National Occupational Exposure Survey; 1981-1983.
2. Federal Register, vol. 57, no. 114, June 12, 1992. Air Contaminants; Proposed Rule. pp. 26001-26602.
3. Chase, R.M., Liss, G.M., Cole, D.C., and Heath, B. 1994. Toxic health effects including reversible macrothrombocytosis in workers exposed to asphalt fumes. Am. J. Indus. Med. 25:279-289.
4. Partanen, T. and Boffetta, P. 1994. Cancer risk in asphalt workers and roofers: review and meta-analysis of epidemiologic studies. Am. J. Indus. Med. 26:721-740.
5. Federal Register vol. 57, June 12, 1992. Air Contaminants; Proposed Rule. p. 26182-26190 deals specifically with asphalt fume.
6. Norseth T, Waage J, and Dale I. Acute Effects and Exposure to Organic Compounds in Road Maintenance Workers Exposed to Asphalt. Am J Ind Med; 1991; 20:737-44.
7. "Assessment of the Cocarcinogenic/Promoting Activity of Asphalt Fumes;" U.S. Department of Health and Human Services, National Institute for Occupational Safety and Health; Contract 200-83-2612; December 1989.

New Jersey Department of Health and Senior Services

HAZARDOUS SUBSTANCE FACT SHEET

Common Name: **ASPHALT**

CAS Number: 8052-42-4
DOT Number: NA 1999 (Asphalt)
UN 1999 (Tars, Liquid)
DOT Hazard Class: 3 (Flammable)

RTK Substance number: 0170
Date: January 2001 Revision: April 2007

HAZARD SUMMARY

* **Asphalt** can affect you when breathed in.
* Extracts of certain *Asphalts* have been shown to cause cancer in animals.
* **Asphalt** *fumes* can irritate the eyes on contact.
* Breathing **Asphalt** *fumes* can irritate the nose, throat and lungs causing coughing, wheezing and/or shortness of breath.
* Contact can irritate and cause severe burns of the skin and may cause dermatitis and acne-like lesions.
* Exposure to **Asphalt** *fumes* can cause headache, dizziness, nausea and vomiting.
* Long-term contact can cause skin pigment change which is made worse by sunlight exposure.
* *Cutback* and *Rapid Curing* **Asphalt** are FLAMMABLE and FIRE HAZARDS.
* **Asphalt** is derived from *Petroleum*. **Asphalt** and *Coal Tar Pitch* are different. If you are actually working with *Coal Tar* chemicals, *CONSULT THE NEW JERSEY DEPARTMENT OF HEALTH AND SENIOR SERVICES HAZARDOUS SUBSTANCE FACT SHEETS ON COAL TAR PITCH AND COAL TARS.*
* *Asphalt, Oxidized* (CAS # 64762-93-4) is a carcinogen. *CONSULT THE NEW JERSEY DEPARTMENT OF HEALTH AND SENIOR SERVICES HAZARDOUS SUBSTANCE FACT SHEET ON ASPHALT, OXIDIZED.*

IDENTIFICATION

Asphalt is a blackish-brown solid, semi-solid or liquid, depending on the formulation or mixture of **Asphalt** used. **Asphalt** *fumes* are produced during the manufacture and heating of **Asphalt**, which is used for road building and roofing, and in rubber and adhesives.

REASON FOR CITATION

* **Asphalt** is on the Hazardous Substance List because it is cited by ACGIH, DOT, NIOSH, IARC and NFPA.
* Definitions are provided on page 5.

HOW TO DETERMINE IF YOU ARE BEING EXPOSED

The New Jersey Right to Know Act requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information and training concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard (29 CFR 1910.1200) requires private employers to provide similar training and information to their employees.

* Exposure to hazardous substances should be routinely evaluated. This may include collecting personal and area air samples. You can obtain copies of sampling results from your employer. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).
* If you think you are experiencing any work-related health problems, see a doctor trained to recognize occupational diseases. Take this Fact Sheet with you.

WORKPLACE EXPOSURE LIMITS

NIOSH: The recommended airborne exposure limit is **5 mg/m^3**, which should not be exceeded during any 15-minute period.

ACGIH: The recommended airborne exposure limit is **0.5 mg/m^3** (for the *inhalable fraction* of the *Benzene*-soluble aerosol), averaged over an 8-hour workshift.

WAYS OF REDUCING EXPOSURE

* Where possible, enclose operations and use local exhaust ventilation at the site of chemical release. If local exhaust ventilation or enclosure is not used, respirators should be worn.
* Wear protective work clothing.
* Wash thoroughly immediately after exposure to **Asphalt** and at the end of the workshift.
* Post hazard and warning information in the work area. In addition, as part of an ongoing education and training effort, communicate all information on the health and safety hazards of **Asphalt** to potentially exposed workers.

This Fact Sheet is a summary source of information of all potential and most severe health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

HEALTH HAZARD INFORMATION

Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to **Asphalt**:

* **Asphalt** *fumes* can irritate the eyes on contact.
* Breathing **Asphalt** *fumes* can irritate the nose, throat and lungs causing coughing, wheezing and/or shortness of breath.
* Contact can irritate and cause severe burns of the skin and may cause dermatitis and acne-like lesions.
* Exposure to **Asphalt** *fumes* can cause headache, dizziness, nausea and vomiting.

Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to **Asphalt** and can last for months or years:

Cancer Hazard

* While **Asphalt** has not been identified as a carcinogen, it should be HANDLED WITH CAUTION since extracts of certain **Asphalts** have been shown to cause cancer in animals.

Reproductive Hazard

* According to the information presently available to the New Jersey Department of Health and Senior Services, **Asphalt** has not been tested for its ability to affect reproduction.

Other Long-Term Effects

* Long-term contact can cause skin pigment change which is made worse by sunlight exposure.
* **Asphalt** *fumes* can irritate the lungs. Repeated exposure may cause bronchitis to develop with cough, phlegm, and/or shortness of breath.

MEDICAL

Medical Testing

Before beginning employment and at regular times after that, for those with frequent or potentially high exposures, the following are recommended:

* Lung function tests

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).

Mixed Exposures

* Because smoking can cause heart disease, as well as lung cancer, emphysema, and other respiratory problems, it may worsen respiratory conditions caused by chemical exposure. Even if you have smoked for a long time, stopping now will reduce your risk of developing health problems.

Conditions Made Worse By Exposure

* Exposure to sunlight may make skin effects of **Asphalt** worse.

WORKPLACE CONTROLS AND PRACTICES

Unless a less toxic chemical can be substituted for a hazardous substance, **ENGINEERING CONTROLS** are the most effective way of reducing exposure. The best protection is to enclose operations and/or provide local exhaust ventilation at the site of chemical release. Isolating operations can also reduce exposure. Using respirators or protective equipment is less effective than the controls mentioned above, but is sometimes necessary.

In evaluating the controls present in your workplace, consider: (1) how hazardous the substance is, (2) how much of the substance is released into the workplace and (3) whether harmful skin or eye contact could occur. Special controls should be in place for highly toxic chemicals or when significant skin, eye, or breathing exposures are possible.

In addition, the following controls are recommended:

* Where possible, automatically pump liquid **Asphalt** from drums or other storage containers to process containers.
* Before entering a confined space where **Asphalt** may be present, check to make sure that an explosive concentration does not exist.

Good **WORK PRACTICES** can help to reduce hazardous exposures. The following work practices are recommended:

* Workers whose clothing has been contaminated by **Asphalt** should change into clean clothing promptly.
* Contaminated work clothes should be laundered by individuals who have been informed of the hazards of exposure to **Asphalt**.
* Eye wash fountains should be provided in the immediate work area for emergency use.
* If there is the possibility of skin exposure, emergency shower facilities should be provided.
* On skin contact with **Asphalt**, immediately wash or shower to remove the chemical. At the end of the workshift, wash any areas of the body that may have contacted **Asphalt**, whether or not known skin contact has occurred.

* Do not eat, smoke, or drink where **Asphalt** is handled, processed, or stored, since the chemical can be swallowed. Wash hands carefully before eating, drinking, applying cosmetics, smoking, or using the toilet.

PERSONAL PROTECTIVE EQUIPMENT

WORKPLACE CONTROLS ARE BETTER THAN PERSONAL PROTECTIVE EQUIPMENT. However, for some jobs (such as outside work, confined space entry, jobs done only once in a while, or jobs done while workplace controls are being installed), personal protective equipment may be appropriate.

The OSHA Personal Protective Equipment Standard (29 CFR 1910.132) requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

Clothing

* Avoid skin contact with **Asphalt**. Wear protective gloves and clothing. Safety equipment suppliers/manufacturers can provide recommendations on the most protective glove/clothing material for your operation.
* All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Eye Protection

* Wear indirect-vent, impact and splash resistant goggles when working with liquids.
* Wear a face shield along with goggles when working with corrosive, highly irritating or toxic substances.
* Contact lenses should not be worn when working with this substance.

Respiratory Protection

IMPROPER USE OF RESPIRATORS IS DANGEROUS. Such equipment should only be used if the employer has a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing, and medical exams, as described in the OSHA Respiratory Protection Standard (29 CFR 1910.134).

* Where the potential exists for exposure over **0.5 mg/m^3**, use a NIOSH approved full facepiece respirator with an organic vapor cartridge and particulate prefilters. Increased protection is obtained from full facepiece powered-air purifying respirators.
* If while wearing a filter or cartridge respirator you can smell, taste, or otherwise detect **Asphalt**, or if while wearing particulate filters abnormal resistance to breathing is experienced, or eye irritation occurs while wearing a full facepiece respirator, leave the area immediately. Check to make sure the respirator-to-face seal is still good. If it is, replace the filter or cartridge. If the seal is no longer good, you may need a new respirator.
* Be sure to consider all potential exposures in your workplace. You may need a combination of filters, prefilters or cartridges to protect against different forms of a chemical (such as vapor and mist) or against a mixture of chemicals.
* Where the potential exists for exposure over **5 mg/m^3**, use a NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode.

HANDLING AND STORAGE

* Prior to working with **Asphalt** you should be trained on its proper handling and storage.
* **Asphalt**, when HEATED, can give off toxic *Hydrogen Sulfide gases*.
* **Asphalt** may ignite or explode when mixed with NAPHTHA, other VOLATILE SOLVENTS, and LIQUID OXYGEN.
* **Asphalt** is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE).
* Store in tightly closed containers in a cool, well-ventilated area.
* Sources of ignition, such as smoking and open flames, are prohibited where *Cutback* and *Rapid Curing* **Asphalt** are used, handled, or stored.
* Metal containers involving the transfer of *Cutback* and *Rapid Curing* **Asphalt** should be grounded and bonded.
* Use only non-sparking tools and equipment, especially when opening and closing containers of *Cutback* and *Rapid Curing* **Asphalt**.

QUESTIONS AND ANSWERS

Q: If I have acute health effects, will I later get chronic health effects?

A: Not always. Most chronic (long-term) effects result from repeated exposures to a chemical.

Q: Can I get long-term effects without ever having short-term effects?

A: Yes, because long-term effects can occur from repeated exposures to a chemical at levels not high enough to make you immediately sick.

Q: What are my chances of getting sick when I have been exposed to chemicals?

A: The likelihood of becoming sick from chemicals is increased as the amount of exposure increases. This is determined by the length of time and the amount of material to which someone is exposed.

Q: When are higher exposures more likely?
A: Conditions which increase risk of exposure include physical and mechanical processes (heating, pouring, spraying, spills and evaporation from large surface areas such as open containers), and "confined space" exposures (working inside vats, reactors, boilers, small rooms, etc.).

Q: Is the risk of getting sick higher for workers than for community residents?
A: Yes. Exposures in the community, except possibly in cases of fires or spills, are usually much lower than those found in the workplace. However, people in the community may be exposed to contaminated water as well as to chemicals in the air over long periods. This may be a problem for children or people who are already ill.

Q: Don't all chemicals cause cancer?
A: No. Most chemicals tested by scientists are not cancer-causing.

Q: Should I be concerned if a chemical causes cancer in animals?
A: Yes. Most scientists agree that a chemical that causes cancer in animals should be treated as a suspected human carcinogen unless proven otherwise.

Q: But don't they test animals using much higher levels of a chemical than people usually are exposed to?
A: Yes. That's so effects can be seen more clearly using fewer animals. But high doses alone don't cause cancer unless it's a cancer agent. In fact, a chemical that causes cancer in animals at high doses could cause cancer in humans exposed to low doses.

The following information is available from:

New Jersey Department of Health and Senior Services
Occupational Health Service
PO Box 360
Trenton, NJ 08625-0360
(609) 984-1863
(609) 984-7407 (fax)

Web address: http://www.state.nj.us/health/eoh/odisweb/

Industrial Hygiene Information
Industrial hygienists are available to answer your questions regarding the control of chemical exposures using exhaust ventilation, special work practices, good housekeeping, good hygiene practices, and personal protective equipment including respirators. In addition, they can help to interpret the results of industrial hygiene survey data.

Medical Evaluation
If you think you are becoming sick because of exposure to chemicals at your workplace, you may call personnel at the Department of Health and Senior Services, Occupational Health Service, who can help you find the information you need.

Public Presentations
Presentations and educational programs on occupational health or the Right to Know Act can be organized for labor unions, trade associations and other groups.

Right to Know Information Resources
The Right to Know Infoline (609) 984-2202 can answer questions about the identity and potential health effects of chemicals, list of educational materials in occupational health, references used to prepare the Fact Sheets, preparation of the Right to Know Survey, education and training programs, labeling requirements, and general information regarding the Right to Know Act. Violations of the law should be reported to (609) 984-2202.

>>>>>>>>>>>>>>>>> EMERGENCY INFORMATION <<<<<<<<<<<<<<<<<

Common Name: **ASPHALT**
DOT Number: **NA 1999 (Asphalt)**
UN 1999 (Tars, Liquid)
DOT Hazard Class: **3 (Flammable)**
NAERG Code: **130**
CAS Number: **8052-42-4**

Hazard rating	NJDHSS	NFPA
FLAMMABILITY	-	1, 2 or 3
REACTIVITY	-	0
FLAMMABLE OR COMBUSTIBLE DEPENDING ON FORMULATION POISONOUS GASES ARE PRODUCED IN FIRE CONTAINERS MAY EXPLODE IN FIRE		

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

FIRE HAZARDS

* *Cutback* and *Rapid Curing* **Asphalt** are FLAMMABLE.
* *Typical* or *Medium* to *Slow Curing* **Asphalt** is COMBUSTIBLE.
* Use dry chemical, CO_2, water spray, or a foaming agent.
* Water may cause frothing so do not apply solid streams of water directly on **Asphalt**.
* POISONOUS GASES ARE PRODUCED IN FIRE including *Sulfer Oxides* and *Hydrogen Sulfide*.
* CONTAINERS MAY EXPLODE IN FIRE.
* Use water spray to keep fire-exposed containers cool.
* Vapors may travel to a source of ignition and flash back.
* Vapor is heavier than air and may travel a distance to cause a fire or explosion far from the source.
* If employees are expected to fight fires, they must be trained and equipped as stated in the OSHA Fire Brigades Standard (29 CFR 1910.156).

SPILLS AND EMERGENCIES

If **Asphalt** is spilled or leaked, take the following steps:

* Evacuate personnel and secure and control entrance to the area.
* Eliminate all ignition sources.
* Absorb liquids in vermiculite, dry sand, earth, or a similar material and deposit in sealed containers.
* Ventilate and wash area after clean-up is complete.
* Keep **Asphalt** out of a confined space, such as a sewer, because of the possibility of an explosion.
* It may be necessary to contain and dispose of **Asphalt** as a HAZARDOUS WASTE. Contact your state Department of Environmental Protection (DEP) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.
* If employees are required to clean-up spills, they must be properly trained and equipped. The OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) may apply.

FOR LARGE SPILLS AND FIRES immediately call your fire department. You can request emergency information from the following:

CHEMTREC: (800) 424-9300
NJDEP HOTLINE: 1-877-WARN-DEP

HANDLING AND STORAGE (See page 3)

FIRST AID

For POISON INFORMATION call 1-800-222-1222

Eye Contact

* Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting upper and lower lids.

Skin Contact

* Quickly remove contaminated clothing. Immediately wash contaminated skin with large amounts of soap and water.

Breathing

* Remove the person from exposure.
* Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
* Transfer promptly to a medical facility.

PHYSICAL DATA

Flash Point:

Cutback Asphalt: less than 50°F (10°C)
Slow to *Rapid Curing Asphalt*: 80°F (27°C) to 225°F (107°C)
Typical Asphalt: greater than 400°F (204°C)

Water Solubility: Insoluble

OTHER COMMONLY USED NAMES

This Fact Sheet can also be used for:
Alphalt (Cutback) RTK # 3172

Chemical Name:

Asphalt

Other Names:

Road Tar; Mineral Pitch; Petroleum Pitch; Bitumen

NEW JERSEY DEPARTMENT OF HEALTH AND SENIOR SERVICES
Right to Know Program
PO Box 368, Trenton, NJ 08625-0368
(609) 984-2202

Amador County News

Study Reveals Dangers of Asphalt Plants

NEW STUDY REVEALS ASPHALT PLANT DANGERS
http://www.bredl.org/press/2007/Young-McQueenasphaltplant.htm

Today at a press conference in Spruce Pine, the Mitchell County Citizens for Clean Air and the Blue Ridge Environmental Defense League released an air pollution study of the proposed Young & McQueen asphalt plant which shows that air toxins would be deposited far from the plant site. The League's report shows dangerous levels offsite of formaldehyde, benzene and arsenic.

The study concludes that formaldehyde would exceed the state's health-based air pollution limit at 200 meters beyond the plant property line. Even worse, the study concludes that benzene would be deposited at dangerous levels 1.8 miles away and that arsenic would be deposited at dangerous levels 2.17 miles away.

Janet Marsh, the League's Executive Director, said, "The state has long maintained that their computer modeling is conservative and health protective, while we have long maintained what we now can demonstrate—that the state's approach cannot protect human health while ignoring huge amounts of asphalt plant pollution." The new study points out that the state permit fails to include the asphalt tank heater and a 10,000 gallon liquid asphalt storage tank. Marsh continued, "The state can't have it both ways: they can't claim that their hands are tied by these

exemptions and that their permit means that area residents are safe from pollution."

Louis Zeller, who authored the report, used the US Environmental Protection Agency's worst-case computer model for air pollution from the proposed asphalt plant. This EPA model calculates ground-level air poisons as well as smokestack sources. Having accessed this worst-case model only two weeks ago, the League chose the Young & McQueen plant for its first study.

Dr. James Carroll, a local resident, said, "The Mitchell County Citizens for Clean Air was formed to protect our health, our homes and our community. We know that if this plant is built, it will create bad smells, increased dust and poisonous chemicals like formaldehyde and arsenic. We want our local officials to protect us from polluting industries like this asphalt plant by keeping them away from populated areas, and we want the state to protect us by denying this air pollution permit."

Sue Dayton, who coordinates the League's NC Health Communities Project, said, "We are particularly concerned about the emissions of arsenic, benzene and formaldehyde. Both arsenic and benzene are known to cause cancer, and, in addition to being a suspected human carcinogen, formaldehyde is an acute irritant, causing coughing, wheezing, nausea, headaches and asthma."

Both organizations recognize that the state's air pollution permit does not consider plant location. The Mitchell County Board of Commissioners has the power under state statute to adopt an asphalt plant moratorium and implement a protective polluting industries ordinance.

Return to Front-page

E-mail a comment for posting here...
Remember to include the title of the article for

Print

Planning Commission May 1, 2023 Public Comment - Submission #3002

Date Submitted: 4/23/2023

First and Last Name*

Brittany Cowan

Email Address*

brittany.a.cowan@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

Public Comment for the Planning Commission May 1, 2023 Meeting

Please see the attachment with my family's comments.

Optional File Attachment

Information reguarding the proposed Asphalt Plant.pdf

Optional File Attachment

Choose File No file selected

Optional File Attachment

Choose File No file selected

Page 195 of 208

Dear Planning Committee,

It is with great importance and emphasis that I write to you today. I am asking you to please take into account the town of Wellington's Land Use Code and enforce the necessary setback for the planned asphalt plant in Wellington.

While I know the argument that state agencies regulate asphalt plants, it DOES NOT NEGATE the fact that this proposed asphalt plant **DOES** in fact curate toxic chemicals and violate the Land Use Code. As long as toxic chemicals are curated (whether regulated or not) a setback must be implied per the town of Wellington's Land Use Code. This will be discussed in more depth further down in my statement.

While the proposed site is permitted as "Right to Use", it is ONLY right to use as long as it complies with the Land Use Code that was adopted on March 22, 2022.

Below you will find significant evidence as to why this does NOT meet the current Land Use Code as well as why the Heavy Industrial and Manufacturing setback of 2,640 ft from any residential district must be applied in this case.

Per the Land Use Code:

1.01.1 Purpose. The purpose of this Land Use Code is to create a vital, cohesive, well-designed community in order to enhance the Town's small-town character and further the residents' goals as identified in the Comprehensive Plan. These zoning regulations are designed to:

A. Promote the health, safety, values, and general welfare of Town residents.

The first point made in the Land Use Code is to "promote the health, safety… and general welfare of Town residents." Allowing an asphalt plant to be built less than 1,000 feet from the nearest home and proposed homes in the Sundance development goes against the Land Use Code.

"Asphalt plants mix gravel and sand with crude oil derivatives to make the asphalt used to pave roads, highways, and parking lots across the U.S. These plants release millions of pounds of chemicals to the air during production each year, including many cancer-causing toxic air pollutants such as arsenic, benzene, formaldehyde, and cadmium. Other toxic chemicals are released into the air as the asphalt is loaded into trucks and hauled from the plant site, including volatile organic compounds, polycyclic aromatic hydrocarbons (PAHs), and very fine condensed particulates.[EPA]"

Two other points of the Land Use Code are:

B. Establish a variety of zoning district classifications according to the use of land and buildings with varying intensities of uses and standards whose interrelationships of boundary zones form a compatible pattern of land uses and buffer areas which enhance the value of each zone.

F. Promote good design and arrangement of buildings or clusters of buildings and uses in residential, business, and industrial development.

By allowing this asphalt plant to be built so close to residential homes, it will negatively impact the home values near the proposed site.

"Health Impacts & Loss of Property Value. The Blue Ridge Environmental Defense League (BREDL), a regional environmental organization, has done two studies on the adverse impacts on property values and health for residents living near asphalt plants. A property value study documented losses of up to 56% because of the presence of a nearby asphalt plant. In another study, nearly half of the residents reported negative impacts on their health from a new asphalt plant. The door-to-door health survey found 45% of residents living within a half mile of the plant reported a deterioration of their health, which began after the plant opened. The most frequent health problems cited were high blood pressure (18% of people surveyed), sinus problems (18%), headaches (14%), and shortness of breath (9%). [BREDL]."

Noise pollution is also a concern from the plant. According to David Wang, "Noise generated by loader loading, induced draft fan operation, drying cylinder rotation, aggregate hoist lifting, and vibrating screen screening," is a source of noise pollution. This goes against the Land Use Code as well:

K. Establish regulations that promotes adequate light and air, maintains acceptable noise levels, and conserves energy and natural resources.

Another major concern is this plant's location within the Boxelder Watershed.

"Asphalt plants have the potential to contaminate ground water and surface waters through spills and leaks of chemicals. Contaminated groundwater can migrate towards nearby streams and lakes. Possible sources of groundwater pollution are: • Fuel tanks, pipework and fueling stations, • Solvents, • Other chemical agents used and stored onsite. Asphalt plants should not be sited in flood plains."

According to the Land Use Code, industrial areas should be located interior to the large block of industrial/light industrial. The proposed asphalt plant DOES NOT follow this.

"3.04.2 I – Industrial District. A. Intent. The Industrial District is intended to provide a location for large-format buildings for manufacturing, warehousing and distributing, indoor and outdoor storage. Locations for this zone require good access to major arterial streets and adequate water, sewer and power. Industrial areas should generally be located interior to the large block of industrial/light industrial areas."

Also, per the Land Use Code:

C. Limitations. Any use in this District shall conform to the following requirements:

1. Dust, fumes, odors, smoke, vapor and noise shall be confined to the site and be controlled in accordance with the state air pollution laws.

While the proposed plant may be regulated by state agencies, they cannot guarantee that these toxins will be confined to the site. In fact, pollution has been known to be carried over two and a half miles from asphalt sites.

Per the proof listed below on articles published by the EPA, US Department of Health and Human Services, scientists and others, the proposed asphalt plant in our town MUST be labeled as heavy industrial and the 2,640 feet setback from any residential district must be imposed:

B. Any Industrial and Manufacturing, Heavy use producing and curating toxic chemicals or conducting animal slaughtering shall be located at least:

1. Two thousand six hundred forty (2,640) feet from any residential district, religious land use, medical care facility, or school.

"Asphalt Fumes are Known Toxins. The federal Environmental Protection Agency (EPA) states "Asphalt processing and asphalt roofing manufacturing facilities are major sources of hazardous air pollutants such as formaldehyde, hexane, phenol, polycyclic organic matter, and toluene. Exposure to these air toxins may cause cancer, central nervous system problems, liver damage, respiratory problems and skin irritation." [EPA]. According to one health agency, asphalt fumes contain substances known to cause cancer, can cause coughing, wheezing or shortness of breath, severe irritation of the skin, headaches, dizziness, and nausea. [NJDHSS] Animal studies show PAHs affect reproduction, cause birth defects and are harmful to the immune system. [NJDHSS] The US Department of Health and Human Services has determined that PAHs may be carcinogenic to humans. [DHHS]."

I appreciate your time to correct this error in planning and ensure that the proposed asphalt site is enforced CORRECTLY. Again, while I know the argument that state agencies regulate asphalt plants, it DOES NOT NEGATE the fact that this proposed asphalt plant **DOES** in fact curate toxic chemicals and violate the Land Use Code. As long as toxic chemicals are curated (whether regulated or not) a setback must be implied per the town of Wellington's Land Use Code.

Please see the additional evidence below which outlines the toxic chemicals curated from asphalt plants as well as other concerning issues.

Sincerely,

Jade and Brittany Cowan and family

Additional Information:

About Asphalt Plant Pollution

Asphalt plants mix gravel and sand with crude oil derivatives to make the asphalt used to pave roads, highways, and parking lots across the country. These plants release millions of pounds of chemicals to the air during production each year, including many cancer-causing toxic air pollutants such as arsenic, benzene, formaldehyde, and cadmium. Other toxic chemicals are released into the air as the asphalt is loaded into trucks and hauled from the plant site, including volatile organic compounds, polycyclic aromatic hydrocarbons (PAHs), and very fine condensed particulates.[EPA]

Asphalt Fumes are Known Toxins. The federal Environmental Protection Agency (EPA) states "Asphalt processing and asphalt roofing manufacturing facilities are major sources of hazardous air pollutants such as formaldehyde, hexane, phenol, polycyclic organic matter, and toluene. Exposure to these air toxics may cause cancer, central nervous system problems, liver damage, respiratory problems and skin irritation." [EPA]. According to one health agency, asphalt fumes contain substances known to cause cancer, can cause coughing, wheezing or shortness of breath, severe irritation of the skin, headaches, dizziness, and nausea. [NJDHSS] Animal studies show PAHs affect reproduction, cause birth defects and are harmful to the immune system. [NJDHSS] The US Department of Health and Human Services has determined that PAHs may be carcinogenic to humans. [DHHS]

Flawed Tests Underestimate Health Risks. In addition to smokestack emissions, large amounts of harmful "fugitive emissions" are released as the asphalt is moved around in trucks and conveyor belts, and is stored in stockpiles. A small asphalt plant producing 100 thousand tons of asphalt a year may release up to 50 tons of toxic fugitive emissions into the air. [Dr. R. Nadkarni] Stagnant air and local weather patterns often increase the level of exposure to local communities. In fact, most asphalt plants are not even tested for toxic emissions. The amounts of these pollutants that are released from a facility are estimated by computers and mathematical formulas rather than by actual stack testing, estimates that experts agree do not accurately predict the amount of toxic fugitive emissions released and the risks they pose. According to Dr. Luanne Williams, a North Carolina state toxicologist, 40% of the toxins from asphalt plant smokestacks even meet air quality standards and for the other 60% of these emissions, the state lacks sufficient data to determine safe levels.

There is documented evidence from health experts and federal and state regulators of the serious health effects of asphalt plant emissions. We must heed these early warning signs and take action to prevent communities from further exposure to cancer-causing substances released by asphalt plants. The following actions are needed:

Moratoriums on asphalt plant construction and operation in communities where people live and go to school;
Stricter testing and enforcement of air quality standards at asphalt plants; and
Improved air standards that address all toxic contaminants including fugitive emissions.

Even if an asphalt plant meets all air pollution standards, people living nearby are still exposed to cancer-causing substances that can cause long-term damage. These standards are based on the principle of "acceptable risk", and assume each state will enforce the standards, the plants will operate perfectly, and the owners can be trusted to operate on an honor system where they are expected to follow all the laws and regulations that apply to their facility without any government oversight. In the majority of cases, it is unknown whether the `theoretical' air emissions predicted by computer models and used by plant owners accurately reflect air emissions from a plant's daily operations. We must put safety first and shut down or overhaul the current system that fails to protect communities from the daily health hazards of asphalt plant pollution.
Reference:
https://cms2.revize.com/revize/cityofcovington/covington/docs/downtownplan/Asphalt%20Facilities%20Analysis%20for%20Downtown%20Covington%20AHBL%20Final%20Revised_06_03_2010%20Clean%20Copy.pdf

II. Impacts of Asphalt Plants Asphalt plants have the potential for a variety of impacts due to the volume and type of materials handled, the heat requirements of the manufacturing process and associated emissions from burning of fuels, and the equipment used.

While required Best Available Control Technologies and other regulatory requirements work to minimize impacts of asphalt plants, there may still be potential for impacts, particularly due to equipment failure or human error. Below is a discussion of potential environmental impacts followed by a discussion on how these impacts may affect development in Covington’s Downtown.

Air quality Asphalt plants have the potential to emit particulate matter, polycyclic aromatic hydrocarbons (PAHs), and gaseous volatile organic compounds (VOCs). These pollutants are considered detrimental to human health (some are suspected carcinogens). The degree to which emissions are hazardous also depends on the fuel used in the production process. Natural gas or propane produce the least hazardous emissions, whereas oil or diesel may create more harmful emissions.

The mixer portion of an asphalt plant is the most significant source of gaseous emissions, however fugitive emissions may be released from other sources such as bitumen tanks, skip hoists, and loading stations. The main sources of particulates include stack emissions, as well as fugitive emissions from storage piles and transport of materials.

The amount of “stack dust” emitted depends on a number of production factors, including: • The nature and the moisture content of the used mineral materials, • The treatment of the mineral materials in the drum, • The amount and temperature of the waste gas, • The waste gas velocity in the drum, • The shape of the extraction hood, • The total output of the plant.

While technology, proper emission control systems, and periodic inspection and reporting may all help to minimize pollutants, asphalt plants are allowed to emit pollutants up to a certain level

under state and federal law. These emissions could have an impact on immediate ambient air quality that can be noticeable to the general public in the vicinity of the facility.

While EPA air quality standards (incorporated in WAC 173-400) would not allow an asphalt plant that causes or contributes to a violation of ambient air quality standards to be permitted, there is always some potential for the release of harmful pollutants above allowed levels.

Where pollution control technologies fail, or human operators make errors, plumes of gases may be released. Emissions from asphalt plants and associated activities also have potential for creating odor impacts.

The main source of odor for asphalt plants is typically bitumen. "Among the compounds identified in bitumen and its emissions, some have been listed as carcinogenic by the International Agency for Research on Cancer (IARC) and/or listed as carcinogenic, mutagenic, toxic to reproduction (CMR) and/or hazardous by the European Union."

Odor may be generated from the loading of bitumen tanks, and emptying of the mixer onto conveyors, or into trucks. While controls such as vapor condensers and baghouses are effective at reducing the everyday adverse impact of odors, the potential for offsite odors still exists. Routine site inspection to ensure good housekeeping practices are being used for storage and on-site movement of materials, and equipment is operating as specified, may be among the steps taken to minimize air quality impacts.

Siting asphalt plants downwind from residential areas and/or tightly regulating hours of operation may help to minimize odor and impacts to ambient air quality. The predominant wind patterns in the Covington TO: Richard Hart, City of Covington 04/05/10 FROM: AHBL, Inc 4 Regulatory Options for Asphalt Batch Plants area are generally from the southwest. The majority of Covington's downtown is to the east/northeast of the proposed asphalt plant site. This means that existing and new development would at least partially be downwind from the proposed asphalt plant site.

D. Water quality Asphalt plants have the potential to contaminate ground water and surface waters through spills and leaks of chemicals. Contaminated groundwater can migrate towards nearby streams and lakes. Possible sources of groundwater pollution are: • Fuel tanks, pipework and fueling stations, • Solvents, • Other chemical agents used and stored onsite. Asphalt plants should not be sited in flood plains.1 In addition to good housekeeping and best management practices to minimize spills and leaks associated with the manufacturing and delivery process, facilities often channel stormwater to avoid contamination or remove

"An asphalt plant is regarded everywhere as a quintessential heavy industrial use. It is associated with noise, with smells, with dust, with heavy truck traffic."

The pollution asphalt plants have

David Wang

David Wang

Overseas Manager at Santai Machinery CO.,LTD
Published Oct 10, 2018

What pollution do asphalt plants have in production?

1 Pollutants

The pollutants generated during the operation of the asphalt mixing plant mainly include the following aspects, as shown in chart 1.

(1) Harmful gases. The flue gas generated by the drum burner, the asphalt discharge produced by the finished product discharge port, the asphalt tank, the heavy oil tank heating and insulation, and the SOx, NOx, CO, CO2 discharged from the chimney.

(2) Dust. The loading process and the mixing of soot and dust generated in the main building and the gathering site.

(3) smell. The odor generated by the storage, unloading, and heating of the asphalt, as well as the odor of the burner during operation and the odor generated by the asphalt mixture on the truck.

(4) Noise. Noise generated by loader loading, induced draft fan operation, drying cylinder rotation, aggregate hoist lifting, and vibrating screen screening.

(5) Waste water and waste liquid. Waste water and waste liquid are mainly derived from cold aggregate storage (infiltration or mixing with natural soil), fuel oil tanks, heat transfer oil, oil and gas storage tanks, pipelines and gas stations, solvents, additives, etc.

(6) Waste. The waste is derived from the secondary recovery powder of the bag filter, laboratory analysis solvent, and the like.

(7) Visual aspects. Mainly the visual impact of the main building or chimney of the mixing station, and also the color of the paint in the mixing station; the other includes the steam in the wet aggregate discharged from the chimney, the storage area of the cold material and the lighting of the factory.

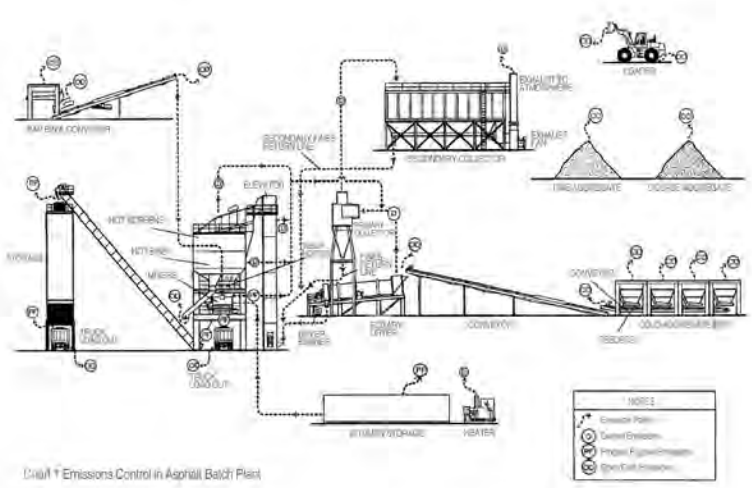

Figure 1 Emissions Control in Asphalt Batch Plant

2 Harm of pollutants

These pollutants can cause the following hazards to the environment and the human body.

(1) Asphalt smoke. Asphalt smoke contains thousands of substances, and the main harmful substances are acridine, phenols, pyridines, anthraquinones and benzopyrenes. Benzopyrene in asphaltic fumes is highly carcinogenic and toxic, causing headaches, dizziness, nausea and vomiting, pharyngitis, rhinitis, and enlarged liver.

(2) Dust. Dust mainly damages the body's respiratory system. After the inhalable particles in the air are inhaled into the human body, they enter the lungs through the nose, pharynx and bronchus. Some stimulating gas particles can be adsorbed on the nasopharynx to cause rhinitis and pharyngitis. The fine particles entering the lungs are blocked by the local tissues of the lungs. The role is easy to cause bronchitis, pulmonary fibrosis and emphysema.

(3) Sulfur dioxide. After entering the respiratory tract, sulfur dioxide is mostly soluble in water, so most of it is blocked in the upper respiratory tract, causing corrosive sulfite, sulfuric acid and sulfate on the moist mucous membrane to enhance the stimulation. The combined action of sulfur dioxide and fly ash can promote the proliferation of alveolar fibers, damage the lung tissue, and develop emphysema.

(4) Carbon monoxide. The degree of damage of carbon monoxide to the body depends mainly on the concentration and the length of time the body absorbs. Carbon monoxide poisoning can cause hypoxia in the body tissues, and the most significant impact on the heart and brain, often leading to softening and necrosis of brain tissue.

(5) Nitrogen oxides. Nitrogen oxides are less irritating to the mucous membranes of the eyes and upper respiratory tract, mainly invading the bronchioles and alveoli in the deep respiratory tract, causing pulmonary edema.

(6) Noise. Noise can not only seriously affect the auditory organs, but also cause people to lose hearing, but also affect sleep and nervous system, making people feel impatient and easy to get angry. Since noise can irritate the nervous system and cause it to be suppressed, people who work in a noisy environment for a long time are prone to neurasthenia.

(7) Odor. The odor generated by asphaltic cigarettes seriously affects the growth and development of humans, animals, and plants. If people are exposed to such odors for a long time, they may cause respiratory diseases and skin diseases, and may induce cancer.

Chart 2 Emissions Sources KG/T

Process		Particle Qty	PM10	PM2.5
Batch mix plant	Open dust emission	16	2.35	0.135
	Water filter	0.07	0.045	0.014
	Bag filter	0.021	0.014	0.004
Continuous type plant	Open dust emission	14	3.25	0.15
	Water filter	0.023	0.015	0.002
	Bag filter	0.017	0.012	0.001

Print

Planning Commission May 1, 2023 Public Comment - Submission #2965

Date Submitted: 4/18/2023

First and Last Name*

Test

Email Address*

Test

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

Public Comment for the Planning Commission May 1, 2023 Meeting

Print

Planning Commission May 1, 2023 Public Comment - Submission #2967

Date Submitted: 4/18/2023

First and Last Name*

Test

Email Address*

Test

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

Public Comment for the Planning Commission May 1, 2023 Meeting

Print

Planning Commission May 1, 2023 Public Comment - Submission #2980

Date Submitted: 4/20/2023

First and Last Name*

Kara Walker

Email Address*

K82walker@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3375 Firewater Ln

Public Comment for the Planning Commission May 1, 2023 Meeting

Why is an Asphalt plant going in near a residential area when it has been proven to cause SEVERE health issues?! Will precautions be made so that the toxic fumes wonâ€™t be released? Why is it ok to build near the park? My main concern is this causing health issues for my family and myself. Will this plant depreciate home value as well?

Print

Planning Commission May 1, 2023 Public Comment - Submission #2981

Date Submitted: 4/20/2023

First and Last Name*

Katie Meyer

Email Address*

katums926@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3255 Iron Horse Way, Wellington, CO 80549

Public Comment for the Planning Commission May 1, 2023 Meeting

Dear Town of Wellington Planning Commission: The Connell site plan doesnâ€™t meet the more stringent requirements that apply to toxic chemicals and so cannot be located at the proposed location. Land use code 4.03.21, B, regarding the production and curating of toxic chemicals, requires these sites to be located at least 2,640 feet from any residential district, religious land use, medical care facility, or school. According to section B of Land Use Code 4.03.21, the size of the property is too small to allow a setback of 2,640 feet. The Toxic Chemicals released are Hazardous air pollutants (HAPs) and Polycyclic aromatic hydrocarbons (PAHs). Toxic chemicals from these processes are; Formaldehyde, Acetaldehyde, Benzene, Hydrogen Sulfide, Chromium, Cadmium, Arsenic, Toluene, Ethylbenzene, and Xylene, along with smaller amounts of toxic chemicals. Current regulations for asphalt plants only assess particulate matter emissions, not toxic chemicals in the forms of HAPs and PAHs. From the last planning commission meeting, Connell Resources showed a holding pond of the runoff water closest to the community park. Wright, Minnesota has had health issues in neighborhoods from nearby asphalt plants. In reading their research, according to the New Jersey Department of Health and Senior Services Occupational Health Service, "Exposures in the community, except possibly in cases of fires or spills, are usually much lower than those found in the workplace. However, people in the community may be exposed to contaminated water as well as to chemicals in the air over long periods. This may be a problem for children or people who are already ill." https://www.co.wright.mn.us/AgendaCenter/ViewFile/Item/6844?fileID=14104 This batch asphalt plant produces and curates toxic chemicals. The planning board should not approve this plan due to the production and curating setback of 2,640 feet. No variance for this speciï¬c setback has been sought. Sincerely, Katie Meyer

Print

Planning Commission May 1, 2023 Public Comment - Submission #2983

Date Submitted: 4/20/2023

First and Last Name*

Chad Canfield

Email Address*

chad@sweetheartbowling.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3340 Grizzly Way

Public Comment for the Planning Commission May 1, 2023 Meeting

Thank you for the opportunity to comment on the proposed Hot Mix Asphalt plant in the Business Park. The primary concerns I want to address are the health and environmental impacts and the nuisance the plant will be for the Buffalo Creek neighborhood and surrounding residential and public areas within 1.5 â€“ 3 miles of the plant. Health concerns: 1. Air pollution: Hot mix asphalt plants emit various air pollutants such as formaldehyde, hexane, phenol, polycyclic organic Matter, toluene, other volatile organic compounds, carbon monoxide, sulfur dioxide, and nitrogen oxides, which can cause problems such as cancer, central nervous system problems, liver damage, asthma, coughing, wheezing, shortness of breath, headaches, dizziness, and nausea. 2. Noise pollution: The noise generated from the plant's machinery and trucks can lead to hearing loss, sleep disturbances, and stress-related health issues. 3. Chemical exposure: Handling and storing hot asphalt mix can expose workers and residents to harmful chemicals. Examples are as follows: Environmental concerns: 1. Water pollution: Runoff from hot-mix asphalt plants can contaminate nearby water sources (e.g., Boxelder Creek) with pollutants such as oil, grease, and heavy metals, which can harm aquatic life and affect water quality. 2. Soil contamination: Spills or leaks from the plant's machinery or storage tanks can contaminate the soil with hazardous substances. 3. Energy consumption: Asphalt production requires significant energy and resources, contributing to greenhouse gas emissions and climate change. Nuisance concerns: 1. Odors: The production process can generate unpleasant odors that can be a nuisance to nearby residents. 2. Traffic congestion: The constant flow of trucks in and out of the plant can lead to traffic congestion and safety hazards. 3. Aesthetics: The presence of an industrial facility in a residential area can impact the neighborhood's aesthetics, lowering property values. Specific Chemical Concerns: 1. Volatile Organic Compounds (VOCs): VOCs are a group of chemicals that can vaporize and form harmful gases when exposed to air. They can cause respiratory problems, eye irritation, headaches, and other health effects. Hot mix asphalt plants can emit VOCs from the asphalt binder, fuel combustion, and storage tanks. 2. Particulate Matter: refers to tiny particles of solid or liquid Matter that can be inhaled into the lungs and cause respiratory problems. Hot mix asphalt plants can emit PM from the aggregate material, the asphalt binder, and the combustion of fuels. 3. Carbon Monoxide: is a colorless, odorless gas that can be harmful in high concentrations. It can cause headaches, dizziness, nausea, and even death. Hot-mix asphalt plants can emit CO from fuel combustion and asphalt binder production. 4. Sulfur Dioxide: is a gas that can irritate the eyes, nose, and throat and cause respiratory problems. It can also contribute to acid rain and damage plants and crops. Hot-mix asphalt plants can emit SO2 from fuel combustion and asphalt binder production. 5. Nitrogen Oxides: refers to a group of gases that can contribute to smog formation and acid rain. They can also cause respiratory problems and aggravate existing health conditions. In addition, hot-mix asphalt plants can emit NOx from fuel combustion and asphalt binder production. 6. Polycyclic Aromatic Hydrocarbons: are a group of chemicals that can form during the combustion of organic material, such as asphalt. They can cause cancer, birth defects, and other health effects. Hot-mix asphalt plants can emit PAHs from fuel combustion and asphalt binder production. 7. Heavy Metals: Heavy metals such as lead, cadmium, and mercury can be present in asphalt binder and emitted from the plant during production. These metals can accumulate in the environment and risk human and ecological health. Because of the above concerns, I oppose the proposal for the plant. Thank you, Chad Canfield

Print

Planning Commission May 1, 2023 Public Comment - Submission #2982

Date Submitted: 4/20/2023

First and Last Name*

Miranda Zuvich

Email Address*

mirandazuvich@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3292 Iron Horse Way

Public Comment for the Planning Commission May 1, 2023 Meeting

I moved to Colorado to go to school at CSU. After living in Fort Collins for 2 years, I wanted to get out of the busy city and move somewhere quieter. I love the small-town vibe of Wellington. I love the open space. I love this town! I purchased a house on the north end of Buffalo Creek and I was so excited about where I lived! The community spaces near my house, a park, a dog park, and tennis courts! This is where I envision living for the rest of my life, where I hope to raise my kids. I was so excited to see the Middle High School open up, knowing that my future kids would have a great school near their house. Wellington has done so many great things to bring attention to them and invite hopeful residents. There are so many great restaurants, breweries, parks, and new housing developments. While I understand that an asphalt plant would bring new jobs, it will also push so many people out of this town. People will not want to move here, let alone spend time here. I will be one of the many leaving Wellington if this asphalt plant is approved. The plant would be less than a mile away from my home. With the known carcinogenic effects of this plant, I cannot justify living here. The plant would be less than a mile away from a beautifully developed community center. An asphalt plant does not belong that close to any town, it does not belong that close to Wellington. This plant should not just be moved to another small town with the prospect of new jobs, this plant should be moved to a rural area where the effects of its emissions will not smog a town of 12,000 people. The way to bring new jobs is to encourage new non-factory businesses to come to Wellington! Pitch a case to technology companies, restaurants, amazon warehouses, or literally anything that is not a factory. This town has done so much to make itself better and more habitable, please don't ruin that with an asphalt plant. Please. While I plead my case, consider that you also live here. Think of your kids. Think of the town you obviously care about so much that you are working for the government of this town. Money can cloud our judgment. Please put the health and safety of the people of Wellington over money. Please.

Print

Planning Commission May 1, 2023 Public Comment - Submission #2985

Date Submitted: 4/20/2023

First and Last Name*

Timothy Strohl

Email Address*

strohlts@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3280 Iron Horse Way

Public Comment for the Planning Commission May 1, 2023 Meeting

To whom it may concern, When I first heard about Connell Resources wanting to build an asphalt plant, I was under the impression that it was going to be on the North side of County Road 66, not the South side. I grew very concerned with this information. There are many, many studies that conclude the air in and around an asphalt plant can produce many types of respiratory issues. Many studies also conclude that breathing the air around a Hot Mix Asphalt (HMA) plant can cause wheezing, coughing, and shortness of breath as well as nausea, headaches, dizziness, and vomiting. The chemicals in asphalt can vary depending on the source of the crude oil, the type of asphalt being made, and the process used. In general, the fumes are a mixture of several different types of chemicals including volatile organic chemicals (VOCs), carbon monoxide, sulfur, nitrogen oxides, and polycyclic aromatic hydrocarbons (PAHs) There was also a study done in Bangor, Maine at an asphalt plant there where one Doctor, a Doctor Mitchell, commented that tiny particles in the production of asphalt produced lung damage, exacerbated breathing conditions and could ultimately cause more serious health issues. This report was published by the U.S. Department of Labor. It was further noted in that report that asphalt fumes has known carcinogens that are generated at the worksite. It was further stated that exposure to asphalt fumes has the potential for chronic health effects, including cancer. That in and of itself should tell the elected officials of this beautiful town, NO we do not want this in our community. As elected government officials, you have been tasked with doing what is best for this community and pave the way for future generations that will follow. Only looking at the revenue, ie; the taxes collected from this site is short sided and irresponsible. The future of our town is in your hands. If this plant is allowed to be built, you face many hurdles, such as lawsuits both of the personal and professional level due to FORSEEABLE health risks from this plant. Connell Resources has a gravel pit on the Carr Road, why are they not wanting to build there? That plant has everything they need to build and sustain an asphalt plant..water, aggregate, etc, and they are no where near a residential area. One can only speculate as to why they do not want to build there. Did Weld County tell them no? Did the residents of Carr tell them no? The proposed plant would be very close to the park where families gather to enjoy the fresh air, and the many opportunities that are within that park. Building a HMA plant might just cause a snowball effect for this town, such as decreased home values, people selling and moving to other cities such as Timnath, or Windsor. This will cause Wellington to become a ghost town in the end. In closing, do not allow greed to make this decision. The residents of this community do not need nor want a HMA plant in our town. Sincerely, Timothy Strohl

Print

Planning Commission May 1, 2023 Public Comment - Submission #2988

Date Submitted: 4/20/2023

First and Last Name*

Carolyn L. Goodwin

Email Address*

info@thecolonialshop.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

305 West Magnolia St PMB 357

Public Comment for the Planning Commission May 1, 2023 Meeting

I am opposed to the Hot Mix Asphalt Plant in the NE section of the Business Park which is 3/4 of a mile from the Buffalo Creek residential area where I live.

Print

Planning Commission May 1, 2023 Public Comment - Submission #2989

Date Submitted: 4/20/2023

First and Last Name*

James Perry

Email Address*

SAgent76@yahoo.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3363 CRAZY HORSE DR

Public Comment for the Planning Commission May 1, 2023 Meeting

I would like the planning commission to provide at least one benefit the Asphalt plant would have to the home owners in the Buffalo Creek development, since we are the ones to suffer the most from the air pollution and increased truck traffic. I bet the commission can' t provide one benefit. The planning commissions first priority should be looking out for the home owners in Wellington and not increasing the coffers of the town at their expense. No way should this asphalt plant be built near any residential area period.

Print

Planning Commission May 1, 2023 Public Comment - Submission #2995

Date Submitted: 4/21/2023

First and Last Name*

JEFFREY A Shaw

Email Address*

shawdog2@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3382 Iron Horse Way Wellington Co. 80549

Public Comment for the Planning Commission May 1, 2023 Meeting

Inserting an asphalt plant in the town of Wellington is the most ridiculous idea I have ever heard of. Not only will it omit dangerous chemicals into the air close to 3 schools and a daycare center where kids play outside and will be subjected to those chemicals but it will definitely reduce our property values that we work so hard to maintain. This is just crazy, crazy, crazy. I honestly was thinking about not wasting my time by voicing my opinion on this subject because ya'll are going to do what you want anyway. It's not about us. It's about you people. Mark my word, you watch how life in Wellington will decline if this project goes through. Just saying.

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Optional File Attachment

Choose File | No file selected

Print

Planning Commission May 1, 2023 Public Comment - Submission #2990

Date Submitted: 4/20/2023

First and Last Name*

Susanne Burtis

Email Address*

Susanneburtis@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3234 Wild West Lane

Public Comment for the Planning Commission May 1, 2023 Meeting

I cannot understand why a Hot Asphalt Plant can be allowed to be built so close to a community and children's park when it has been proven that noise and smell and chemicals will impact my community. In looking at the Asphalt Plant in Timnath there are no houses as close as Buffalo Creek will be to this Plant. This will turn Wellington into a place residents will want to move away from. There are other places this Asphalt Plant can be built that do not effect communities like Buffalo Creek. This should not be allowed. CONNELL INDUSTRIES should not be allowed to proceed with this Plant.

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Optional File Attachment

Choose File | No file selected

Print

Planning Commission May 1, 2023 Public Comment - Submission #2996

Date Submitted: 4/21/2023

First and Last Name*

Dan Matlock

Email Address*

damatlock@tdsmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3371 White Buffalo Drive

Public Comment for the Planning Commission May 1, 2023 Meeting

Way too much truck and heavy equipment traffic (6-9 double tankers hauling liquid asphalt, roughly 9,000 gallons per truck daily, set to stay about 3 months). Oil fumes and diesel exhaust fumes will cause respiratory as well as environmental hazards. Not to mention the piles of gravel and sand other trucks will bring in. Noise pollution will be extremely noisy. Totally NOT ACCEPTABLE!

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Optional File Attachment

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Optional File Attachment

Choose File | No file selected

Print

Planning Commission May 1, 2023 Public Comment - Submission #2998

Date Submitted: 4/22/2023

First and Last Name*

Monte medina

Email Address*

montecmedina@hotmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3364 iron horse way

Public Comment for the Planning Commission May 1, 2023 Meeting

To whom it may concern, When I first heard about Connell Resources wanting to build an asphalt plant, I was under the impression that it was going to be on the North side of County Road 66, not the South side. I grew very concerned with this information. There are many, many studies that conclude the air in and around an asphalt plant can produce many types of respiratory issues. Many studies also conclude that breathing the air around a Hot Mix Asphalt (HMA) plant can cause wheezing, coughing, and shortness of breath as well as nausea, headaches, dizziness, and vomiting. The chemicals in asphalt can vary depending on the source of the crude oil, the type of asphalt being made, and the process used. In general, the fumes are a mixture of several different types of chemicals including volatile organic chemicals (VOCs), carbon monoxide, sulfur, nitrogen oxides, and polycyclic aromatic hydrocarbons (PAHs) There was also a study done in Bangor, Maine at an asphalt plant there where one Doctor, a Doctor Mitchell, commented that tiny particles in the production of asphalt produced lung damage, exacerbated breathing conditions and could ultimately cause more serious health issues. This report was published by the U.S. Department of Labor. It was further noted in that report that asphalt fumes has known carcinogens that are generated at the worksite. It was further stated that exposure to asphalt fumes has the potential for chronic health effects, including cancer. That in and of itself should tell the elected officials of this beautiful town, NO we do not want this in our community. As elected government officials, you have been tasked with doing what is best for this community and pave the way for future generations that will follow. Only looking at the revenue, ie; the taxes collected from this site is short sided and irresponsible. The future of our town is in your hands. If this plant is allowed to be built, you face many hurdles, such as lawsuits both of the personal and professional level due to FORSEEABLE health risks from this plant. Connell Resources has a gravel pit on the Carr Road, why are they not wanting to build there? That plant has everything they need to build and sustain an asphalt plant..water, aggregate, etc, and they are no where near a residential area. One can only speculate as to why they do not want to build there. Did Weld County tell them no? Did the residents of Carr tell them no? The proposed plant would be very close to the park where families gather to enjoy the fresh air, and the many opportunities that are within that park. Building a HMA plant might just cause a snowball effect for this town, such as decreased home values, people selling and moving to other cities such as Timnath, or Windsor. This will cause Wellington to become a ghost town in the end. In closing, do not allow greed to make this decision. The residents of this community do not need nor want a HMA plant in our town. Sincerely, Monte C Medina

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Planning Commission May 1, 2023 Public Comment - Submission #2999

Date Submitted: 4/22/2023

First and Last Name*

Christopher Kerin

Email Address*

chrisjkerin1@yahoo.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

8818 Indian Village Dr

Public Comment for the Planning Commission May 1, 2023 Meeting

This proposal to put an asphalt plant in close proximity to residential houses and a park puts the health and safety of all Wellington citizens at risk. This is in clear violation of EPA health and safety guidelines. This will expose anyone at the community park, nearby schools, and surrounding homes to harmful chemicals emitted from the asphalt plant. This sends a clear message to the citizens of Wellington, that money is more important than our health and safety. This is unacceptable and everyone involved should be ashamed of themselves. Please put a stop to this now before this goes any further. It is not too late to do the right thing and show the people of Wellington that our health and safety does matter.

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Planning Commission May 1, 2023 Public Comment - Submission #3000

Date Submitted: 4/22/2023

First and Last Name*

Paul Bodnar

Email Address*

bodnarp60@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

9089 Raging Bull Ln. Wellington, CO

Public Comment for the Planning Commission May 1, 2023 Meeting

RE: PROPOSED ASPHALT PLANT Dear Planning Commission, I wish to register my revulsion to the proposed asphalt plant. I am hopeful that wisdom will prevail and that this abhorrent plan, which will certainly destroy the quality of life in Wellington, can be withdrawn. The close proximity of the asphalt plant to residential areas will undoubtedly propagate an awful, dangerous stench that will make life in Wellington unbearable. From the perspective of health hazards, some of the toxic chemicals found in asphalt plant emissions include Polycyclic aromatic hydrocarbons (PAH), benzene, toluene, nitric and carbonic acid, benz(a)pyrene, formaldehyde, carbon monoxide, nitrogen dioxide, sulphur dioxide and hydrogen sulphide. Many of these chemicals are known carcinogens, as well as skin, eye and respiratory irritants. Secondary to the emissions will be and unsightly industrial plant, the incessant noise and heavy truck traffic. The end result, if the plant becomes a reality, will be a significant reduction in the quality of life, a significant drop in property values and relegate Wellington to be known as nothing more than the Commerce City of Northern Colorado. A town where people live out of necessity rather than by choice. I recommend the Planning Commission take a field trip to a location down-wind of an existing plant to experience and therefore understand the awful, potent and hazardous fumes that the residents of Wellington will no doubt be subject to endure if this plant becomes operational. Best regards, Paul Bodnar 9089 Raging Bull Ln, Wellington

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Planning Commission May 1, 2023 Public Comment - Submission #3001

Date Submitted: 4/22/2023

First and Last Name*

Huston Hoffman

Email Address*

morse.huston@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3313 Thundering Herd Way

Public Comment for the Planning Commission May 1, 2023 Meeting

My comment on this issue is - are you seriously considering approving a HEAVY industrial use to be placed next to the largest, most popular, and exceptionally featured community park (let alone the residential neighbors to this park). Town events going to be held right next to the asphalt plant? REALLY? Hop Skip and a jump away from the new high school and middle school? Come on. The addition of this plant to Wellington while I am sure would be beneficial from a creating jobs, etc. stand point - we HAVE GOT to be smarter than this. I am vehemently opposed to this location being approved for this kind of use. Be smarter about this.

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Planning Commission May 1, 2023 Public Comment - Submission #3004

Date Submitted: 4/23/2023

First and Last Name*

Kenneth M Ferrier

Email Address*

kmfkona@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3393 White Buffalo Dr

Public Comment for the Planning Commission May 1, 2023 Meeting

The proposed asphalt plant would be in direct contradiction to the stated PURPOSE (Article 1.01.1) of the Wellington Land Use Code (WLUC). Specifically, the asphalt plant would NOT "enhance the Town's small-town character" nor would it "further the residents' goals as identified in the Comprehensive Plan". If you disagree, please show us what goals would be furthered by the plant. Furthermore, an Asphalt Plant in the proposed location would stand in opposition to several of the specific stated purposes for which the WLUC was adopted. The WLUC states that the zoning regulations contained therein are designed to: 1.01.1, A - Promote the health, safety, values, and general welfare of Town residents. How would the asphalt plant with its emissions, truck traffic, noise, and negative asthetics achieve any of those foundational goals? Rather, it would seem designed to do just the opposite. 1.01.1, C - Ensure adequate provision of transportation, water supply, sewage disposal, schools, parks, and other public improvements. We are painfully aware of the water supply issues facing our community. How can an asphalt plant do anything but add to the burden of an already over-taxed (and over-priced) system? 1.01.1, H - Prevent...danger and congestion in travel and transportation, and any other use or development that might be detrimental to the stability and livability of the Town. Wellington residents are all too familiar with the traffic congestion that occurs at the I-25 on-ramps and off-ramps, as well as the traffic signal at the East Frontage Rd. At certain times of day the intersection at N. County Rd. 7 and Cleveland Ave. gets really backed up. I have had to wait through multiple cycles of the traffic light, especially when turning left. There is also a concern for the present school zone near Eyestone Elementary School and Wellington Middle School. Those roads are often clogged with school busses and other vehicles belonging to parents who are dropping off or picking up students. Adding a steady flow of asphalt trucks to the situation can only heighten the level of congestion and the likelihood of danger to vehicles and pedestrian students alike. Wouldn't that be "detrimental to the stability and livability of the Town"? I respectfully urge you to act in the best interests of our community and keep the asphalt plant out. Thank you!

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Planning Commission May 1, 2023 Public Comment - Submission #3007

Date Submitted: 4/23/2023

First and Last Name*

Susanne Burtis

Email Address*

Susanneburtis@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3234 Wild West Lane

Public Comment for the Planning Commission May 1, 2023 Meeting

I have passed the Asphalt Plant in Timnath many times and the proximity to any housing developments is negligible in comparison to the proximity of the proposed Asphalt Plant in Wellington. Buffalo Creek sits closer. Putting this plant next to the communities and children's playground will show what the elected officials and appointed members of Wellington truly think of the quality of life here for the residents here. Noise, toxic chemicals blowing from the very strong winds that we get here will cause not only physical health issues , but also mental health issues. This is a very bad idea.

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Planning Commission May 1, 2023 Public Comment - Submission #3006

Date Submitted: 4/23/2023

First and Last Name*

Virginia Jensen

Email Address*

ginjens@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3316 Thundering Herd Way)

Public Comment for the Planning Commission May 1, 2023 Meeting

To the Planning Commission and City Trustees of Wellington. Re: Connell Asphalt Recycling Plant First, I would like to thank and commend you for listening to the citizens of Wellington at the March meeting and postponing the decision to approve the proposed asphalt recycling plant. Second, I have yet to hear any benefit to the citizens and community if this plant is built. I would like to hear why this plant is good for the community. Third, the literature I have seen is both negative and positive regarding health hazards. Some say there are no significant hazards. Others note multiple hazards and that the EPA does not adequately regulate these facilities. Since we cannot be sure we need to be cautious. Fourth, the perception of the vast majority of people here in my neighborhood is that this is not a good idea for multiple reasons, and they do not want it built. My family agrees that this plant should not be given permission. It needs to go away from a population center. Please consider the PEOPLE YOU SERVE and do what is right. Thank you.

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Planning Commission May 1, 2023 Public Comment - Submission #3008

Date Submitted: 4/23/2023

First and Last Name*

Brendan Gallagher

Email Address*

bjfgallagher@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3443 Firewater lane

Public Comment for the Planning Commission May 1, 2023 Meeting

Letter to the Planning Commision RE: the proposed Connell Hot Mix Asphalt Plant To the members of the planning commission: My name is Brendan Gallagher. I live at 3443 Firewater Lane in Wellington. I am very concerned about the effects that the proposed hot mix asphalt plant would have on the health, property values, and culture of our community. Like many people in Wellington, I moved here because it gave me an opportunity to purchase a house and raise a family in a small town. I value both the new and old communities that exist here, and it is important that we prioritize the health of our residents, especially our children. One of the many cancer-causing chemicals that hot mix asphalt plants generate is benzene. In addition to causing cancer, this chemical damages the human nervous system in adults and affects the development of children. A representative from Connell stated that hot mix asphalt plants create less benzene than a fast food restaurant like the Burger King down the road, but that information is from a study paid for by the National Asphalt Pavement Association (https://www.sanbornhead.com/wp-content/uploads/2021/08/Emissions-Comparison-Report.pdf). There are, in fact, many known negative health effects from exposure to asphalt and other hydrocarbons. â€œAvailable epidemiological studies have shown statistically significant links between exposure to hydrocarbons and/or metal fume and childhood leukemia2 and between exposure to asphalt fume and a variety of cancers.â€ (https://www.epa.gov/sites/default/files/2020-10/documents/stkhld-opn.pdf). And there are even more unknown negative health effects. â€œSince EPAâ€™s current approach is based on considering each chemical by itself, knowledge about the health effects of each individual chemical will not be available for many decades. Further, even after this data has been compiled, the synergistic interactions between these chemicals in a complex mixture will not be available and would require further study.â€ (https://www.epa.gov/sites/default/files/2020-10/documents/stkhld-opn.pdf) I donâ€™t understand why a variance for setbacks and silo height were ever granted in the first place. We donâ€™t need an asphalt plant in Wellington, and we definitely donâ€™t need it to be built so close to existing and already-approved residential sites. I moved here to raise a family, not to put my familyâ€™s health at risk. I urge you to find the legal means to protect the residents in Wellington and stop the approval of this plant. Sincerely, Brendan Gallagher 3443 Firewater Lane Wellington, CO

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Planning Commission May 1, 2023 Public Comment - Submission #3009

Date Submitted: 4/24/2023

First and Last Name*

Jeanette Baysingar

Email Address*

drjmag04@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

6781 Mount Nimbus St

Public Comment for the Planning Commission May 1, 2023 Meeting

Dear Committee. I am writing to you to stop the asphalt company from building in our community. The negative impact on our town should not be minimized. The plant will affect the air quality of everyone but especially our children. The proximity to the NEW school and our large beautiful COMMUNITY Park is an outrage. My family loves being outdoors and this will deter any healthy habits of outdoor exercise. This will harm our animals in the community. It will devalue our homes and increase people leaving this community. The houses will be harder to sale and sale for less. The plant will not grow this community in a positive manner. Please reconsider allowing this plant to be built in our town. It needs to be further away from our town and especially our children. Our children are our future and we need to invest in them and their health

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Planning Commission May 1, 2023 Public Comment - Submission #3011

Date Submitted: 4/24/2023

First and Last Name*

Rachael Johnson

Email Address*

rcjohnson313@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3243 Firewater Ln

Public Comment for the Planning Commission May 1, 2023 Meeting

I strongly oppose the proposed asphalt plant. I live close to the plant in the Buffalo Creek neighborhood. I have asthma and have struggled with respiratory problems especially the last 3 years. I am concerned about the impacts of the plant on my health, as we already have poor air quality in this area and this would make the problem worse. I enjoy walking in the community park that will be very close to the plant. It seems very shortsighted to place as asphalt plant so close to the community park where the community, especially families with children, are playing and spending time. I worry about my property values and how they would be negatively impacted by this plant. I'm concerned about increased traffic and the school that will be so close to the plant. I care about Wellington and am very concerned about how this plant being in this specific spot is going to impact our town. Please consider the health and well being of our community do not approve the asphalt plant in this location.

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Planning Commission May 1, 2023 Public Comment - Submission #3020

Date Submitted: 4/24/2023

First and Last Name*

Carol Feebeck

Email Address*

clf010114@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3136 White Buffalo Dr

Public Comment for the Planning Commission May 1, 2023 Meeting

I am totally against the building of a hot mix asphalt plant in Wellington. . I take daily walks through my neighborhood, Buffalo Creek, and Wellington Community Park. Building the plant puts my well-being and health in jeopardy. I have COPD and am very concerned that my condition will be exacerbated due to the fumes and particles it will generate. Building the asphalt plant compromises my home-life as I like to sit in my backyard, have my doors and windows open. The fumes, particles and smells plus noise is going to be a negative affect on my life. I also believe having an asphalt plant close to my residence is going to detour potential buyers and also decrease the value of my home.

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Planning Commission May 1, 2023 Public Comment - Submission #3021

Date Submitted: 4/24/2023

First and Last Name*

Reesa Conrey

Email Address*

reesa.conrey@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

9009 Spirit St.

Public Comment for the Planning Commission May 1, 2023 Meeting

24 April 2023 Dear Town of Wellington Planning Commission: I am writing to request that you vote â€œnoâ€ on the hot mix asphalt plant proposed by Connell Resources to be built northeast of the Buffalo Creek residential area and north of Wellington Community Park. If the proposal remains under consideration by the Wellington Town Planning Commission, despite the objections of Wellington residents, I request that you publicly provide the results of your consultations with appropriate agencies, such as the Larimer County Department of Health and Environment and Colorado Parks and Wildlife. I also request that you make available any data gathered from Connellâ€™s existing operations elsewhere, comparable operations by other companies, and the results of surveys contracted by Connell or the Town of Wellington on water resources, biological resources, or cultural resources on or near the proposed build site and areas downwind and/or downstream from the proposed facility. I attended the Commission meeting on March 6th, where many residents voiced their concerns over air quality, odor, noise, traffic, and groundwater impacts. There were multiple questions about why this site was chosen, given that there are closer locations to their aggregate source in Carr that are still near the train tracks and I-25. This location is adjacent to current and planned residences and just north (and upwind) of Wellington Community Park. I have observed asphalt mix operations on Taft Hill Rd. in Fort Collins and in the proposed Ladera development in Timnath, and I donâ€™t believe that these operations are appropriate or desirable for this site in Wellington. Although I appreciate that Connell has worked with the Board of Adjustment on their proposal, I continue to feel that this is not the right site for this project. I donâ€™t believe they should have granted the variances for smaller setbacks and taller structure heights that otherwise would prevent this project from being built here. There are potential threats to the health of nearby residents, likely loss of home values, and impacts on our park and ballfields downwind of this site, should this asphalt plant be built. Please consider voting â€œnoâ€ on this project, or at least making publicly available all data and results of appropriate consultations. Thank you, Reesa Yale Conrey, Homeowner, Buffalo Creek 9009 Spirit St. Wellington

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Planning Commission May 1, 2023 Public Comment - Submission #3024

Date Submitted: 4/24/2023

First and Last Name*

Travis Paul

Email Address*

Tpaul7712@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3348 Firewater Ln

Public Comment for the Planning Commission May 1, 2023 Meeting

I am writing this letter to express my deep concern over the proposed installation of an asphalt plant near our neighborhood. As a resident of a surrounding neighborhood, I strongly oppose this proposed installation for various reasons. Firstly, the asphalt plant produces a lot of harmful emissions that can have adverse effects on the health of the residents in the surrounding area. Studies have shown that these emissions can cause respiratory problems and other health problems in children, the elderly, and those with pre-existing conditions. Secondly, the installation of such a plant will likely result in an increase in traffic in our community, leading to more traffic accidents and reduced livability for residents. Lastly, the presence of an asphalt plant near our community could lead to a significant decrease in property values, which could have a negative impact on the local economy. I urge local officials to reconsider the installation of this asphalt plant in our neighborhood. Thank you for your time and attention.

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Planning Commission May 1, 2023 Public Comment - Submission #3022

Date Submitted: 4/24/2023

First and Last Name*

David Motichka

Email Address*

dmotichka@hotmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

8960 Raging Bull Lane

Public Comment for the Planning Commission May 1, 2023 Meeting

To the Town Planning Commission - My name is David Motichka and I have lived in Wellington for 22 years. I am writing due to concerns with the Asphalt plant. I am not going to get into the health concerns because I don't feel I am knowledgeable enough, other than reading articles pro and con, to have an intelligent conversation about that. I am writing because I don't understand how we even got to this point regarding the variance of setback and building height. I have built homes in Wellington and on one occasion had to apply for a variance because a buyer decided they wanted a fireplace added. We asked for a 6 inch variance on a side setback and honestly it was a difficult process because the town said "Setbacks are designed for a reason" and "If we change it for one person, we have to change it potentially for others" So if it was so hard to get a 6 inch variance on a side setback for a house, how in the world is the planning commission giving the massive change in setback and building height requested by Connell? It is extremely hard for a resident that is not savvy to the inner dealings of the Town and Connell to not wonder what the incentives or motives are for this move. I think that the town is owed a real explanation of why the variances were given so easily. I would hope that this decision is not being made because this is a golden ticket for Wellington to get out of the many planning and financial mistakes this town has made over the years. Sincerely David Motichka

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Planning Commission May 1, 2023 Public Comment - Submission #3025

Date Submitted: 4/24/2023

First and Last Name*

Meghan Paul

Email Address*

meghanroloson@yahoo.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3348 Firewater Ln

Public Comment for the Planning Commission May 1, 2023 Meeting

I am writing this letter to strongly disagree with the proposed construction of an asphalt plant near our neighborhood. As a long-time resident of this area, I am concerned about the potential impacts that such a plant would have on our quality of life. As you may be aware, asphalt plants produce a great deal of pollution and noise. This could have serious consequences for the health and safety of our community. Studies have shown that the emissions from these plants can contribute to respiratory problems, especially in vulnerable populations such as children and the elderly. Additionally, the construction of an asphalt plant would increase traffic in our already-busy neighborhood, leading to more accidents and increased noise pollution. Moreover, the presence of an asphalt plant in our area could have severe economic consequences. Properties near industrial establishments often decrease in value, which could result in a negative impact on our local economy. For these reasons, I strongly urge you to reconsider the building of an asphalt plant near our neighborhood. We value our community and the wellbeing of our friends and families, and we do not want to expose them to the negative effects of an industrial facility. Thank you for your attention to this matter.

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Planning Commission May 1, 2023 Public Comment - Submission #3026

Date Submitted: 4/24/2023

First and Last Name*

Heather Burton

Email Address*

hburtonart@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

7535 Horsechestnut Street

Public Comment for the Planning Commission May 1, 2023 Meeting

We feel that the entire town of Wellington should have been notified about this and not just the neighborhood next to the proposed site. We found out about the proposal today which is unacceptable. The amount of road traffic alone from this site will be significant and there needs to be many more studies done about the impact on our air quality as well as noise and traffic issues. In addition, I don't believe this is the type of business that our community needs right in town. Something this industrial belongs a bit further out. There are much better ways to build our community. We have to ask, what kind of town do we want Wellington to become, and is this the type of business that takes us in that direction or away from it. I believe it will negatively impact everyone's home values and bring real questions as to the quality of our air and water. At the very least a lot more due diligence should be done before altering our community forever.

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Planning Commission May 1, 2023 Public Comment - Submission #3027

Date Submitted: 4/24/2023

First and Last Name*

Brooke Musial

Email Address*

Brookemmusial@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3255 Crazy Horse drive Wellington, CO 80549

Public Comment for the Planning Commission May 1, 2023 Meeting

I strongly oppose the asphalt plant. I live in the Buffalo Creek neighborhood and will be the closest neighborhood to the plant. I have children and animals and our air here is already toxic enough. I do not want to not spend time outside because of the terrible air pollution that will be right outside my home. My children okay at the playground and splash pad. My dogs play at the dog park. My family and I have an extremely rare cancer gene that increases our chances of getting cancer by a lot. We try to do everything we can to avoid toxins and I want to be able to breath in as clean of air as I can when I walk outdoors. Living close at an asphalt plant increases your risk for cancer. Why would anyone want this in our small community, right across from a neighborhood!? I donâ€™t care if they are known as â€œgoodâ€ neighbors. That doesnâ€™t take the toxins away. I also care about the value of my home and that will drop drastically for this entire area? The only people that I have heard that want this have financial gain. Put it far away from houses! There is plenty of empty land close by that they could move their plant to without being on top of a neighborhood. Itâ€™s sickening and the fact that the board let it get this far is even worse. What are they turning Wellington into?

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Planning Commission May 1, 2023 Public Comment - Submission #3032

Date Submitted: 4/25/2023

First and Last Name*

Ben Freese

Email Address*

benjamin.freese

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

8436 Nashua Circle

Public Comment for the Planning Commission May 1, 2023 Meeting

I understand that the Connell Asphalt Plant is up for debate again. I implore the town to not move forward in allowing the construction of this plant within the limits of our town. We're already known as the northern Colorado town with the worst water quality-- do we want to also be known as the town with the worst air quality? Let's change our story. Wellington: the town that put profits second to the health of its residents. Thank you.

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Planning Commission May 1, 2023 Public Comment - Submission #3033

Date Submitted: 4/25/2023

First and Last Name*

Austin Jackson

Email Address*

austin.jackson@live.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

Public Comment for the Planning Commission May 1, 2023 Meeting

With how much this town struggles dealing with health, safety, and infrastructure already, I worry that certain members of our community put dollars ahead of human beings. Weâ€™re already on the hook for poor water quality, halted developments, snow plowing, limited high-speed internet access, destroyed pavement (ironically, this is something I doubt the proposed facility will help with), and the community is routinely asked to foot the bill for repairs and expansion after the fact. Do we want to be known as a family-friendly farm community or as a poorly-planned and unregulated industrial park with a train line and interstate running through it?

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Written Public Comments
3:00pm 4/25/2023

Connell Resources Asphalt Plant - Wellington, CO

Alden Gaw <agawster@gmail.com>

Mon 4/3/2023 2:00 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>
Cc: janice.marchman.senate@coleg.gov <janice.marchman.senate@coleg.gov>;JKefalas@larimer.org <JKefalas@larimer.org>;takeactionwellington@gmail.com <takeactionwellington@gmail.com>

Dear Cody Bird et al,

My wife and I have resided in the Buffalo Creek HOA in Wellington Colorado since May of 2013. Our primary reason for choosing Wellington was because of its rural and very minor light industry nature and presence.

We watched as the Wellington Community Park was created and appreciated the value-add it's creation brought to Wellington as a whole. We have used and enjoyed it daily throughout these years.

That there is now consideration for an asphalt production plant to become a part of Wellington Colorado east of this community park and adjoining residential neighborhood is beyond and against common sense, good judgement and goodwill to those of us that live here. Industrial additions of this nature without doubt stem from personal greed and the lack of respect and consideration for all that live in and around the town of Wellington.

I've found no one that lives in my neighborhood, or have encountered a Wellington citizen who is in favor of such an offensive addition to our lives, our community, our environment, our health and our well being.

I urge you all to refuse approval of this and any other type of industrial business that is known to produce and release the broad spectrum of toxic chemicals, whether or not regulated at the State and/or Federal levels, immediately and forthwith, and insure that now and for the future the town of Wellington will never have to endure such proposals again, by zoning at the most any parts and parcels of the town of Wellington Colorado as light industrial, especially east of the Wellington Community Park and areas zoned near and around now or in the future as residential.

Respectfully,

Alden Gaw

Everything Depends on Everything Else

Written Public Comments
3:00pm 4/25/2023

Against asphalt company

Brycen Ballinger <ballingerb71@gmail.com>

Wed 4/5/2023 8:54 AM

To: Cody Bird <birdca@wellingtoncolorado.gov>

I'm sure you are getting loads of emails against this potential Connell asphalt company going in next to the park. Down below I listed some asphalt known toxins. I'm personally against this for not only my future wellbeing but my kids who play at this very park and live just a stones throw away. Please If you care for the not only the future of the wellington but its populous tell these guys to take a hike! Share this with whomever you want. Thanks

Asphalt Fumes are Known Toxins. The federal Environmental Protection Agency (EPA) states "Asphalt processing and asphalt roofing manufacturing facilities are major sources of hazardous air pollutants such as formaldehyde, hexane, phenol, polycyclic organic matter, and toluene. Exposure to these air toxics may cause cancer, central nervous system problems, liver damage, respiratory problems and skin irritation." [EPA]. According to one health agency, asphalt fumes contain substances known to cause cancer, can cause coughing, wheezing or shortness of breath, severe irritation of the skin, headaches, dizziness, and nausea. [NJDHSS] Animal studies show PAHs affect reproduction, cause birth defects and are harmful to the immune system. [NJDHSS] The US Department of Health and Human Services has determined that PAHs may be carcinogenic to humans. [DHHS]

Written Public Comments
3:00pm 4/25/2023

NO ASPHALT IN WELLINGTON

Mike Locke <lockem2011@yahoo.com>
Wed 4/5/2023 6:21 AM
To: Cody Bird <birdca@wellingtoncolorado.gov>

NO ASPHALT PLANT: IN WELLINGTON!!

Connell Resources Inc. = the applicant

Next to Wellington Community Park, Buffalo Creek subdivision & the undeveloped Sundance subdivision.

WHY WE DON'T WANT IT HERE?
1. Toxic air emmisions/carcinogens/dust/foul odors, adverse air quality.
2. Liklihood of negative impact on groundwater supply. Strain on already insufficient storm water/ drainage infrastructure in Wellington.
3. Increased residential / business water bills.
3. Plant operations = noise pollution / increased, unpleasant noise in area.
4. Semi Traffic noise / congestion & yes "jake breaks". (always happens, always). Ask Weld county rural residents.
5. LOSS OF PROPERTY / HOME VALUES. Ie; Northern Wellington & rural properties along CR's. 66, 7, 9, & owl canyon.
6. Wellington does NOT require an Environmental Impact Statement. (Lack of Transparency).
7. Increased taxes for All. For road maintenance, Fire Dept. expansion & increased police presence for traffic enforcement, ect, ect..
8. Increased electricity & natural gas costs on Wellington residents. (infrastructure again).
9. More increased TAXES, annexation. Potential for Wellington to expand north. Thus, to attract more, big, heavy industry w/ tax credits /abatements & an increase in taxation on existing residents/business's to accommodate necessary infrustructure expansion. DOES YOUR TOWN GOVERNMENT HAVE YOUR BEST INTEREREST AT HEART? VOTERS!!??

Sincerely, Mike
Wellington pointe community

Written Public Comments
3:00pm 4/25/2023

Asphalt plant

Rachel Hayes <rhayes7686@icloud.com>

Mon 4/10/2023 6:08 AM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Please include in May 1st meeting packet for the board.

We / our family of five does not want an asphalt plant near our park where we go to play, ride bikes, walk our dogs, have a bbq and bath air .

There was little information presented to us and false information provided about it being an asphalt recycling plant. This hot batch asphalt plant should require a huge set back due to curating and producing toxic chemicals. Should not be allowed to be so close to house that are not even built yet.

Not enough information was presented by Connell only a lot of nice words and skating over most questions and stating
“Only steam comes out, we will put trees and shrubberies so to block smell and site of the 70’ addition.” Not acceptable.
No information provided about the affect it will have on the resale of our homes.

Please listen to our communities concerns. Even our middle and high school kiddos (12 & 17 year old) don’t want this here. This isn’t why we moved here.
Thanks
Rachel Hayes
3328 Wild West lane wellington

Sent from my iPhone

Written Public Comments
3:00pm 4/25/2023

Fw: Asphalt Plant Proposal

TOW Building <Building@wellingtoncolorado.gov>
Thu 4/13/2023 8:25 AM
To: Cody Bird <birdca@wellingtoncolorado.gov>

This was in the building email account.

Town of Wellington
Planning and Building Department
Phone: (970) 568- 3554
Email: building@wellingtoncolorado.gov
Web: www.wellingtoncolorado.gov
8225 Third Street, Wellington, CO 80549

From: Chad Mickschl <chad.guides@gmail.com>
Sent: Wednesday, April 12, 2023 10:23 AM
To: TOW Building <Building@wellingtoncolorado.gov>
Subject: Asphalt Plant Proposal

Hi Planning Dept,

I want to inquire and provide comments regarding the proposed Asphalt Plant. I live on the south end of Wellington in the Sage Meadows subdivision. I have some questions about the process of evaluating the impacts of the Asphalt Plant and how this gets approved or denied.

I was able to listen to the video recording of the meeting that is posted online, thanks for making this available.

What I heard was that the land in which the proposed Asphalt Plant is on is zoned industrial. Zoning maps recently changed in Wellington and in the new zoning regulations there are setbacks of 1,000ft linearly and 45ft vertically for land uses in industrial zoned areas. Given these new definitions, the Asphalt Plant needed to be granted variance to the requirements in order to have the proposal considered. From the meeting, I heard that these variances were granted because prior to the new zoning maps and regulations, there were no setback requirements. My concern is that new setback requirements were determined, obviously considering potential uses that could be permitted in industrial areas. To then grant variances to the Asphalt Plant after it was determined that new setbacks are required and justified, I don't see why the variances were granted. Furthermore, to grant variances prior to thorough understanding and analysis of environmental and human impacts seems premature.

1. Are there public documents that the town produced assessing impacts to this proposed action?
2. Impacts that should be assessed and disclosed to the public

- Visual Impacts

- Noise Impacts
- Traffic Pattern Impacts
- Air Quality Impacts
- Water Resource Impacts
- Economic Impacts

Given the proposed location of the Asphalt Plant, next to an established housing neighborhood and next to land zoned for housing development, and next to a public park with a children playground, tennis courts and baseball field, it seems like there is a better location for the health, safety and viability of the town and its residents. The Town of Wellington should prioritize protecting its residents before a polluting industry moves into a neighborhood. If the Asphalt Plant is permitted, I would predict many residents moving out of town and others not moving here. The Town of Wellington already has health and safety issues to deal with for its residents, I don't believe they should add another. There is a lot of vacant land outside of city limits, there is certainly a better location and balance to achieve and the company should be exploring those options.

Thanks

Chad Mickschl

Written Public Comments
3:00pm 4/25/2023

May 1st meeting/Asphalt Plant

Susanne B. <susanneburtis@gmail.com>

Thu 4/20/2023 4:27 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

I am writing again regarding the proposed Asphalt Plant. I oppose it. I live in Buffalo Creek and with the bad impact from noise, air quality(pollution)especially with the high wind in Wellington and toxic chemicals that this Plant will produce it is a very bad idea to force residents to try to live normal lives around this Plant. CONNELL INDUSTRIES can build this plant in Weld County without impacting the health of residents close by. This is a very bad thing to make the residents of Wellington have to suffer from. I was led to believe Colorado was an environmentally safe place to live. If this Asphalt Plant is approved for Wellington. Then protecting the environment here is not a priority. Wellington will not be a safe place to live in.

Written Public Comments
3:00pm 4/25/2023

Development

Joanne Carlson <vinmarkid5@msn.com>

Thu 4/20/2023 4:52 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

I had always thought that piece of property in the north east area of Wellington would be a perfect location for some good businesses like are on the south end of the street. Nice looking and bringing business to Wellington. The proposal of hot asphalt plant is neither of those things. Wellington city council can do better. I know there surely must be other businesses who would like to come to Wellington. Please search this out before acting so quickly.
Joanne Carlson
3255 Grizzly Way
Sent from my iPhone

Written Public Comments
3:00pm 4/25/2023

Fwd: Asphalt plant

Chris Schott <cschott50@hotmail.com>

Thu 4/20/2023 9:09 AM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Dear Mr Bird:
I sent the letter below to you quite a while ago and I am resending it now because I would like it to be included in the planning commission packet for the town council meeting on May 1. Please respond and confirm that it will be included. Thank you for your assistance in this matter,
Mary Chris Schott
8987 Smoke Signal Way
Wellington, Colorado
Sent from my iPad

Begin forwarded message:

From: Chris Schott <cschott50@hotmail.com>
Date: December 8, 2022 at 8:55:25 PM MST
To: Jodi Quass <jodiquass@gmail.com>
Cc: Chris Schott <cschott50@hotmail.com>
Subject: Asphalt plant

Dear Mr. Byrd and town council members:
I have recently become aware of the town's plans to erect an asphalt plant just to the north of town. I have done some research on the effect of asphalt plants in neighborhood areas and the results are not good. There is a dramatic increase in the incidence of cancer, nerve dysfunctions, and liver issues. In other places where asphalt plants have been built there are reports of headaches,rash, sensitivity, fatigue, reduced appetite, cough and various skin cancers. Small particulate matter is also released and that can get into the lungs and bloodstream causing cancers and heart problems.I have read that the newer technology mitigates these unfortunate effects but frankly I don't find them to be very credible. Once we have the plant here, if it's determined that it does create pollution or health issues it will be too late for us to do anything about it. I find this an unreasonable situation. Not only do I live in town but my daughter and her family also live in town with their small children. I can't imagine the effect of breathing in the kind of air pollution that comes with that sort of plant on their small bodies.

In addition to the numerous negative health effects, property values would likely decrease. Having a layer of soot on everything isn't a great selling point. Ask the people in Commerce City how they enjoy the environment that they have been told does no harm to them. I have not spoken to anyone in Wellington, who is in favor of the asphalt plant, so I'm wondering why the town is continuing to move forward with this. Surely how the

constituents feel about this matters to the council.

I'm not sure what the benefit of this asphalt plant would be to the town, but I doubt that it would make up for the harm that it will do. I hope that the council will reconsider this proposal for the good of us all.

Sent from my iPhone

Written Public Comments
3:00pm 4/25/2023

Plant

Jeffrey Shaw <shawdog2@gmail.com>

Fri 4/21/2023 6:35 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Cody, Inserting an asphalt plant in the town of Wellington is the most ridiculous idea I have ever heard of. Not only will it omit dangerous chemicals into the air close to 3 schools and a daycare center where kids play outside and will be subjected to those chemicals but it will definitely reduce our property values that we work so hard to maintain. This is just crazy, crazy, crazy. I honestly was thinking about not wasting my time by voicing my opinion on this subject because ya'll are going to do what you want anyway. It's not about us. It's about you people. Mark my word, you watch how life in Wellington will decline if this project goes through. Just saying.

Paul Whalen

From: josh kerson <jkoct28@hotmail.com>
Sent: Sunday, April 23, 2023 9:15 PM
To: Paul Whalen
Subject: Please do not allow the asphalt plant to be built in our community...

Ladies and gentlemen of the City Planning Board,
I'm here today to express our community's strong opposition to the proposed new asphalt plant. We are deeply concerned that this plant would have significant negative impacts on our community values, especially given the fact that our Front Range Colorado air is already compromised.
We have several concerns about the proposed plant, including the dangerous chemicals that are used in producing asphalt. These chemicals, such as benzene, toluene, and formaldehyde, can pose serious health risks to our community, especially to the children who will attend the new school that is located in close proximity to the plant.
In addition, the emissions from the plant could further compromise our air quality, exposing us to even more pollution and toxins. This is particularly concerning given that our community is already struggling with poor air quality, and we believe that the addition of an asphalt plant would only make things worse.
We are also concerned about the impact the plant would have on our quality of life. The noise, traffic, and pollution generated by the plant would make it more difficult for us to enjoy outdoor activities such as biking, running, and playing sports. We value the ability to spend time outside with our families and friends, but the construction of this plant would make that much more difficult.
Moreover, the Union of Concerned Scientists has reported that asphalt plants are among the top industrial sources of cancer-causing pollution. We cannot allow our community to be exposed to such risks, especially when we already have significant concerns about air quality in our area.
In conclusion, I urge you to take our concerns seriously as you consider the proposal for the new asphalt plant. The health and well-being of our community is at stake, and we believe that the construction of this plant would be a grave mistake. Thank you for your time and consideration.

Thank you kindly, Josh Kerson
3815 Garfield Ave
Wellington CO, 80549
po 1374

Written Public Comments
3:00pm 4/25/2023

05/01/2023 Town Planning Meeting - Asphalt Plant

Daniel Otamendi <dan.otamendi@gmail.com>

Sun 4/23/2023 7:23 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

1 attachments (16 KB)

Outlook-unxwd02n.jpg;

Hello Cody,

My name is Daniel Otamendi and I live at 9076 Smoke Signal Way in the Buffalo Creek community. Our house backs up directly to the community park. We are strongly opposed to the asphalt plant due to: increased noise and industrial traffic in the area, poor air quality, and the high likelihood of a decrease in property value.

Thank you for your time and consideration with reading this email.

Regards,
Dan

On Mon, Mar 6, 2023, 1:25 PM Cody Bird <birdca@wellingtoncolorado.gov> wrote:

> Daniel and Family,
>
> Thank you for the correspondence. I have received your email and will include it in the information provided to the Planning Commission.
>
> Kind regards,
>
> ---
>
> **From:** Daniel Otamendi <dan.otamendi@gmail.com>
> **Sent:** Monday, March 6, 2023 12:49 PM
> **To:** Cody Bird <birdca@wellingtoncolorado.gov>
> **Subject:** 03/06/2023 Town Planning Meeting - Asphalt Plant
>
> Good Afternoon Cody,
>
> I am a resident of the Bufflao Creek Community and I am opposed to the Connel Asphalt Plant so near to the Wellington Community Park and our neighborhood. Attached is a document with a few more details.
>
> Thank you,
> Daniel Otamendi and Family

Written Public Comments
3:00pm 4/25/2023

Asphalt plant

Jeanette Baysingar <drjmag04@gmail.com>

Mon 4/24/2023 6:35 AM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Dear Cody,

I am writing to you to stop the asphalt company from building in our community. The negative impact on our town should not be minimized. The plant will affect the air quality of everyone but especially our children. The proximity to the NEW school and our large beautiful COMMUNITY Park is an outrage. My family loves being outdoors and this will deter any healthy habits of outdoor exercise. This will harm our animals in the community. It will devalue our homes and increase people leaving this community. The houses will be harder to sale and sale for less. The plant will not grow this community in a positive manner. Please reconsider allowing this plant to be built in our town. It needs to be further away from our town and especially our children. Our children are our future and we need to invest in them and their health.

Sincerely
Jeanette Baysingar
6781

Written Public Comments
3:00pm 4/25/2023

Asphalt plant

susan cooney <stcooney9701@gmail.com>

Mon 4/24/2023 10:23 AM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Dear Mr. Bird,
My family and I live at 7359 View Pointe Circle in Wellington. I was very alarmed when I learned that Wellington is considering allowing an asphalt plant to be built in Wellington. The health effects and smell associated with an asphalt plant are certainly an area of concern. I am also worried about the effect this will have on my property value. I urge you to support the will of the citizens and not allow this asphalt company to locate in Wellington.

Sincerely,
Susan Cooney
720-383-3948

Written Public Comments
3:00pm 4/25/2023

Public Comment

Gilda Gallagher <gilda.gallagher@gmail.com>
Mon 4/24/2023 8:31 PM
To: Cody Bird <birdca@wellingtoncolorado.gov>

Dear Cody Bird,

My name is Gilda Gallagher. I live at 3443 Firewater Lane in Wellington. I am very concerned about the effects that the proposed hot mix asphalt plant would have on the health, property values, and culture of our community.

It is important that we prioritize the health of our residents, especially our children. I expect Wellington leaders to be thoughtful about the impact of the choices they make. I expect our leaders to represent and look out for their residents. I don't understand why a variance for setbacks and silo height were ever granted. There is no reason for this plant to be built so close to our schools, park, & residential area when other locations are available.

I urge you to find the legal means to protect the residents in Wellington and stop the approval of this plant.

Sincerely,

Gilda Gallagher
3443 Firewater Lane
Wellington, CO

Sundance at Daubert Farm Holdings, LLC
308 Commerce Drive, Unit A
Fort Collins, CO 80524
Phone: 970-493-6262

March 6, 2023

Planning Department
Attention: Cody Bird
8225 Third Street
Wellington, CO 80549
birdca@wellingtoncolorado.gov

Re: Connell Resources

Dear Planning Department,

Sundance at Daubert Farm Holdings, LLC is the owner of the land immediately west of the proposed Connell site. We currently have a single-family home subdivision planned for this site and plan to construct it in the future. We have had several meetings and conversations with representatives from Connell, as well as several meetings and conversations with Cody Bird of the Wellington Planning Department. In every meeting we found all parties willing to work together to produce a plan that would work well for everyone. We have known from the very beginning that the land immediately east of our site would be developed into an industrial commercial facility. I am familiar with Connell's current plant located on I-25 just south of the Harmony exit. I have always been impressed with their efforts to make the plant as aesthetically pleasing as possible. We feel there are far worse potential users for this site than Connell. We also think Connell will be a good neighbor to our community. We fully support Connell's proposal for their plant and believe the effect it will have on our community will be minimal. We ask that you please approve this proposal.

Thank you for your time.

Sincerely,

John G. Giuliano
Managing Member

Online Form Submittal: Contact the Planning and Building Department

noreply@civicplus.com <noreply@civicplus.com>
Mon 4/24/2023 8:07 PM
To: TOW Building <Building@wellingtoncolorado.gov>

Contact the Planning and Building Department

Acknowledgement	I agree
First Name	Carlos
Last Name	Gonzalez
Property Address Related to Question	3802 Mount Flora St
City	Wellington
State	CO
Zip Code	80549
Email Address	cmgonzalez454@aol.com
Phone Number	3617261815
Preferred contact method?	Email or phone
Are you the homeowner, contractor, business, or other related to this project?	Homeowner
What is the zoning district for the location you have questions about? If you are unsure please utilize the zoning district map to the right.	Unsure
Discover Your Zoning District	Zoning District Map
I have a question regarding...	New commercial building
What specific questions do you have? Please provide any relevant information.	Is the tax money received from the asphalt company really worth compromising the great quality of life we have in Wellington? Will the extra taxes pay for the community streets the large semi trucks will ultimately destroy. Will the the taxes mask the stench of asphalt in the air? Will the taxes take away all the noise and light pollution the plant will create? There is a reason the asphalt plant was pushed out of Fort Collins. It was not worth the trouble or the money. Let's not make it our

	problem. Do any of the board members have a financial stake in the company coming to Wellington?
Helpful Documents	*Field not completed.*

Online Form Submittal: Contact the Planning and Building Department

noreply@civicplus.com <noreply@civicplus.com>
Mon 4/24/2023 11:52 AM
To: TOW Building <Building@wellingtoncolorado.gov>

Contact the Planning and Building Department

Acknowledgement	I agree
First Name	Valerie
Last Name	Kramer
Property Address Related to Question	6813 sumner st
City	Wellington
State	Colorado
Zip Code	80549
Email Address	Valcraig99@gmail.com
Phone Number	*Field not completed.*
Preferred contact method?	Email
Are you the homeowner, contractor, business, or other related to this project?	Homeowner
What is the zoning district for the location you have questions about? If you are unsure please utilize the zoning district map to the right.	R-2 Residential Medium
Discover Your Zoning District	Zoning District Map
I have a question regarding...	Other
What specific questions do you have? Please provide any relevant information.	Hello, I am submitting a comment today I. The hopes that I am one of MANY doing so - I am absolutely opposed to an asphalt plant being built in wellington. I feel strongly about the health of my family and the health of my community. I mean this is the literal sense, but also health in the way of how our town grows and improves. I am proud to live here, but our town CANNOT go down this path. I will be one of many residents that then has to make the decision to move elsewhere. Please. Do not allow

	an asphalt plant to be built in wellington. Thank you - Valerie
Helpful Documents	*Field not completed.*

Email not displaying correctly? View it in your browser.

Written Public Comments
3:00pm 4/25/2023

Asphalt Plant Protest

Leatherman, Scarlett - Student <73961@psdschools.org>

Mon 4/24/2023 1:35 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Hi. Please stop trying to build the asphalt plant near Wellington Middle High School. It will ruin the school, and possibly give people cancer from its hazardous fumes. Go build it in Greeley, CO.

-A concerned student

Written Public Comments
3:00pm 4/25/2023

Asphalt Plant

Jess Leatherman <twigs1404@gmail.com>

Mon 4/24/2023 10:44 AM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Hello,
My concern is about the proposed asphalt plant. I've heard it will be close to the Middle/high school and that it will be near town. Why on earth is this being considered so close to town!?! Are we really trying to turn Wellington into the armpit/Commerce City of Northern Colorado? These plants have shown to be harmful to the health of humans. The smell is awful. Headaches would abound at the school and in the community! Why aren't we working on getting better community business in the area. A larger grocery store, better food chains, a rec center, a community pool. Making the intersection at I-25 and HWY 1 safer, re building that bridge. People are moving here because other areas have become too expensive. I appreciate that this is a quite rural/agricultural area not an industrial zone! Send this crap to Weld county, they don't seem to mind. The county doesn't allow this sort of thing on their lands why would you use a loop hole to put it so close to the town!?! Quit putting in Dollar stores and crap that takes away from the beauty of this community. I'm finishing my basement and putting money into making my house our permanent home. This plant would bring down property values in the area. Parents would pull children from the school if they start having health problems due to the asphalt plant. All the money put into the school would be a waste if enrollment drops significantly! I firmly disagree with this plant. Please don't allow this toxic plant in our beautiful town.
Thank you,
Jessica Leatherman
7517 Final Turn Drive
Wellington, Co. 80549

Written Public Comments
3:00pm 4/25/2023

Opposition to Asphalt Plant

D Peel <d.peel2725@gmail.com>

Mon 4/24/2023 3:48 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

We have a home in the Buffalo Creek subdivision, and we are opposed to the Asphalt Plant. As you are aware, the chemicals, gasses and other byproducts from this operation are known carcinogens. Please do not approve this operation.
Thank you,
Dan Peel
9052 Painted Horse Lane
(970) 218-5238

Written Public Comments
3:00pm 4/25/2023

Fw: Online Form Submittal: Contact Us Form

Verity Ketsdever <KetsdeverV@wellingtoncolorado.gov>
Mon 4/24/2023 11:23 AM
To: Cody Bird <birdca@wellingtoncolorado.gov>

Hi Cody,

This came through the online form submittal to Mahalia and myself regarding the asphalt plant. If I get more, would you like me to forward them to you?

TOWN OF WELLINGTON

Verity Ketsdever
Administrative Assistant II/ Court Clerk
Phone: 970.568.3381
Email: KetsdeverV@wellingtoncolorado.gov
Web: www.wellingtoncolorado.gov
8225 Third Street
Wellington, CO 80549

From: noreply@civicplus.com <noreply@civicplus.com>
Sent: Monday, April 24, 2023 11:08 AM
To: Mahalia Henschel <henschem@wellingtoncolorado.gov>; Verity Ketsdever <KetsdeverV@wellingtoncolorado.gov>
Subject: Online Form Submittal: Contact Us Form

Contact Us Form

First and Last Name	Jenifer Wilcher
Address	3940 Buckthorn St
City	Wellington
State	Colorado
Zip Code	80549
Phone Number	9702229740
Email Address	Jenifer.wilcher@gmail.com
Comment or Question	I will be unable to attend the meeting on May 1. But wanted to send a quick comment stating that my family and I are against the proposed asphalt plant.

Written Public Comments
3:00pm 4/25/2023

How would you like to be contacted?	Email me

Email not displaying correctly? View it in your browser.

Written Public Comments
3:00pm 4/28/2023

Asphalt Facility

Brian Harrison <bah511@yahoo.com>
Wed 4/26/2023 12:36 PM
To: Cody Bird <birdca@wellingtoncolorado.gov>

-
- To the members of the planning commission:

  My name is Brian Harrison. I live at 9073 Painted Horse Lane in Wellington. I am very concerned about the effects that the proposed hot mix asphalt plant would have on the health, property values, and culture of our community.

  Like many people in Wellington, I moved here because it gave me an opportunity to purchase a house and raise a family in a small town. I value both the new and old communities that exist here, and it is important that we prioritize the health of our residents, especially our children.

  One of the many cancer-causing chemicals that hot mix asphalt plants generate is benzene. In addition to causing cancer, this chemical damages the human nervous system in adults and affects the development of children. A representative from Connell stated that hot mix asphalt plants create less benzene than a fast food restaurant like the Burger King down the road, but that information is from a study paid for by the National Asphalt Pavement Association (https://www.sanbornhead.com/wp-content/uploads/2021/08/Emissions-Comparison-Report.pdf).

  There are, in fact, many known negative health effects from exposure to asphalt and other hydrocarbons. "Available epidemiological studies have shown statistically significant links between exposure to hydrocarbons and/or metal fume and childhood leukemia2 and between exposure to asphalt fume and a variety of cancers." (https://www.epa.gov/sites/default/files/2020-10/documents/stkhld-opn.pdf).

  And there are even more *unknown* negative health effects. "Since EPA's current approach is based on considering each chemical by itself, knowledge about the health effects of each individual chemical will not be available for many decades. Further, even after this data has been compiled, the synergistic interactions between these chemicals in a complex mixture will not be available and would require further study." (https://www.epa.gov/sites/default/files/2020-10/documents/stkhld-opn.pdf)

  I don't understand why a variance for setbacks and silo height were ever granted in the first place. We don't need an asphalt plant in Wellington, and we definitely don't need it to be built so close to existing and already-approved residential sites. I moved here to raise a family, not to put my family's health at risk. I urge you to find the legal means to protect the residents in Wellington and stop the approval of this plant.

  Sincerely,

  Brian Harrison 9073 Painted Horse Lane
  Wellington, CO 80549

  -
  -
  -
  -
-
-

Written Public Comments
3:00pm 4/28/2023

Opposition to Hot Asphalt Plant

Larry Rice <larryriceoc1@gmail.com>

Wed 4/26/2023 7:01 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Dear Mr. Bird,

Simply and to the point, I am a Wellington resident who resides and owns a home in Buffalo Creek subdivision, located to the west of the proposed Hot Asphalt Plant that is being considered for construction behind Wellington Community Park. I want to express in the strongest means possible that I oppose any such development in our community! Why? In plain terms that anyone can understand: IT STINKS! The smell, full of toxic gases and emissions. The eyesore (really, does anyone want to look out and see this ugly construction site?). The increase in heavy truck traffic within our town (as if we need any MORE traffic). The reduction in property values (who would like to have their home situated downwind of the asphalt fumes?). Noise pollution (yes, there are residents of Wellington who appreciate its small-town tranquility).

And why is this hot asphalt plan even being considered to be located in Wellington? Hmmm….let's think about that for a second. Money? Greed? Short-sighted, ill-informed thinking? All of the above? I think "all of the above."

I implore you, Mr. Bird, and the rest of the town trustees, including the mayor, to stop this ill-conceived idea from going any further. Do NOT allow this asphalt plan to be situated anywhere within Wellington. Not only for us current residents, but for those who might want to call Wellington their home in the future. It's just a plain bad idea that should have never have been considered in the first place. It's time to stop it now. Wellington does not need it. We do not need it!

Thanks you for your time and consideration. Please do the right thing.

Sincerely,

Larry Rice

Buffalo Creek Estates

Sent from my iPhone

Written Public Comments
3:00pm 4/28/2023

Notice of my Opposition

Sandra Hunnicutt <sandy.hunnisan@gmail.com>

Thu 4/27/2023 4:46 PM

To: Jon Gaiter <gaiterjm@wellingtoncolorado.gov>;tietz@wellingtoncolorado.gov <tietz@wellingtoncolorado.gov>;Brian Mason <masonb@wellingtoncolorado.gov>;Calar Chaussee <chausseec@wellingtoncolorado.gov>;David Wiegand <wiegandd@wellingtoncolorado.gov>;Patti Garcia <garciapa@wellingtoncolorado.gov>;Cody Bird <birdca@wellingtoncolorado.gov>;macdonar@wellingtoncolorado.gov <macdonar@wellingtoncolorado.gov>;dailyrm@wellingtoncolorado.gov <dailyrm@wellingtoncolorado.gov>

2 attachments (737 KB)

Asphalt Email BOT April212023.pdf; Hot Mix Asphalt Plants-EPA-Dec2000.pdf;

I'm writing to express my strong opposition to having a Hot Mix Asphalt plant within the borders of our town. Not only are the serious health implications most alarming, but it would not comply with the goals of our Comprehensive Plan and Land Use Codes. Please find attached my supportive research, and do not proceed with The Plant!

Sincerely,

Sandra Hunnicutt
3940 Ginkgo St
Wellington, CO

April 20, 2023

Dear Town of Wellington Trustees and appointed officials,

I'm writing this letter for three primary purposes:

1. I'm frustrated and upset that the amount of public input has decreased by one week, per Mr. Bird, Planning Commissioner. He has changed the routine of having written comments submitted to the Planning Commission no later than 3 pm on the meeting day. Just today, I learned that the cutoff for the May 1 meeting is tomorrow, April 21, at 3 pm! This certainly does not comply with the Theme, Reliable & Resilient Public Services, of the Comprehensive Plan. It almost appears to be a sabotage of getting as much public input as possible to reflect the truly diverse desires of the community. **Please reverse this decision!**

2. **I do not want the asphalt plant built downtown!** It counters the community themes written in our town's Comprehensive Plan (2021). It is an irrefutable source of detriment to the environment and health of our residents. Although the owners of the plant deny any causes of toxicity, the attached sampling of researched articles strongly refutes their claims:

    - "EPA Hot Asphalt Plant Emission Assessment Report, EPA Document #EPA 454R.00.019, December 2000." Please pay special attention to the following pages sections:
        - Pg.1, Sect. 1.2 – "Overview of the HMA (Hot Mix Asphalt) Industry."
        - Pg.11, Sect. 2.1.4 – "Emissions and Controls," especially the first paragraph listing the emissions from the two significant emissions categories. *A little more than "just water in that steam!"*
        - Pg. 19, Table 5 - estimated annual emissions for a typical batch mix plant dryer, hot screens, and mixers
        - Pgs. 20-26, Tables 6-12 - refer to the toxic contributions of additional production sources: plant load-out operations; storage tank emissions; drum mix dryers; drum mix plant silos; estimated annual yard VOC (volatile organic compounds) emissions.
        - Pg. 15, Sect. 2.3 – "Emission Factors for Other Generic Sources Associated with HAP Facilities:" - **these are often overlooked in discussing the *cumulative* toxic output of HAPs!**
            - Receipt of new aggregate
            - Transfer of aggregate from storage to the conveyor belt
            - Unpaved road dust emissions
            - Paved road dust emissions
            - Diesel exhaust emissions (think 20 trucks a day just idling in the yard while waiting to load or unload)

    - Center for HMA, Environmental, and Justice (CHEJ): "A Bad Place for An Asphalt Plant: An African American Community Fights Back," March 3, 2022. (Please relate this to our community with a particular focus on the severe health problems suffered by those living in proximity to a HAP): Cancer, Nervous system dysfunction, Liver damage.

    - Extracts from other articles:
        - Living near an HMA plant exposes residents to toxic air pollutants of polycystic aromatic oxide, sulfur dioxide, and hydrogen sulfide; volatile organic compounds; and metals. (North Carolina Department of Environmental Quality).

  - Exposure to asphalt (Study by North Carolina government) and detrimental health effects include **breathing fumes**; irritate nose, throat, and lungs causing coughing, wheezing, shortness of breath, headache, dizziness, nausea, and vomiting; **contact** with asphalt: severe skin burns, dermatitis, acne-like lesions.

- "Timnath group opposing TopGolf to submit petitions Wednesday," Loveland Reporter-Herald, Dallas Heltzell, 3/27/23: This article from our neighboring town of Timnath reflects the concerns of residents about heavy industry taking over and their need for development plans to be congruent with their 2020 Comprehensive Plan.
  - Petition signatures more than double the needed signatures gathered to trigger a special election to block Topgolf. The ballot measure would stipulate land use/development parameters for future commercial industries.
  - The opposition focuses on wildlife protection and the negative impacts on residential quality of life.
  - Topgolf also does not remotely coincide with the goals of the town's Comprehensive Plan for future development, and this significantly concerns the residents. *Sound familiar?*

3) I thank you for promoting the community themes in our Comprehensive Plan, with a focus on creating that "small town" feeling where tourists would be drawn to visit, thus boosting our economy. I doubt that 70 ft. smokestacks and an asphalt plant will contribute much to the atmosphere of a "charming" small town and be much of a tourist attraction. Nor would people using our projected parks and trails find it peaceful and placid to run/walk past a "delightfully" roiling, dusty, loud asphalt plant.

Please, do whatever it takes to revise zoning, land use codes, health codes, etc., **to halt the asphalt plant and any other heavy industries from ever being considered in our downtown in the future**. This request comes at a pivotal point in the design, vision, and desired characteristics of 'our little town.'

Thank you for your perseverance in reviewing this rather lengthy letter and for all of your hard work in developing our unique town of Wellington with the timely input of us, the residents.

Sincerely,

Sandra L Hunnicutt

United States Environmental Protection Agency | Office Of Air Quality Planning And Standards Research Triangle Park, NC 27711 | EPA-454/R-00-019 December 2000

Air

HOT MIX ASPHALT PLANTS

EMISSION ASSESSMENT REPORT

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EPA 454/R-00-019

HOT MIX ASPHALT PLANTS

EMISSION ASSESSMENT REPORT

This document was prepared by:

Emissions Monitoring and Analysis Division
Office of Air Quality Planning and Standards
United States Environmental Protection Agency
Research Triangle Park, NC

and under contract, by:

Midwest Research Institute
Kansas City, MO and Cary, NC
EPA Contract Number 68D-98-027

and

Eastern Research Group, Inc.
1600 Perimeter Park
P.O. Box 2010
Moorisville, NC
EPA Contract Number 68-D7-0068

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air and Radiation
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

December 2000

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DISCLAIMER

The information in this document has been funded by the Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency (EPA) under contract 68-D-98-027 to Midwest Research Institute and under contract 68-D-70-068 to Eastern Research Group, Inc. The EPA has made additions and revisions to the information submitted by the contractors. This final report has been subjected to the Agency's review, and it has been approved for publication as an EPA document. Mention of trade names or commercial products is not intended to constitute endorsement or recommendation for use.

PREFACE

This report was produced by the Source Measurement Technology Group of EPA's Emissions Measurement Center located in Research Triangle Park, NC. It is one of a series of twelve reports prepared to document an EPA program to characterize emissions to the air from hot mix asphalt plants. These twelve reports and their associated EPA document numbers and publication dates are:

Document Title	EPA Document Number	Publication Date
Hot Mix Asphalt Plants Emission Assessment Report	EPA 454/R-00-019	December 2000
Hot Mix Asphalt Plants Kiln Dryer Stack Instrumental Methods Testing Asphalt Plant A, Cary, North Carolina	EPA 454/R-00-020	April 2000
Hot Mix Asphalt Plants Kiln Dryer Stack Manual Methods Testing Asphalt Plant A, Cary, North Carolina		
Volume 1 of 2	EPA 454/R-00-021a	April 2000
Volume 2 of 2	EPA 454/R-00-021b	April 2000
Hot Mix Asphalt Plants Kiln Dryer Stack Instrumental Methods Testing Asphalt Plant B, Clayton, North Carolina	EPA 454/R-00-022	April 2000
Hot Mix Asphalt Plants Kiln Dryer Stack Manual Methods Testing Asphalt Plant B, Clayton, North Carolina		
Volume 1 of 2	EPA 454/R-00-023a	April 2000
Volume 2 of 2	EPA 454/R-00-023b	April 2000
Hot Mix Asphalt Plants Truck Loading and Silo Filling Instrumental Methods Testing Asphalt Plant C, Los Angeles, California	EPA 454/R-00-024	May 2000
Hot Mix Asphalt Plants Truck Loading and Silo Filling Manual Methods Testing Asphalt Plant C, Los Angeles, California		
Volume 1 of 8	EPA 454/R-00-025a	May 2000
Volume 2 of 8	EPA 454/R-00-025b	May 2000
Volume 3 of 8	EPA 454/R-00-025c	May 2000
Volume 4 of 8	EPA 454/R-00-025d	May 2000
Volume 5 of 8	EPA 454/R-00-025e	May 2000
Volume 6 of 8	EPA 454/R-00-025f	May 2000
Volume 7 of 8	EPA 454/R-00-025g	May 2000
Volume 8 of 8	EPA 454/R-00-025h	May 2000
Hot Mix Asphalt Plants Technical Systems Audit of Testing at Asphalt Plant C Asphalt Plant C, Los Angeles, California	EPA 454/R-00-026	May 2000

Document Title	EPA Document Number	Publication Date
Hot Mix Asphalt Plants Truck Loading Instrumental Methods Testing Asphalt Plant D, Barre, Massachusetts	EPA 454/R-00-027	May 2000
Hot Mix Asphalt Plants Truck Loading Manual Methods Testing Asphalt Plant D, Barre, Massachusetts	EPA 454/R-00-028	May 2000
Hot Mix Asphalt Plants Response to Comments on Testing Program for Asphalt Plants C and D	EPA 454/R-00-029	May 2000
Hot Mix Asphalt Plants Stakeholders Opinions Report	EPA 454/R-00-030	

These documents, including this Emissions Assessment Report document, are available for downloading, on CD-ROM and in paper.

Downloads can be made from:

http//www.epa.gov/ttn/emc/asphalt.html

Copies of the CD ROM can be requested by mail at:

Emission Measurement Center, MD-19
US Environmental Protection Agency
Research Triangle Park, NC 27711

Paper copies of the reports can be obtained from:

National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
Phone orders 1-800-553-6847 or (703) 605-6000; FAX orders (703) 605-6900
http://www.ntis.gov/products/environment.htm

ACKNOWLEDGMENTS

Many individuals contributed to the development of this report. Ron Myers of the Emission Measurement Center's Source Measurement Technology Group (SMTG), Brian Shrager, Scott Klamm, Richard Marinshaw, and Amy Marshall of Midwest Research Institute (MRI), are the primary authors of the report. Bob McConnell of EPA's Region I office, David Mobley, Acting Director of EPA's Emissions Monitoring and Analysis Division, Bill Lamason, Mike Toney, Gary McAlister, and Candace Sorrell of EPA's Emission Measurement Center, Ron Ryan and Dennis Beauregard of EPA's Emission Factor and Inventory Group, Laura Autry of EPA's Air Quality Trends Analysis Group, participated in the review. We also acknowledge the contributions of numerous reviewers and advisors from PES, MRI and EPA.

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APPENDIX B Emission Factor Documentation for AP-42 Section 11.1, Hot Mix Asphalt Production, December 2000 Final Report

APPENDIX C Chapter 3: Preferred and Alternative Methods for Estimating Air Emissions from Hot Mix Asphalt Plants. Emission Inventory Improvement Program (EIIP), July 1996.

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LIST OF ACRONYMS

ASTM	American Society of Testing and Materials
Btu	British thermal unit
CH_4	methane
CO	carbon monoxide (as measured by EPA Method 10)
CO_2	carbon dioxide (as measured by EPA Method 3)
EPA	Environmental Protection Agency
HAP	hazardous air pollutant (listed in or pursuant to section 112(b) of the 1990 Clean Air Act Amendments)
HMA	hot mix asphalt
NO_x	nitrogen oxides (as measured by EPA Method 7)
PAH	polycyclic aromatic hydrocarbon (a class of HAPs)
PM	particulate matter (as measured by EPA Methods 5 or 17)
PM-10	particulate matter less than 10 microns in diameter
PM-2.5	particulate matter less than 2.5 microns in diameter
RAP	reclaimed asphalt pavement
RTFOT	rolling thin film oven test (ASTM Method D2872-88)
SCC	source classification code
SO_2	sulfur dioxide (as measured by EPA Methods 6 or 8)
SO_x	sulfur oxides
TOC	total organic compounds (as measured by EPA Method 25A)
VOC	volatile organic compound (refer to 40 CFR 51.100); VOC is TOC plus formaldehyde, less methane, ethane, acetone, and other chemicals listed as negligibly photochemically reactive.

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1. EXECUTIVE SUMMARY

1.1 INTRODUCTION

This report presents an assessment of emissions from hot mix asphalt (HMA) manufacturing facilities. Included in the report is a description of the manufacturing process and the emissions associated with HMA production; the procedures for developing emission factors and emission inventories for the HMA industry; and estimated annual emissions for typical HMA facilities.

1.2 OVERVIEW OF HMA INDUSTRY

Hot mix asphalt is used primarily as paving material and consists of a mixture of aggregate and liquid asphalt cement, which are heated and mixed in measured quantities. Hot mix asphalt facilities can be broadly classified as either drum mix plants or batch mix plants, according to the process by which the raw materials are mixed. In a batch mix plant, the aggregate is dried first, then transferred to a mixer where it is mixed with the liquid asphalt. In a drum mix plant, a rotary dryer serves to dry the aggregate and mix it with the liquid asphalt cement. After mixing, the HMA generally is transferred to a storage bin or silo, where it is stored temporarily. From the silo, the HMA is emptied into haul trucks, which transport the material to the job site. Figure 1 presents a diagram of a typical batch mix HMA plant; a typical drum mix HMA plant is depicted in Figure 2.

In 1996, approximately 500 million tons of HMA were produced at the 3,600 (estimated) active asphalt plants in the United States. Of these 3,600 plants, approximately 2,300 are batch plants, and 1,300 are drum mix plants. The total 1996 HMA production from batch and drum mix plants is estimated at about 240 million tons and 260 million tons, respectively. Based on these figures, an average batch mix plant produces approximately 100,000 tons of HMA annually, and an average drum mix plant produces about 200,000 tons of HMA per year. Natural gas fuel is used to produce 70 to 90 percent of the HMA. The remainder of the HMA is produced using oil, propane, waste oil, or other fuels.

The primary emission sources associated with HMA production are the dryers, hot bins, and mixers, which emit particulate matter (PM) and a variety of gaseous pollutants. Other emission sources found at HMA plants include storage silos, which temporarily hold the HMA; truck load-out operations, in which the HMA is loaded into trucks for hauling to the job site; liquid asphalt storage tanks; hot oil heaters, which are used to heat the asphalt storage tanks; and yard emissions, which consist of fugitive emissions from the HMA in truck beds. Emissions also result from vehicular traffic on paved and unpaved roads, aggregate storage and handling operations, and vehicle exhaust.

The PM emissions associated with HMA production include the criteria pollutants PM-10 (PM less than 10 micrometers in aerodynamic diameter) and PM-2.5, hazardous air pollutant (HAP) metals, and HAP organic compounds. The gaseous emissions associated with HMA production include the criteria pollutants sulfur dioxide (SO_2), nitrogen oxides (NO_x), carbon monoxide (CO), and volatile organic compounds (VOC), as well as volatile HAP organic compounds.

1.3 DEVELOPMENT AND USE OF EMISSION FACTORS FOR HMA FACILITIES

An emission factor relates the quantity (weight) of pollutants emitted to a unit of activity of the source. Emission factors for the HMA industry are generally determined in units of pounds of pollutant emitted per ton of HMA produced. These emission factors typically are used to estimate area-wide

emissions for a large number of facilities and emissions for specific facilities where source-specific emissions data are not available or where source testing is cost prohibitive.

To develop emission factors for the HMA industry, data from more than 390 emission test reports and other documents on the industry were compiled and reviewed. Through a careful screening process, the documents that were determined to be unusable for emission factor development were excluded from further evaluation. The remaining reports were compiled by plant type, emission source, pollutant, and emission control. For each emission test, emission factors were calculated by dividing the measured emission rates by the HMA production rate measured at the time of the emission test. These emission factors were then grouped by source, pollutant, and control device, and an average emission factor was calculated for each group.

Emission factors can be used to estimate emissions from one or more HMA facilities by multiplying the emission factor by the HMA production rate. For example, the emission factor for CO emissions from a natural gas-fired drum mix dryer is 0.13 pounds per ton (lb/ton). If the dryer produces 200,000 tons per year (ton/yr), the estimated CO emissions during that period would be: 200,000 ton/yr × 0.13 lb/ton = 26,000 lb/yr or 13 tons/yr.

1.4 ESTIMATED ANNUAL EMISSIONS FROM TYPICAL HMA FACILITIES

Annual emissions for a facility can be estimated by summing up the emissions from each emission source over the course of a year. Annual emissions for a specific source can be estimated by multiplying the annual throughput or production rate for that source by its corresponding emission factors. For an HMA facility, annual emissions can be estimated by multiplying the annual HMA production rate by the emission factors for each type of source at the facility. Table 1 summarizes annual emissions for a typical HMA batch mix plant, and Table 2 summarizes annual emissions for a typical drum mix HMA plant. The estimates presented in these tables account for all of the identified emission sources at each type of facility. For both batch mix plants (Table 1) and drum mix plants (Table 2), the estimate includes emissions from the dryer/mixer, load-out operations, asphalt storage, yard (fugitive emissions from loaded trucks), diesel exhaust, paved and unpaved road dust, and aggregate processing (screening, conveyor transfer, and reclaimed asphalt pavement [RAP] crushing). Additionally, for the drum mix plant (Table 2), the estimate includes emissions from silo filling operations. Estimates are presented for criteria pollutants (pollutants for which national ambient air quality standards have been developed) and hazardous air pollutants (HAPs, as defined in section 112(b) of the 1990 Clean Air Act Amendments). Criteria pollutants include PM-10, VOC, CO, SO_2, and NO_x. Emissions for three classes of HAPs are presented in Tables 1 and 2: polycyclic aromatic hydrocarbons (PAHs), volatile organic HAPs, and metal HAPs. The emissions were estimated using the emission factors developed for the HMA industry and the following assumptions:

- Dryers are fueled with natural gas or No. 2 fuel oil (estimates are presented for both types). It is estimated that between 70 and 90 percent of HMA plants use natural gas, although some HMA plants use fuel oil as an alternative to natural gas.
- Dryer emissions are controlled with fabric filters.
- PM emissions from load-out and silo filling are entirely PM-10.
- Annual HMA production rate for a typical batch mix plant is 100,000 ton/yr.
- Annual HMA production rate for a typical drum mix plant is 200,000 ton/yr.
- The typical HMA plant has two 18,000-gallon asphalt storage tanks.

As indicated in Table 1, a typical batch mix plant using a No. 2 fuel oil-fired dryer emits over 74,000 lb/yr of criteria pollutants, and a typical batch mix plant using a natural gas-fired dryer emits over

56,000 lb/yr of criteria pollutants, of which approximately 41,000 lb/yr are CO and approximately 10,700 lb/yr are PM-10; emissions of other criteria pollutants range from about 500 to about 12,000 lb/yr. The same plant would emit about 770 lb/yr of HAPs. A typical drum mix plant using a No. 2 fuel oil-fired dryer emits about 83,000 lb/yr of criteria pollutants, and a typical drum mix plant using a natural gas-fired dryer emits around 75,000 lb/yr of criteria pollutants, of which approximately 28,000 lb/yr are CO, about 10,000 lb/yr are VOC, and around 31,000 lb/yr are PM-10. A typical drum mix plant emits from 1,300 to 2,000 lb/yr of HAPs, depending on the fuel used in the dryer.

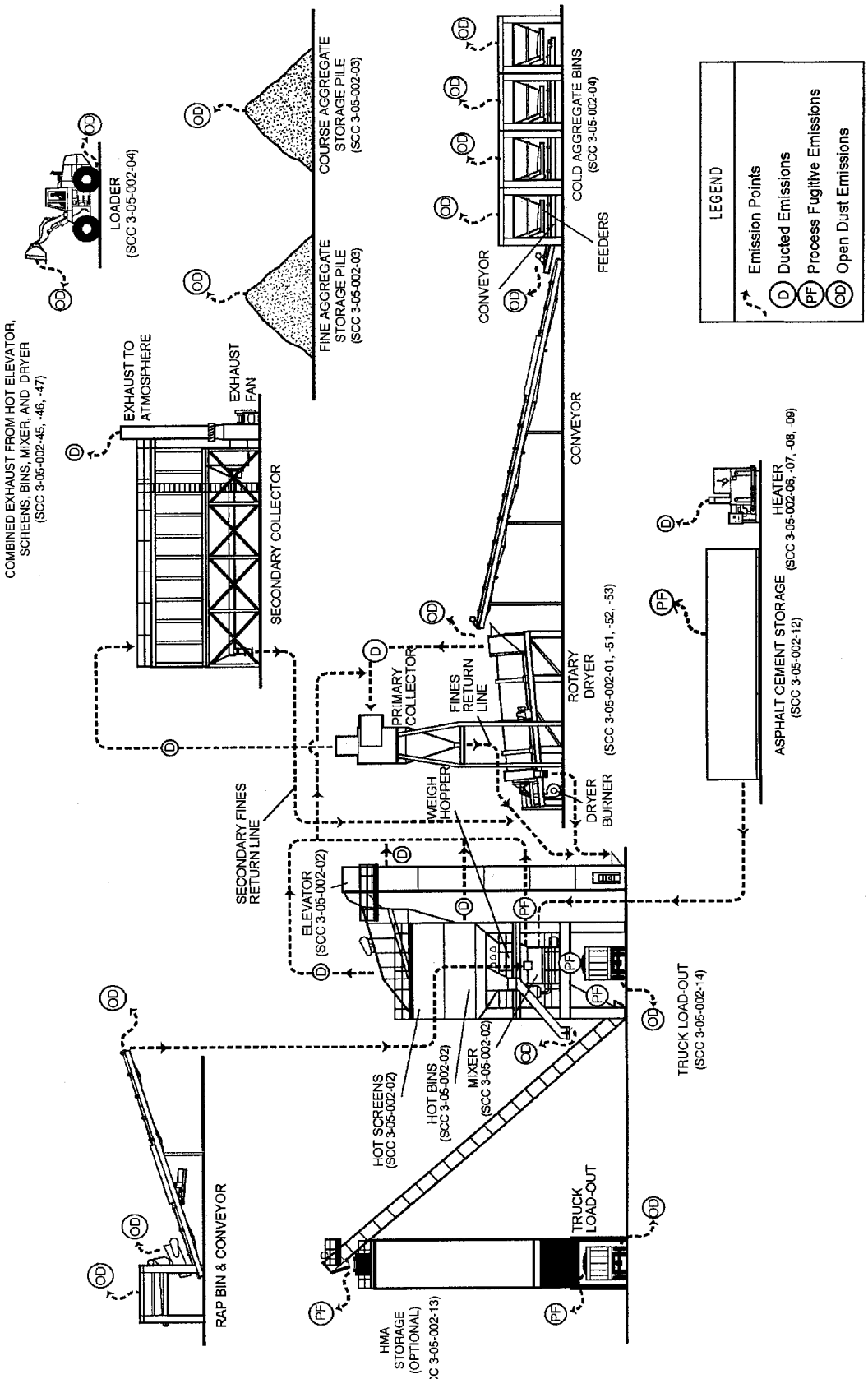

Figure 1. General process flow diagram for batch mix asphalt plants (source classification codes in parentheses).

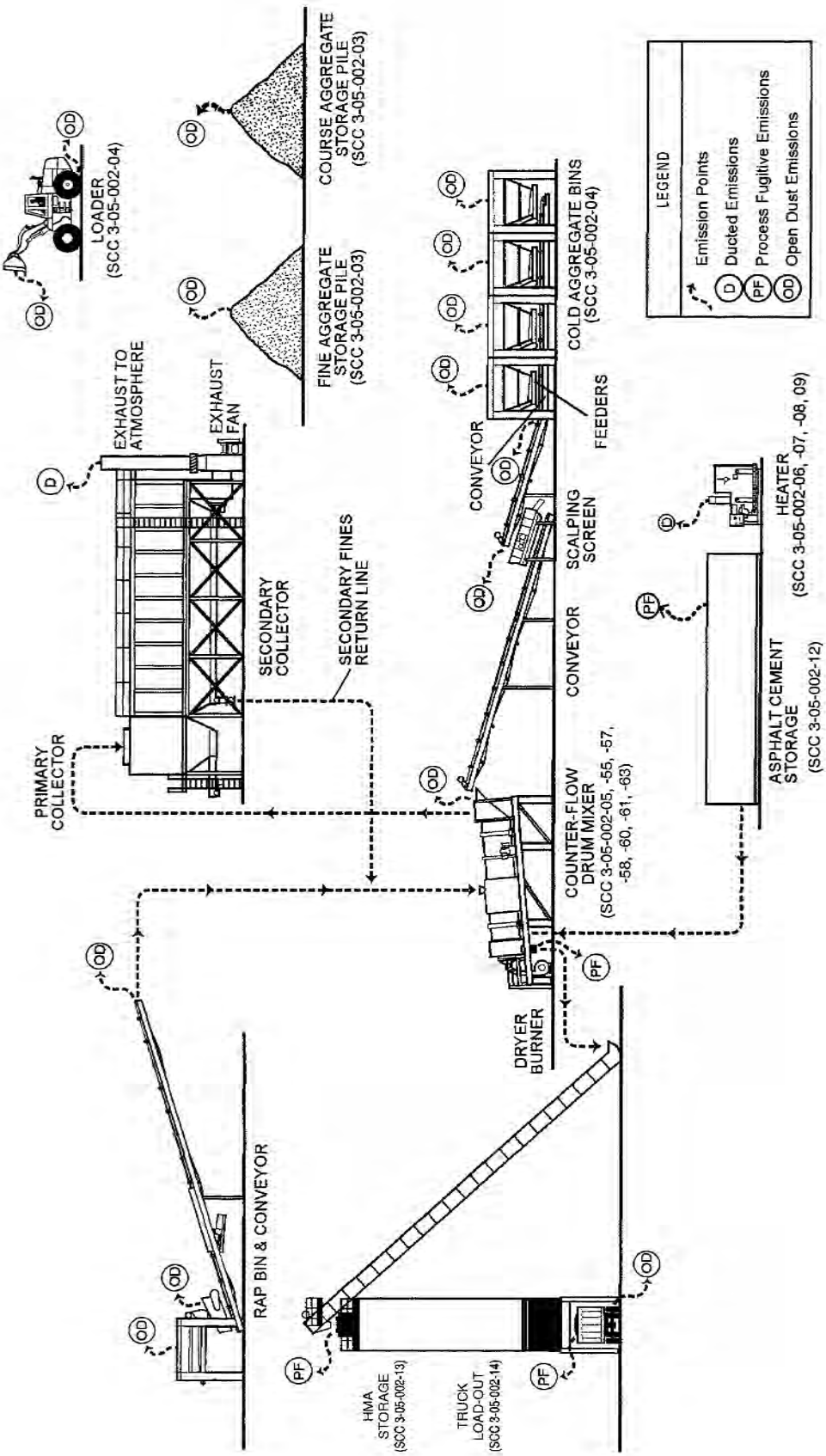

Figure 2. General process flow diagram for counter-flow drum mix asphalt plants (source classification codes in parentheses).

TABLE 1. ESTIMATED ANNUAL EMISSIONS FOR A TYPICAL BATCH MIX HMA FACILITY[a]

Pollutant	Annual emissions by source, pounds per year								
	Mobile sources (diesel exhaust)	Material handling and road dust	No. 2 fuel oil-fired dryer, hot screens, and mixer[b]	Natural gas-fired dryer, hot screens, and mixer[c]	Load-out[d]	Asphalt Storage[e]	Yard[f]	Total[g] (oil-fired)	Total[g] (gas-fired)
Criteria air pollutants									
Particulate matter less than 10 micrometers (PM-10)	46	7,900	2,700	2,700	52			10,700	10,700
Volatile organic compounds (VOC)	100		820	820	391	32	110	1,500	1,500
Carbon monoxide (CO)	700		40,000	40,000	135	3	35	41,000	41,000
Sulfur dioxide (SO_2)	22		8,800	460				8,800	480
Nitrogen oxides (NO_x)	380		12,000	2,500				12,400	2,900
Hazardous air pollutants (HAPs)									
Polycyclic aromatic hydrocarbons (PAHs)	0.035		11	11	2.0	0.12		13	13
Phenol					0.40			0.40	0.40
Volatile HAPs	1.9		751	751	6.2	140	1.6	760	760
Metal HAPs			1.4	1.4				1.4	1.4
Total HAPs[g]	1.9		760	760	8.6	140	1.6	770	770

[a] Based on an annual HMA production rate of 100,000 tons per year.
[b] Between 10 and 30 percent of the HMA is produced using fuel oil.
[c] Between 70 and 90 percent of the HMA is produced using natural gas.
[d] Loading of HMA into haul trucks.
[e] Includes emissions from oil-fired hot oil heaters.
[f] Fugitive emissions from loaded trucks prior to departure to the job site.
[g] Total expressed using two significant figures.

TABLE 2. ESTIMATED ANNUAL EMISSIONS FOR A TYPICAL DRUM MIX HMA FACILITY[a]

Pollutant	Annual emissions by source, pounds per year									
	Mobile sources (diesel exhaust)	Material handling and road dust	No. 2 fuel oil-fired dryer[b]	Natural gas-fired dryer[c]	Load-out[d]	Silo filling[e]	Asphalt storage[f]	Yard[g]	Total[h] (oil-fired)	Total[h] (gas-fired)
Criteria air pollutants										
Particulate matter less than 10 micrometers (PM-10)	220	26,000	4,600	4,600	104	117			31,000	31,000
Volatile organic compounds (VOC)	190		6,400	6,400	782	2,440	64	220	10,000	10,000
Carbon monoxide (CO)	1,200		26,000	26,000	270	236	6	72	28,000	28,000
Sulfur dioxide (SO_2)	26		2,200	680					2,200	710
Nitrogen oxides (NO_x)	560		11,000	5,200					12,000	5,800
Hazardous air pollutants (HAPs)										
Polycyclic aromatic hydrocarbons (PAHs)	0.13		176	37	4.0	5.8	0.12		190	50
Phenol					0.80				0.80	0.80
Volatile HAPs	6.6		1,560	1,020	12.4	31	140	3.3	1,800	1,200
Metal HAPs			19	16					19	16
Total HAPs[h]	6.7		1,800	1,100	17	37	140	3.3	2,000	1,300

[a] Based on an annual HMA production rate of 200,000 tons per year.
[b] Between 10 and 30 percent of the HMA is produced using fuel oil.
[c] Between 70 and 90 percent of the HMA is produced using natural gas.
[d] Loading of HMA into haul trucks
[e] Filling of temporary storage silo prior to load-out.
[f] Includes emissions from oil-fired hot oil heaters.
[g] Fugitive emissions from loaded trucks prior to departure to the job site.
[h] Total expressed using two significant figures.

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2. ASSESSMENT OF HOT MIX ASPHALT EMISSIONS

This section presents the results of an assessment of emissions from HMA manufacturing. An overview of the HMA industry and process operations is provided first (Section 2.1). Section 2.2 summarizes the methodology used to develop emission factors for the HMA industry. Section 2.3 identifies other sections of AP-42 that apply to HMA plants. An overview of the process for conducting an emission inventory is presented in Section 2.4, and Section 2.5 presents estimates of annual emissions from typical HMA facilities.

2.1 INDUSTRY OVERVIEW AND PROCESS DESCRIPTION[1]

Hot mix asphalt paving materials are a mixture of well-graded, high-quality aggregate and liquid asphalt cement, which is heated and mixed in measured quantities. The aggregate often includes RAP. Aggregate and RAP (if used) constitute over 92 percent by weight of the total mixture. Aside from the amount and grade of asphalt cement used, mix characteristics are determined by the relative amounts and types of aggregate and RAP used. A certain percentage of fine aggregate (less than 74 micrometers [μm] in physical diameter) is required for the production of good quality HMA.

Hot mix asphalt plants can be classified by their mixing operation as one of the following: (1) batch mix plants, (2) continuous mix (mix outside dryer drum) plants, (3) parallel flow drum mix plants, and (4) counterflow drum mix plants. An HMA plant can be constructed as a permanent plant, a skid-mounted (easily relocated) plant, or a portable plant. All plants can have RAP processing capabilities.

In 1996, approximately 500 million tons of HMA were produced at the 3,600 (estimated) active asphalt plants in the United States. Of these 3,600 plants, approximately 2,300 are batch plants, 1,000 are parallel flow drum mix plants, and 300 are counterflow drum mix plants. The total 1996 HMA production from batch and drum mix plants is estimated at about 250 million tons and 260 million tons, respectively. About 85 percent of new plants being constructed today are of the counterflow drum mix design, while batch plants and parallel flow drum mix plants account for 10 percent and 5 percent respectively. Continuous mix plants represent a very small fraction of the plants in use ($\leq$0.5 percent) and, therefore, are not discussed further. While most HMA plants have the capability to use both fuel oil and natural gas, it is estimated that between 70 and 90 percent of the HMA in the U. S. is produced using natural gas. The process operations at typical batch mix and drum mix plants are described in the following paragraphs.

2.1.1 Batch Mix Plants[2]

Processing begins as the aggregate is hauled from onsite storage piles and is placed in the appropriate hoppers of the cold feed unit. The material is metered from the hoppers onto a conveyer belt and is transported into a rotary dryer (typically gas- or oil-fired). As the hot aggregate leaves the dryer, it drops into a bucket elevator, is transferred to a set of vibrating screens, then separated into as many as four different grades (sizes), and dropped into “hot” bins according to size. At newer facilities, RAP may be transferred to a separate heated storage bin. At the same time, liquid asphalt cement is pumped from a heated storage tank to an asphalt bucket, where it is weighed to achieve the desired aggregate-to-asphalt cement ratio in the final mix. To control the aggregate size distribution in the final batch mix, the operator transfers material from various hot bins (and RAP bins, if used) to a weigh hopper until the desired mix

[1] See Appendix A, Section 11.1.1, and Appendix B, Section 2.1, for more detailed information.

[2] See Appendix A, Section 11.1.1.1, and Appendix B, Section 2.2.1, for more detailed information.

and weight are obtained. The aggregate from the weigh hopper is dropped into the mixer (pug mill) and dry-mixed for 6 to 10 seconds. The liquid asphalt is then dropped into the pug mill where it is mixed for an additional period of time. At older plants, RAP typically is conveyed directly to the pug mill from a storage hopper and combined with the hot aggregate. Total mixing time usually is less than 60 seconds. Then, the hot mix is conveyed to a hot storage silo or is dropped directly into a truck and hauled to the job site. Figure 1 depicts a typical batch mix plant.

2.1.2 Drum Mix Plants[3]

This process is a continuous mixing type process. The major difference between this process and the batch process is that the dryer is used not only to dry the material but also to mix the heated and dried aggregates with the liquid asphalt cement. In a parallel flow drum mixer, the aggregate is introduced to the drum at the burner end. As the drum rotates, the aggregate, as well as the combustion products from the burner, move toward the other end of the drum in parallel. Liquid asphalt cement is introduced in the mixing zone midway down the drum in a lower temperature zone, along with any RAP and PM from collectors. In a counterflow drum mixer, the material flow in the drum is opposite or counterflow to the direction of exhaust gases. In addition, the liquid asphalt cement mixing zone is located behind the burner flame zone so as to remove the materials from direct contact with hot exhaust gases. After mixing, the mixture is discharged at the end of the drum and is conveyed to either a surge bin or HMA storage silos. Figure 2 illustrates a counterflow drum mix plant.

In a parallel flow mixer, the exhaust gases also exit the end of the drum and pass on to the collection system. Parallel flow drum mixers have an advantage, in that mixing in the discharge end of the drum captures a substantial portion of the aggregate dust, therefore lowering the load on the downstream PM collection equipment. For this reason, most parallel flow drum mixers are followed only by primary collection equipment (usually a baghouse or venturi scrubber). However, because the mixing of aggregate and liquid asphalt cement occurs in the hot combustion product flow, organic emissions (gaseous and liquid aerosol) may be greater than in other processes.

Counterflow drum mix plants likely will have organic stack emissions (gaseous and liquid aerosol) that are lower than parallel flow drum mix plants because the liquid asphalt cement, virgin aggregate, and RAP are mixed in a zone removed from the exhaust gas stream. A counterflow drum mix plant normally can process RAP at ratios up to 50 percent with little or no observed effect upon emissions.

2.1.3 Recycle Processes[4]

Reclaimed asphalt pavement significantly reduces the amount of new aggregate and asphalt cement needed to produce HMA. In the reclamation process, old asphalt pavement is removed from the road base. This material is then transported to the plant, and is crushed and screened to the appropriate size for further processing. The paving material then is heated and mixed with new aggregate (if applicable), and the proper amount of new asphalt cement is added to produce HMA that meets the quality requirements of the customer.

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[3] See Appendix A, Sections 11.1.1.2 and 11.1.1.3, and Appendix B, Sections 2.2.2 and 2.2.3, for more detailed information.

[4] See Appendix A, Section 11.1.1.4, and Appendix B, Section 2.2.4, for more detailed information.

2.1.4 Emissions and Controls[5]

Hot mix asphalt plants have two major categories of emissions: ducted sources (those vented to the atmosphere through some type of stack, vent, or pipe), and fugitive sources (those not confined to ducts and vents but emitted directly from the source to the ambient air). Dryers are the most significant ducted sources of emissions from both batch mix and drum mix HMA plants. Emissions from these sources consist of water (as steam evaporated from the aggregate); PM; products of combustion (carbon dioxide [CO_2], NO_x, and sulfur oxides [SO_x]); CO; and small amounts of organic compounds of various species (including VOC, methane [CH_4], and HAPs). The CO and organic compound emissions result from incomplete combustion of the fuel and also are released from the heated asphalt.

At batch mix plants, other potential process sources include the hot-side conveying, classifying, and mixing equipment, which are vented to either the primary dust collector (along with the dryer gas) or to a separate dust collection system. These emissions are mostly aggregate dust, but they also may contain gaseous organic compounds, CO, and a fine aerosol of condensed organic particles. This organic aerosol is created by the condensation of gas into particles during cooling of organic vapors volatilized from the asphalt cement in the mixer. The amount of organic aerosol produced depends to a large extent on the temperature of the asphalt cement and aggregate entering the mixer. Organic vapor and its associated aerosol also are emitted directly to the atmosphere as process fugitives during truck load-out, from the bed of the truck itself during transport to the job site, and from the asphalt storage tank. Both the low molecular weight organic compounds and the higher weight organic aerosol may contain small amounts of HAP. The ducted emissions from the heated asphalt storage tanks may include gaseous and aerosol organic compounds and combustion products from the tank heater.

At most HMA facilities, fabric filters are used to control emissions from dryers. Other controls used include mechanical collectors and scrubbers. Emissions from aggregate handling and transfer typically are controlled with fabric filters or scrubbers. Large diameter cyclones and settling chambers also are used as product recovery devices. The material collected in those devices is recycled back into the process.

There also are a number of fugitive dust sources associated with batch mix HMA plants, including vehicular traffic generating fugitive dust on paved and unpaved roads, aggregate material handling, and other aggregate processing operations.

2.2 EMISSION FACTOR DEVELOPMENT FOR AP-42 SECTION 11.1, HOT MIX ASPHALT PLANTS

A detailed description of how the emission factors were developed for the HMA industry is provided in Section 4 of Appendix B. The following paragraphs summarize the methodology used.

To develop emission factors for the HMA industry, data from about 390 emission test reports and other documents on the industry were compiled and reviewed (a complete list of these references is provided following Section 4 of Appendix B). The majority of these reports documented measurements of emissions from batch plant dryer/mixers and drum plant dryers. Through a careful screening process, 35 of the reports were determined to be unusable for emission factor development and were excluded from further evaluation. About 350 reports remained and were compiled by plant type, emission source, pollutant, and emission control. These emission factors were then grouped by source, pollutant, and

[5] See Appendix A, Section 11.1.2, and Appendix B, Section 2.3, for more detailed information.

control device, and an average emission factor was calculated for each group. Table 3 presents a matrix of all of the sources and pollutants for which emission factors are presented in AP-42 (Appendix A).

While the particulate, CO_2, CO, and TOC emission factors are based on over 100 tests, most of the remaining criteria pollutant emission factors are based on between 5 and 10 tests. A few HAP emission factors are based on more than 5 tests, although the majority are based on between 2 and 5 tests. Information on the supporting data for specific emission factors and the quality rating assigned to the emission factor is included in the section or table in Appendices A and B as indicated in Table 4. Column four of Table 4 references the tables in Appendix A that present the emission factors and quality ratings. Column five of Table 4 references the paragraphs in Appendix B that discuss the basis for the emission factors developed for all of the sources and pollutants. Column six of Table 4 references the tables in Appendix B that present the emission factors and the individual data used to develop the emission factors. Generally, the amount of supporting data is typical of many AP-42 sections. However, the amount of data supporting the particulate, CO_2, CO, and TOC emission factors is greater than most AP-42 sections. The following paragraphs summarize the procedures followed to develop the emission factors for HMA facilities.

2.2.1 Batch Mix and Drum Mix Dryers

The usable data on batch mix and drum mix plant dryer emissions were compiled according to source type, emission control, and pollutant. Data on fuel types, the percentage of RAP used in the mix, and the process operating rate (e.g., dryer production rate) also were recorded. The quality of the emission data was evaluated with respect to the level of documentation in the report, the test methods used, the number of test runs, and any reported problems with the sampling procedures or the operation of the source during the test period. On the basis of this evaluation, data ratings of A, B, C, or D were assigned to each data set. Specific procedures used to evaluate the data are specified in *Procedures for Preparing Emission Factor Documents (*EPA-454/R-95-015).

For each emission test, an emission factor also was calculated for each pollutant sampled. These test-specific emission factors then were grouped according to source type, emission control device, pollutant, and, in the case of combustion sources, fuel type. At this stage in the process, D-rated data sets were discarded, provided there were higher quality data available for that particular group (i.e., that specific combination of source, control, fuel, and pollutant). In addition, where there were data from multiple tests on the same specific emission source, the test-specific emission factors were averaged to yield a source-specific emission factor. In subsequent calculations, this source-specific emission factor was used.

A statistical analysis of the data for batch and drum mix dryers was performed to determine the effects of RAP content, fuel type, production rate on emissions of several pollutants. The analysis showed no strong correlation between these parameters and emission factors. Details on the statistical analysis can be found in Section 4.3 of Appendix B.

To develop emission factors, the mean of the test-specific emission factors was calculated for each of the emission factor groups discussed above. In some cases, the data for two or more groups were combined and an overall mean emission factor was calculated. For example, if the data indicated that fuel type had no apparent effect on emissions of a specific pollutant, fuel type was ignored and all of the data for that source type and pollutant were combined. The final step in developing emission factors is to assign a quality rating of A, B, C, D, or E. Quality ratings are a function primarily of the number of data points

from which a specific emission factor is calculated. Additional information on the rating system used is discussed in Section 3 of Appendix B.

2.2.2 Hot Oil Heaters

For hot oil heaters, only a single test report for an oil-fired hot oil heater was available. The report was reviewed and the emission factors compiled using the procedures described previously. Appendix B, Section 4.2.4.2, provides a detailed description of how these emission factors were developed. It should be noted that most hot oil heaters are gas-fired, and the emission factors developed from the available data would not necessarily be representative of gas-fired heaters.

2.2.3 Truck Load-Out

Truck load-out emissions were developed from two emission tests sponsored by the U. S. Environmental Protection Agency (EPA) (Appendix B References 355 and 356). In designing, performing and evaluating these two tests, EPA was involved with a number of groups. The groups included citizens, State and local health agencies, State and local air pollution control agencies, and industry associations. These different groups provided input on the selection of facilities for emissions testing, the design of the test program, reviewed the individual site-specific test plans, observed emissions testing, commented on the draft test reports and provided suggestions for analysis of the data to develop emission factors. The procedures used to develop emission factors generally were the same as those described above. However, additional steps were taken to ensure the quality and consistency of the data and the representativeness and universality of the emission factors developed from the data. For example, two quality assurance scientists from Research Triangle Institute were employed to independently audit the test. These additional steps are summarized below. Detailed explanations of the methodology used are provided in Section 4.4 of Appendix B.

At one of the facilities the sampling area was enclosed but did not meet EPA requirements for a total enclosure. Consequently, the capture efficiency was quantitatively estimated and the data were corrected for capture efficiency.

At one facility, emissions due to diesel truck operation could not be segregated from emissions due to truck load-out. Therefore, background concentrations also were sampled. To account for background levels of various pollutants emitted from truck operation, the as-measured background concentrations were subtracted from the capture efficiency corrected load-out emission concentrations. For the most part, values were treated as zero if the background concentration exceeded the capture-efficiency-adjusted run concentration.

Because the asphalt types and temperatures for the two facilities differed, adjustments also were made to normalize the emission data. To account for differences in the volatility of the liquid asphalts used, samples of asphalt were collected during the emission tests and analyzed by ASTM Method D 2872-88, *Effects of Heat and Air on a Moving Film of Asphalt (Rolling Thin Film Oven Test - RTFOT)* to determine the "loss-on-heating" values for the asphalts. Additional loss-on-heating data also were obtained from several State departments of transportation laboratories in order to determine a common RTFOT value to use as a default in those situations where no historical information is available. Based upon the RTFOT data collected and the desire to select a default which encourages the use of site-specific data, a default of -0.5 percent was selected as a default value for use in the predictive emission factor equations developed from the data.

To account for differences in the load-out temperatures of the two facilities the data were adjusted using the Clausius-Clapeyron equation, which relates vapor pressure and temperature of a substance. This equation and the asphalt laboratory data provide a mechanism to normalize the emissions to a temperature of 325°F, which is the maximum midpoint load-out temperature recommended by the Asphalt Pavement Environmental Council's Best Practices Guide dated March 2000.

Using the adjusted data and the temperature and volatility relationship described above, separate predictive emission factor equations were developed for emissions of total PM, organic PM, total organic compounds (TOC), and CO from drum mix and batch mix load-out operations. Additionally, adjusted data for a variety of HAP's were used to develop ratios of the HAP pollutant to either organic PM or TOC (speciation profiles). These speciation profiles are applicable to load-out emissions and yard emissions.

2.2.4 Silo Filling

Silo filling emission factors were developed from one of the emission tests described in the previous paragraphs for load-out emissions (Appendix B Reference 355). These data also were collected and evaluated with stakeholder involvement. Additionally, the same basic methodology described in the previous paragraphs for load-out emissions was used to adjust the data on emissions from silo filling operations. Predictive emission factor equations also were developed for total PM, organic PM, TOC, and CO. A detailed explanation of the methodology used to develop these equations is provided in Section 4.4.4 of Appendix B. Speciation profiles for silo filling emissions were also developed using the methodology described for load-out emissions. The speciation profiles from silo filling are applicable to asphalt storage tank emissions.

2.2.5 Asphalt Storage Tanks

To estimate emissions from heated organic liquid storage tanks, the methodologies described in Chapter 7 of AP-42 and the TANKS software are generally used. The emissions from these types of tanks depend on the contents of the tank, the volume of gas vented, and the operating temperature range of the liquid in the tank. Emissions during the filling of these tanks (working loss) are governed by the saturation concentration of the liquid stored in the tank and the volume of gas displaced by the addition of liquid to the tank. Emissions during other periods (breathing losses) are governed by the saturation concentration of the liquid stored in the tank and the changes in the volume of the gas caused by temperature variations. Although vapor pressure information on paving asphalt is not available to allow the use of the TANKS program without additional information, information was available from the silo filling test report to infer emissions during the filling of the asphalt storage tank and, by extension, the vapor pressure characteristics of paving asphalt at the typical operating temperatures. Using these data, input values for Antoine's equation and liquid and vapor molecular weight were developed for use with the TANKS program to calculate working and breathing losses for asphalt storage tanks. A detailed explanation of the methodology used to develop these values is presented in Section 4.4.5 of Appendix B.

2.2.6 Yard Emissions

At one of the EPA-sponsored emission tests described in the previous paragraphs for load-out emissions (Appendix B Reference 355), data also were collected on fugitive emissions from loaded trucks as they sat in the yard prior to departure for the job site. As with the other data from this reference, these data were evaluated with stakeholder involvement. The data obtained were fitted to a power function in order to develop an equation for these yard emissions as a function of time. A specific emission factor for cumulative emissions over an 8-minute period (which represents the maximum time represented by the

data) was calculated using the power function equation developed from the emission data. A detailed explanation of the methodology used to develop the equations and the emission factor is provided in Section 4.4.6 of Appendix B.

2.3 OTHER APPLICABLE AP-42 SECTIONS

Emission factors for other generic sources associated with HMA facilities can be found in other sections of AP-42 (http://www.epa.gov/ttn/chief/ap42/index.html). As discussed above, methodologies for estimating emissions from asphalt storage tanks can be found in Chapter 7 of AP-42. Methods for estimating fugitive dust emissions from vehicular traffic are presented in AP-42 Chapter 13 (Sections 13.2.1 and 13.2.2). Material handling emissions and storage pile emissions are addressed in AP-42 Chapter 11 (Section 11.19.2) and Chapter 13 (Section 13.2.4). Emission factors for truck exhaust are provided in AP-42 Volume II: Mobile Sources (http://www.epa.gov/oms/ap42.htm).

To calculate the material handling and mobile source emission estimates presented in Tables 1 and 2 of this report, suitable emission factors for these material handling and mobile sources were determined. The following paragraphs describe the basis for the emission factors that were used:

- Receipt of new aggregate – Used equation from AP-42 Section 13.2.4, assuming an average moisture content of 1.5 percent and an average wind speed of 10 miles per hour (mph). The resulting PM-10 emission factor is 0.0041 lb/ton of new aggregate. The resulting PM-2.5 emission factor is 0.0013 lb/ton of new aggregate.
- Transfer of aggregate from storage to conveyor belt or between conveyor belts – Used controlled emission factor from AP-42 Section 11.19.2. The PM-10 emission factor is 0.000048 lb/ton of new aggregate.
- Screening of aggregate – Used controlled emission factor from AP-42 Section 11.19.2. PM-10 emission factor is 0.00084 lb/ton of new aggregate.
- RAP crushing – Used controlled tertiary crushing emission factor from AP-42 Section 11.19.2. PM-10 emission factor is 0.00059 lb/ton of new aggregate.
- Paved road dust emissions – Used paved roads equation from AP-42 Section 13.2.1, assuming an average vehicle weight of 22 tons and a road silt content of 3 grams per square meter. The resulting PM-10 emission factor is 0.016 lb per vehicle mile traveled. The resulting PM-2.5 emission factor is 0.0040 lb per vehicle mile traveled.
- Unpaved road dust emissions – Used unpaved roads equation from AP-42 Section 13.2.2, assuming an average vehicle weight of 6 tons, a road silt percentage of 10 percent, a surface moisture content of 0.7 percent. The resulting PM-10 emission factor is 2.04 lb per vehicle mile traveled. The resulting PM-2.5 emission factor is 0.29 lb per vehicle mile traveled.
- Diesel exhaust emissions – Used heavy duty diesel truck emission factors for idling and for an average speed of 10 mph with a 250 brake horsepower engine. The diesel engines get 10 miles per gallon at 10 mph and burn 1 gallon per hour (gal/hr) of fuel at idle. The sulfur content of diesel fuel is 0.05 percent. At idle, the emissions factors for diesel engines are: VOC - 0.208 grams per minute (g/min) (0.00046 pound per minute [lb/min]), CO - 1.57 g/min (0.0035 lb/min), NO_x - 0.917 g/min (0.0020 lb/ min), SO_2 - 0.157s pounds per gallon of fuel (lb/gal) (where s is fuel sulfur content) and PM - 0.043 g/min (0.000095 lb/min). When traveling at an average speed of 10 mph, the emission factors for diesel engines are: VOC - 3.18 grams per mile (g/mile) (0.0070 pounds per mile [lb/mile]), CO - 18.82 g/mile (0.041 lb/mile), NO_x - 8.50 g/mile (0.019 lb/mile), SO_2 - 0.157s lb/gal fuel (where s is fuel sulfur content), and PM - 0.1011 grams per brake horsepower hour (0.00022 pounds per horsepower hour). For organic HAP emissions - Used medium duty diesel truck emission

factors from article by Schauer, et. al., in Environmental Science & Technology of May 15, 1999. The volatile HAP emission factors presented were 0.084 grams per kilometer (g/km) (0.00030 lb/mile) and 0.0016 g/km (0.0000057 lb/mile) for PAHs.

The ducted and process fugitive emissions estimates presented in Tables 1, 2, 7, and 11 are based on the following additional assumptions:

- 84,800 ton/yr of new aggregate for batch mix plant.
- 10,000 ton/yr of recycled pavement for batch plant.
- 1.25 million gallons (5,200 tons) of asphalt for batch plant.
- 150,900 ton/yr of new aggregate for drum mix plant.
- 40,000 ton/yr of recycled pavement for drum mix plant.
- 2.5 million gallons (10,400 tons) of asphalt for drum mix plant.
- Two 18,000-gallon asphalt storage tanks.
- Five open conveyor transfer points for new aggregate.
- Front end loader travel over unpaved roads of 0.25 mile per ton of RAP used.
- Vehicle travel over paved roads of 1.5 miles per 25 tons of HMA produced.
- Vehicle idling time of 128,000 min (an average of 4 trucks in line during the average 8-minute load-out time) for batch plant.
- Vehicle idling time of 72,000 min (an average of 6 trucks in line during the average 1.5-minute load-out time) for drum mix plant.

2.4 EMISSION INVENTORY FOR TYPICAL HOT MIX ASPHALT PLANTS

To perform an emission inventory for a typical HMA plant, the first step is to identify the types of emission sources and to count the total number of each type of source. The next step is to identify the best emission estimation tools, which include: (1) facility-specific emissions test data; (2) source-specific emission factors; (3) other types of source-specific data, such as mass balance data; (4) emission factors for similar sources; (5) emission factors for sources that are believed to be somewhat similar to the source being considered; and (6) engineering estimates. After selecting appropriate emission estimation tools, activity factors, such as production rates, should be determined for each source so that emissions can be estimated for a specified period of time. The emissions over the specified period of time for each source and pollutant then are summed to complete the emission inventory. Appendix C provides more detailed information on procedures for performing an emission inventory at an HMA plant.

2.5 EMISSION ESTIMATES FOR TYPICAL HOT MIX ASPHALT PLANTS

Tables 1 and 2 present annual estimates of emissions of criteria pollutants and HAPs for typical batch mix and drum mix HMA plants, respectively. The estimates presented in these tables account for the most significant emission sources at each type of facility. Tables 5 through 12 present more detailed annual emission estimates for typical batch and drum mix HMA plants. Table 5 summarizes the estimated emissions from a typical batch mix plant dryer, hot screens, and mixer. Included in the table are estimates for criteria pollutants as well as specific PAHs, volatile HAPs, and metal HAPs for which emission factors were developed. Estimated annual criteria pollutant, PAH and volatile HAP emissions from typical batch mix plant load-out operations and asphalt storage tank are summarized in Tables 6 and 7. Tables 8, 9, 10, and 11 summarize the estimated annual emissions from a typical drum mix plant dryer, load-out operations, silo filling operations, and asphalt storage tank respectively. These tables includes estimates for criteria pollutants, PAHs, volatile HAPs, and metal HAPs for which emission factors were developed. Finally, Table 12 presents estimates of fugitive emissions from loaded trucks (yard emissions) for a typical

batch mix and drum mix plant. The emissions estimates presented in Tables 5 through 12 are based on the emission factors developed for the HMA industry and the following assumptions:

- Batch mix plant and drum mix plant dryers are fueled with either natural gas or fuel oil. It is estimated that between 70 and 90 percent of HMA plants use natural gas, although some HMA plants use fuel oil as an alternative to natural gas. As shown in Tables 5 and 8, fuel oil-fired mixers and dryers have higher emissions of SO_2, NO_x, and some HAPs.
- Batch mix plant dryer, hot screens, and mixer and drum mix plant dryer emissions are controlled with fabric filters.
- PM emissions from load-out and silo filling are entirely PM-10. (However, the organic portion of these emissions also can be assumed to be PM-2.5. Information is available in AP-42 Appendix B.1, Particle Size Distribution Data and Sized Emission Factors for Selected Sources, for categorizing the inorganic or filterable PM into PM-10 and PM-2.5 fractions.)
- Average asphalt loss on heating is -0.5 percent (asphalt volatility).
- Average HMA load-out temperature is 325°F.
- The typical HMA plant has two asphalt storage tanks that are 50 feet long and 8 feet in diameter. It is estimated that these storage tanks require a total heating capacity of about 200,000 Btu/hr, based on a heat loss of 60 Btu/ft^2 of tank surface area. The asphalt storage tanks are kept at 325°F continuously for the five months the HMA plant operates. As a result, 720 million Btu are used to maintain the temperature of the asphalt in the storage tank. For a gas-fired hot oil heater, 720,000 ft^3 of gas is combusted. For an oil-fired hot oil heater, 5,100 gallons of fuel oil are combusted. It should be noted that this fuel usage is about 3 percent of the fuel used in a typical batch mix plant and 1.6 percent of the fuel used in a typical drum mix plant.

TABLE 3. MATRIX OF EMISSION FACTORS DEVELOPED FOR HMA SOURCES

Plant type	Source	Criteria pollutants	HAPs	Other pollutants
Batch mix	Dryer, hot screens, and mixer	PM-10, NO_x, CO, SO_2, VOC	24 organic HAPs 9 metal HAPs	CO_2 4 other organics 3 other metals
	Hot oil heaters		22 organic HAPs	
	Load-out	PM, CO, VOC,	41 organic HAPs	3 other organics
	Yard emissions	VOC	19 organic HAPs	
Drum mix	Dryer	PM-10, NO_x, CO, SO_2, VOC	58 organic HAPs 11 metal HAPs	CO_2 15 other organics, 6 other metals
	Hot oil heaters		22 organic HAPs	
	Load-out	PM, CO, VOC	41 organic HAPs	3 other organics
	Silo filling	PM, CO, VOC	28 organic HAPs	3 other organics
	Yard emissions	VOC	19 organic HAPs	

TABLE 4. LOCATIONS OF SUPPORTING DATA FOR EMISSION FACTORS

Plant Type	Source	Pollutant	Appendix A Table	Appendix B Section	Appendix B Table
Batch Mix	Dryer, hot screens, mixer	PM-10	11.1-1, 11.1-2	4.2.4.3.1-4.2.4.3.6	4-19
		CO	11.1-5	4.2.4.3.7	4-20
		CO_2	11.1-5	4.2.4.3.8	4-20
		NO_x	11.1-5	4.2.4.3.9	4-20
		SO_2	11.1-5	4.2.4.3.10	4-20
		TOC/VOC/methane	11.1-6	4.2.4.3.11, 4.2.4.3.12	4-20
		Speciated organics	11.1-9	4.2.4.3.12-4.2.4.3.15	4-22
		Trace metals	11.1-11	4.2.4.3.16	4-21
Drum Mix	Dryer/mixer	PM-10	11.1-3, 11.1-4	4.2.4.1.1-4.2.4.1.6	4-14
		CO	11.1-7	4.2.4.1.7	4-15
		CO_2	11.1-7	4.2.4.1.8	4-15
		NO_x	11.1-7	4.2.4.1.9	4-15
		SO_2	11.1-7	4.2.4.1.10	4-15
		TOC/VOC/methane	11.1-8	4.2.4.1.11	4-15
		HCl	11.1-8	4.2.4.1.18	4-17
		Speciated organics	11.1-10	4.2.4.1.12-4.2.4.1.15, 4.2.4.1.19	4-17
		Dioxin/furans	11.1-10	4.2.4.1.17	4-17
		Trace metals	11.1-12	4.2.4.1.16	4-16
Batch or Drum Mix	Hot oil heater	Organic pollutants	11.1-13	4.2.4.2	4-18
	Load-out	PM, organic PM, TOC, CO, speciated organics	11.1-14 11.1-15 11.1-16	4.4.4	4-27 to 4-37, 4-43, 4-44
	Silo filling	PM, organic PM, TOC, CO, speciated organics	11.1-14 11.1-15 11.1-16	4.4.4	4-38 to 4-44
	Asphalt storage	Speciated organics	11.1-15 11.1-16	4.4.5	4-43, 4-44
	Yard emissions	Speciated organics	11.1-15 11.1-16	4.4.6	4-45, 4-46

TABLE 5. ESTIMATED ANNUAL EMISSIONS FOR A TYPICAL BATCH MIX PLANT DRYER, HOT SCREENS, AND MIXER[a]

Pollutant	Oil-fired dryer	Natural gas-fired dryer
	Emissions, lb/yr	
Criteria Pollutants		
PM-10	2,700	2,700
VOC	820	820
CO	40,000	40,000
SO_2	8,800	460
NO_x	12,000	2,500
PAHs (semi-volatile HAPs)		
Naphthalene	3.6	3.6
2-Methylnaphthalene	7.1	7.1
Acenaphthene	0.090	0.090
Acenaphthylene	0.058	0.058
Anthracene	0.021	0.021
Benzo(a)anthracene	0.00046	0.00046
Benzo(a)pyrene	0.000031	0.000031
Benzo(b)fluoranthene	0.00094	0.00094
Benzo(g,h,i)perylene	0.00005	0.00005
Benzo(k)fluoranthene	0.0013	0.0013
Chrysene	0.00038	0.00038
Dibenz(a,h)anthracene	0.0000095	0.0000095
Fluoranthene	0.016	0.016
Fluorene	0.16	0.16
Indendo(1,2,3-cd)pyrene	0.00003	0.00003
Phenanthrene	0.26	0.26
Pyrene	0.0062	0.0062
Total PAHs	11	11
Volatile HAPs		
Acetaldehyde	32	32
Benzene	28	28
Ethylbenzene	220	220
Formaldehyde	74	74
Quinone	27	27
Toluene	100	100
Xylene	270	270
Total Volatile HAPs	751	751
Metal HAPs		
Arsenic	0.046	0.046
Beryllium	0.015	0.015
Cadmium	0.061	0.061
Chromium	0.057	0.057
Lead	0.089	0.089
Manganese	0.69	0.69
Mercury	0.041	0.041
Nickel	0.3	0.3
Selenium	0.049	0.049
Total metal HAPs	1.35	1.35

[a] Dryer, hot screens, and mixer controlled by fabric filter producing 100,000 tons of hot mix asphalt per year. Between 70 and 90 percent of HMA is produced using natural gas; most of the remaining HMA is produced using fuel oil.

TABLE 6. ESTIMATED ANNUAL EMISSIONS FOR TYPICAL BATCH MIX PLANT LOAD-OUT OPERATIONS[a]

Pollutant	Emissions, lb/yr
Criteria Pollutants	
PM-10	52
VOC	391
CO	135
PAHs (semi-volatile HAPs)	
Acenaphthene	0.089
Acenaphthylene	0.0095
Anthracene	0.0239
Benzo(a)anthracene	0.0065
Benzo(b)fluoranthene	0.0026
Benzo(k)fluoranthene	0.00075
Benzo(g,h,i)perylene	0.00065
Benzo(a)pyrene	0.00078
Benzo(e)pyrene	0.0027
Chrysene	0.035
Dibenz(a,h)anthracene	0.00013
Fluoranthene	0.017
Fluorene	0.26
Indeno(1,2,3-cd)pyrene	0.00016
2-Methylnaphthalene	0.81
Naphthalene	0.43
Perylene	0.0075
Phenanthrene	0.28
Pyrene	0.051
Total PAHs	2.02
Other semi-volatile HAPs	
Phenol	0.40
Volatile HAPs	
Benzene	0.22
Bromomethane	0.040
2-Butanone	0.20
Carbon disulfide	0.054
Chloroethane	0.00087
Chloromethane	0.062
Cumene	0.46
Ethylbenzene	1.16
Formaldehyde	0.37
n-Hexane	0.62
Isooctane	0.0075
Methylene chloride	0.00
Methyl tert-butyl ether	0.00
Styrene	0.030
Tetrachloroethene	0.032
Toluene	0.87
1,1,1-Trichloroethane	0.00
Trichloroethene	0.00
Trichlorofluoromethane	0.0054
m-/p-Xylene	1.70
o-Xylene	0.33
Total volatile HAPs	6.18

[a] Uncontrolled emissions from 100,000 tons of hot mix asphalt per year.

TABLE 7. ESTIMATED ANNUAL EMISSIONS FOR TYPICAL BATCH MIX PLANT ASPHALT STORAGE TANK[a]

Pollutant	Emissions, lb/yr
Criteria Pollutants	
PM-10	ND
VOC	32
CO	3
PAHs (semi-volatile HAPs)	
Acenaphthene	0.0027
Acenaphthylene	0.0010
Anthracene	0.00092
Benzo(b)fluoranthene	0.00051
Fluoranthene	0.00022
Fluorene	0.00016
Naphthalene	0.087
Phenanthrene	0.025
Pyrene	0.00016
Total PAHs	0.12
Volatile HAPs	
Benzene	0.010
Bromomethane	0.0016
2-Butanone	0.012
Carbon disulfide	0.0051
Chloroethane	0.0012
Chloromethane	0.0074
Ethylbenzene	0.012
Formaldehyde	140
n-Hexane	0.032
Isooctane	0.000099
Methylene chloride	0.000086
Phenol	0.00
Styrene	0.0017
Toluene	0.020
m-/p-Xylene	0.061
o-Xylene	0.018
Total volatile HAPs	140

[a] Uncontrolled emissions from plant producing 100,000 tons of hot mix asphalt per year. Includes emissions from oil-fired hot oil heaters. All calculated PAH emissions and almost all of the formaldehyde emissions are from the oil-fired hot oil heater.

TABLE 8. ESTIMATED ANNUAL EMISSIONS FOR
A TYPICAL DRUM MIX DRYER[a]

Pollutant	No. 2 fuel oil-fired dryer	Natural gas-fired dryer
	Emissions, lb/yr	
Criteria Pollutants		
PM-10	4,600	4,600
VOC	6,400	6,400
CO	26,000	26,000
SO_2	2,200	680
NO_x	11,000	5,200
PAHs (semi-volatile HAPs)		
2-Methylnaphthalene	34	15
Acenaphthene	0.28	0.28
Acenaphthylene	4.4	1.7
Anthracene	0.62	0.044
Benzo(a)anthracene	0.042	0.042
Benzo(a)pyrene	0.0020	0.0020
Benzo(b)fluoranthene	0.020	0.020
Benzo(e)pyrene	0.022	0.022
Benzo(g,h,i)perylene	0.0080	0.0080
Benzo(k)fluoranthene	0.0082	0.0082
Chrysene	0.036	0.036
Fluoranthene	0.12	0.12
Fluorene	2.2	0.76
Indeno(1,2,3-cd)pyrene	0.0014	0.0014
Naphthalene	130	18
Perylene	0.0018	0.0018
Phenanthrene	4.6	1.5
Pyrene	0.60	0.11
Total PAHs	180	37
Volatile HAPs		
Isooctane	8.0	8.0
Hexane	184	180
Benzene	78	78
Ethylbenzene	48	48
Formaldehyde	620	620
Methyl chloroform	9.6	9.6
Toluene	580	30
Xylene	40	40
Total volatile HAPs	1,568	1,020
Metal HAPs		
Lead	3	0.12
Mercury	0.52	0.048
Antimony	0.036	0.036
Arsenic	0.11	0.11
Beryllium	0.000	0.000
Cadmium	0.082	0.082
Chromium	1.1	1.1
Manganese	1.5	1.5
Nickel	12.6	12.6
Selenium	0.070	0.070
Total metal HAPs	19	16

[a] Dryer controlled by fabric filter producing 200,000 tons of hot mix asphalt per year. Between 70 and 90 percent of HMA is produced using natural gas; most of the remaining HMA is produced using fuel oil.

TABLE 9. ESTIMATED ANNUAL EMISSIONS FOR TYPICAL DRUM MIX PLANT LOAD-OUT OPERATIONS[a]

Pollutant	Emissions, lb/yr
Criteria Pollutants	
PM-10	104
VOC	780
CO	270
PAHs (semi-volatile HAPs)	
Acenaphthene	0.177
Acenaphthylene	0.0191
Anthracene	0.0477
Benzo(a)anthracene	0.013
Benzo(b)fluoranthene	0.0052
Benzo(k)fluoranthene	0.0015
Benzo(g,h,i)perylene	0.0013
Benzo(a)pyrene	0.00157
Benzo(e)pyrene	0.0053
Chrysene	0.070
Dibenz(a,h)anthracene	0.00025
Fluoranthene	0.034
Fluorene	0.53
Indeno(1,2,3-cd)pyrene	0.00032
2-Methylnaphthalene	1.62
Naphthalene	0.85
Perylene	0.015
Phenanthrene	0.55
Pyrene	0.10
Total PAHs	4.05
Other semi-volatile HAPs	
Phenol	0.80
Volatile HAPs	
Benzene	0.43
Bromomethane	0.080
2-Butanone	0.41
Carbon disulfide	0.11
Chloroethane	0.0017
Chloromethane	0.12
Cumene	0.91
Ethylbenzene	2.3
Formaldehyde	0.73
n-Hexane	1.25
Isooctane	0.015
Methylene chloride	0.00
Methyl tert-butyl ether	0.00
Styrene	0.06
Tetrachloroethene	0.064
Toluene	1.74
1,1,1-Trichloroethane	0.00
Trichloroethene	0.00
Trichlorofluoromethane	0.011
m-/p-Xylene	3.40
o-Xylene	0.66
Total volatile HAPs	12.35

[a] Uncontrolled emissions from 200,000 tons of hot mix asphalt per year.

TABLE 10. ESTIMATED ANNUAL EMISSIONS FOR TYPICAL DRUM MIX PLANT SILO FILLING OPERATIONS[a]

Pollutant	Emissions, lb/yr
Criteria Pollutants	
PM-10	120
VOC	2,400
CO	240
PAHs (semi-volatile HAPs)	
Acenaphthene	0.24
Acenaphthylene	0.0071
Anthracene	0.066
Benzo(a)anthracene	0.028
Benzo(e)pyrene	0.0048
Chrysene	0.11
Fluoranthene	0.076
Fluorene	0.51
2-Methylnaphthalene	2.7
Naphthalene	0.92
Perylene	0.015
Phenanthrene	0.91
Pyrene	0.22
Total PAHs	5.8
Other semi-volatile HAPs	
Phenol	0.00
Volatile HAPs	
Benzene	0.78
Bromomethane	0.12
2-Butanone	0.95
Carbon disulfide	0.39
Chloroethane	0.095
Chloromethane	0.56
Ethylbenzene	0.93
Formaldehyde	17
n-Hexane	2.4
Isooctane	0.0076
Methylene chloride	0.0066
Styrene	0.13
Toluene	1.5
m-/p-Xylene	4.6
o-Xylene	1.4
Total volatile HAPs	31

[a] Uncontrolled emissions from 200,000 tons of hot mix asphalt per year.

TABLE 11. ESTIMATED ANNUAL EMISSIONS FOR TYPICAL DRUM MIX PLANT ASPHALT STORAGE TANK[a]

Pollutant	Emissions, lb/yr
Criteria Pollutants	
PM-10	ND
VOC	64
CO	6
PAHs (semi-volatile HAPs)	
Acenaphthene	0.0027
Acenaphthylene	0.0010
Anthracene	0.00092
Benzo(b)fluoranthene	0.00051
Fluoranthene	0.00022
Fluorene	0.00016
Naphthalene	0.087
Phenanthrene	0.025
Pyrene	0.00016
Total PAHs	0.12
Volatile HAPs	
Benzene	0.020
Bromomethane	0.0031
2-Butanone	0.025
Carbon disulfide	0.010
Chloroethane	0.0025
Chloromethane	0.015
Ethylbenzene	0.024
Formaldehyde	140
n-Hexane	0.064
Isooctane	0.00020
Methylene chloride	0.00017
Phenol	0.00
Styrene	0.0035
Toluene	0.040
m-/p-Xylene	0.12
o-Xylene	0.036
Total volatile HAPs	140

[a] Uncontrolled emissions from plant producing 200,000 tons of hot mix asphalt per year. Includes emissions from an oil-fired hot oil heater. All of the calculated PAH emissions and almost all of the formaldehyde emissions are from the oil-fired hot oil heater.

TABLE 12. ESTIMATED ANNUAL YARD VOC EMISSIONS FOR TYPICAL BATCH MIX AND DRUM MIX HMA PLANTS[a]

	Batch mix[b]	Drum mix[c]
Pollutant	Emissions, lb/yr	
Criteria Pollutants		
PM-10	ND	ND
VOC	110	220
CO	36	72
PAHs (semi-volatile HAPs)	ND	ND
Other semi-volatile HAPs		
Phenol	0.00	0.00
Volatile HAPs		
Benzene	0.057	0.11
Bromomethane	0.011	0.021
2-Butanone	0.054	0.11
Carbon disulfide	0.014	0.029
Chloroethane	0.00023	0.0046
Chloromethane	0.017	0.033
Cumene	0.12	0.24
Ethylbenzene	0.31	0.62
Formaldehyde	0.10	0.19
n-Hexane	0.17	0.33
Isooctane	0.0020	0.0040
Methylene chloride	0.00	0.00
Styrene	0.0080	0.016
Tetrachloroethene	0.0085	0.017
Toluene	0.23	0.46
Trichlorofluoromethane	0.0014	0.0029
m-/p-Xylene	0.45	0.90
o-Xylene	0.088	0.18
Total volatile HAPs	1.6	3.3

[a] Fugitive VOC emissions from loaded haul truck for eight minutes after completion of load-out.
[b] Uncontrolled emissions from plant producing 100,000 tons of hot mix asphalt per year.
[c] Uncontrolled emissions from plant producing 200,000 tons of hot mix asphalt per year.

APPENDIX A

AP-42 Section 11.1
Hot Mix Asphalt Plants

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APPENDIX B

Emission Factor Documentation for AP-42 Section 11.1
Hot Mix Asphalt Production

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APPENDIX C

Chapter 3:
Preferred and Alternative Methods for Estimating
Air Emissions from Hot Mix Asphalt Plants
Emission Inventory Improvement Program (EIIP)
July 1996

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TECHNICAL REPORT DATA

(Please read Instructions on reverse before completing)

1. REPORT NO.	2.	3. RECIPIENT'S ACCESSION NO.
EPA-454/R-00-019		

4. TITLE AND SUBTITLE	5. REPORT DATE
Hot Mix Asphalt Plants Emission Assessment Report	December 2000
	6. PERFORMING ORGANIZATION CODE

7. AUTHOR(S)	8. PERFORMING ORGANIZATION REPORT NO.
Ron Myers (EPA) Brian Shrager (MRI) Gary Brooks (ERG)	

9. PERFORMING ORGANIZATION NAME AND ADDRESS	10. PROGRAM ELEMENT NO.
U.S. Environmental Protection Agency Office of Air Quality Planning and Standards Research Triangle Park, NC 27711	11. CONTRACT/GRANT NO. 68D-98-027 (MRI) 68-D7-0068 (ERG)

12. SPONSORING AGENCY NAME AND ADDRESS	13. TYPE OF REPORT AND PERIOD COVERED
Office of Air Quality Planning and Standards Office of Air and Radiation U.S. Environmental Protection Agency Research Triangle Park, NC 27711	14. SPONSORING AGENCY CODE EPA/200/04

15. SUPPLEMENTARY NOTES

16. ABSTRACT The United States Environmental Protection Agency (EPA) Emission Factors and Inventory Group (EFIG) is investigating the Hot Mix Asphalt industry to identify and quantify criteria and hazardous air pollutants (HAP's) emitted from kiln stacks, transport truck loading and silo filling. EFIG obtained over 300 emission tests from kiln stacks that characterize emissions of criteria pollutants and hazardous air pollutants' emissions. EFIG requested that EPA's Emission Measurement Center (EMC) conduct the required testing of the transport truck and silo filling operations. Under separate EPA contracts, Midwest Research Institute (MRI) and Pacific Environmental Services (PES) performed two emissions tests. The primary objective of the testing program was to characterize uncontrolled emissions of the criteria pollutants particulate matter (PM) and total hydrocarbons (THC) and emissions of volatile and semi-volatile organic HAP's including polycyclic organic matter, phenol, benzene, toluene, xylene, ethyl benzene, 2-butanone, cumene, formaldehyde, hexane, isooctane and others. The results of the two test reports and responses to comments on these test reports are covered in separate EPA reports (EPA 454/R-00-024, EPA 454/R-00-025 (a through h), EPA 454/R-00-026, EPA 454/R-00-027, EPA 454/R-00-028 and EPA 454/R-00-029). This document characterizes hot mix asphalt plant operations, summarizes emissions from the typical batch mix and drum mix plants, presents emission factors specifically developed for hot mix asphalt plants and presents analyses used to develop the emission factors developed and presents information needed to inventory the emissions at hot mix asphalt plants.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
	Air Pollution control	

18. DISTRIBUTION STATEMENT	19. SECURITY CLASS *(Report)*	21. NO. OF PAGES
Release Unlimited	Unclassified	592
	20. SECURITY CLASS *(Page)*	22. PRICE
	Unclassified	

EPA Form 2220-1 (Rev. 4-77) PREVIOUS EDITION IS OBSOLETE

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Written Public Comments
3:00pm 4/28/2023

FW: Connell Resources Asphalt Plant

Patti Garcia <garciapa@wellingtoncolorado.gov>
Thu 4/27/2023 3:24 PM

To: chad.guides@gmail.com <chad.guides@gmail.com>
Cc: **Board of Trustees <boardoftrustees@wellingtoncolorado.gov>**;Cody Bird <birdca@wellingtoncolorado.gov>

Hi Chad –

Thank you for your email. The email you sent was to the Board of Trustees; the Planning Commission is a separate advisory board which will be considering the site plan for Connell Resources. Appeals of decisions made by the Planning Commission are made to the Board of Trustees so the Mayor and Trustees are not permitted to comment on this item as it could be considered ex-parte communications if there is an appeal.

I wanted to respond to you so that you understood why the Mayor and Trustees did not reply to your email. You can view the May 1, 2023 Planning Commission packet at this link https://www.wellingtoncolorado.gov/Archive.aspx?AMID=56.

Patti

TOWN OF WELLINGTON

Patti Garcia
Town Administrator
Mobile: (970) 473-6033
Email: garciapa@wellingtoncolorado.gov
Web: www.wellingtoncolorado.gov
8225 3rd Street, Wellington, CO 80549

From: Calar Chaussee <chausseec@wellingtoncolorado.gov>
Sent: Thursday, April 27, 2023 10:50 AM
To: Patti Garcia <garciapa@wellingtoncolorado.gov>
Subject: Fwd: Connell Resources Asphalt Plant

God Bless,
Mayor Chaussee
Ph:(970)652-3261

Begin forwarded message:

> **From:** Chad Mickschl <chad.guides@gmail.com>
> **Date:** April 27, 2023 at 10:39:17 MDT
> **To:** Calar Chaussee <chausseec@wellingtoncolorado.gov>, Eetzs@wellingtoncolorado.gov, David Wiegand <wiegandd@wellingtoncolorado.gov>, Brian Mason <masonb@wellingtoncolorado.gov>, Jon Gaiter <gaiterjm@wellingtoncolorado.gov>, Rebekka Dailey

Written Public Comments
3:00pm 4/28/2023

<dailey rm@wellingtoncolorado.gov>
Subject: Connell Resources Asphalt Plant

Mayor and Trustees of Wellington,

I am a resident of Wellington in the Sage Meadows subdivision. I am writing to you all regarding the proposed development of the Connell Resources Asphalt Plant. I wanted to voice my thoughts and am very against the asphalt plant being built in its proposed location.

1. The town of Wellington was re-zoned in 2022 with the land that Connell Resources wants to develop zoned as Heavy Industrial. As Wellington was re-zoned, Heavy Industrial land came with setback requirements of 1000ft linear and 45ft height restrictions. The claim by Connell Resources that the land is not suitable for Heavy Industrial use with current setbacks should have led town planners to decide that this property should be re-zoned to Light Industrial to limit the setback needs. The need for a greater setback of 2640ft is actually more appropriate given the language in the Land Use Code Section 4.03.21 B curating toxic chemicals. Especially since it is adjacent to a residential neighborhood, a park and school. Additionally, the asphalt plant will not only impact the nearby neighborhoods, but our entire small town as the air quality will be impacted.

2. I have issues with the lack of informed decision making to grant the setback variance as well. It does not appear the town of Wellington has done any environmental (air quality, water quality and quantity, soil erosion and discharge), traffic impact, view shed impacts, noice, environmental justice for underserved communities, or economic impacts analysis that this will have on the health and safety of Wellington residents and wildlife such as migrating birds. The town must clearly understand and communicate to the public, the risks and/or benefits associated with the Asphalt Plant. This has yet to have been completed.

Based on other locations where Asphalt Plants are located near neighborhoods, property values decreased 56% according to Blue Ridge Environmental Defense League (BREDL). BREDL also found that 45% of residents living within a half mile of a new asphalt plant reported a deterioration of their health, which began after the plant opened. Known toxins also come with an Asphalt Plant such as odor, formaldehyde, hexane, phenol, polycyclic organic matter, and toluene. The CDC's National Institute for Occupational Safety & Health states, "Known carcinogens have been found in asphalt fumes generated at work sites."* Exposure to these air toxins may cause cancer, central nervous system problems, liver damage, respiratory problems, and skin irritation (EPA Asphalt Plant Emission Assessment Report 2000).

The town of Wellington has a number of human health and safety issues to deal with currently, they do not need to add another issue. The responsibility of the Town of Wellington and its elected representatives is the health, safety, and well being of its residents. If this asphalt plant is approved, the town is falling far short of this responsibility.

3. The economic impact on the residents and the town will be noticeable. Residents will lose property value and will likely look to move out of town. With issues Wellington is already trying to deal with (train crossings, water quality, water price, concentrated feed lots, close proximity to the highway), this will likely be the final thing to tilt residents to leave. Businesses will also likely leave and close as their consumers will leave town.

4. There are certainly better locations for the Asphalt Plant to be located. Connell Resources likes to mention that homes have been built in Fort Collins next to their plants, however that is a homeowners decision. With this approval in Wellington, homeowners were not able to make a decision to live next to an Asphalt Plant, the town of Wellington is poorly making that decision for them. As elected officials, you must stand up for your constituents.

There are large swaths of county land in Larmier and Weld where this could be located away from residential areas. Connell Resources claims that the counties don't want the Asphalt Plants, but there is a process to get those approved there. There are also areas within Weld County where these plants are welcomed. Connell Resources also claimed that they could open in Carr (where they get their aggregate) but its too cold and windy for transporting. There are common mitigations such as lining and insulating trucks for transport. These plants exist in far colder places than the Front Range of Colorado. It's time for the town of Wellington to STOP being Fort Collins' dumping ground.

5. One other concern is the lack of transparency with this proposal and process. I do not feel there has been adequate public notification of this controversial proposal. As I speak to residents in my neighborhood, people are not aware, but once they find out are very against the Asphalt Plant being built. The decision of permit the Asphalt Plant should absolutely be put on hold until there is an adequate public notification process completed.

Thank you for taking comments and I trust the right decision will be made regarding the health, safety, and viability of residents and the town of Wellington.

Chad Mickschl

6915 Grassy Range Dr

Written Public Comments
3:00pm 4/28/2023

Asphalt batch plant

M S <antisubmarine@yahoo.com>

Tue 4/25/2023 9:10 PM

To: Shirrell Tietz <tietzs@wellingtoncolorado.gov>;David Wiegand <wiegandd@wellingtoncolorado.gov>;Jon Gaiter <gaiterjm@wellingtoncolorado.gov>;daileyrm@wellingtoncolorado.gov <daileyrm@wellingtoncolorado.gov>;Calar Chaussee <chausseec@wellingtoncolorado.gov>;Cody Bird <birdca@wellingtoncolorado.gov>;Brian Mason <masonb@wellingtoncolorado.gov>

Town of Wellington

My grave disappointment in you is so profound. We bought our forever home 2 ½ years ago. My husband put in his retirement papers this week. This was supposed to be a time of relaxing and celebrating. Instead, we are trying to figure out where in the USA we want to live since Wellington is now off the table. Thanks to you, this is no longer our forever home, but our for-the-moment home. I have breathing issues. My neighbors with small children have contacted a realtor. You are breaking up my community. Soon our beautiful Wellington will look like LaPorte – only people who don't care about their property or communities will be living here. Why, why, why would you put our most beautiful park which means our children – our most sacred gifts – in a toxic environment? I hope your children and grandchildren live on the other side of town. I am especially disappointed that you didn't even ASK your own citizens. Thank you for the reminder that my life, my health and my success are none of your concern. You need to take down the sign letting people know "We are the playful city" and change it to "We are the toxic city." I just wanted to remind you that what you do impacts people. Are you making a positive impact, or a horrendous impact?

Mary Beth Smith

9088 Painted Horse Ln

Wellington, CO

Written Public Comments
3:00pm 4/28/2023

May 1, 2023 Planning Commission Meeting Comments

Kimjosh Cruz-Rodenbeck <kimjoshchuy@yahoo.com>

Fri 4/28/2023 11:07 AM

To: Cody Bird <birdca@wellingtoncolorado.gov>

2 attachments (235 KB)

Connell Plant Settlement Agreement 12-5-22.pdf; Board of Trustees - Mar 28 - 2023.docx;

To the Planning Commissioners:

First, I would like to thank you for affording Wellington citizens and yourselves the time to further research asphalt plant operations, zoning and the harms that may or may not be posed by locating a hot batch asphalt plant in proximity to residential and open spaces. I also want to thank you for asking hard questions at the March 6 meeting. I appreciate the commissioners taking the reigns, asking hard questions and requesting more of the applicant in order to demonstrate (from their perspective) historical safety compliance and effects to the environment.
Second, I would like to point out a few items that concern me regarding Connell and asphalt plants in general based on comments made at the March 6 meeting.

1. At the 2hr 31m mark during the meeting, Mr. Warren stated, "we have been able to pass all their air quality permits to date." I believe this statement was made to demonstrate the trustworthiness of Connell and their ability to follow all rules and regulations. Unfortunately, this just wasn't true. When researching the public records the first report I came to was an inspection that they failed. They remained in non-compliance for several months and were later fined $7,000 for this non-compliance (please see attached settlement document). Mr. Warren did allude to the severity of the financial repercussions of falling out of compliance but there was never any mention of what happens to those individuals who happen to live in proximity of an asphalt plant when these non-compliant events occur. This should concern all of us. Especially if a non-compliance event occurs during their busy season.

2. Connell's busy season, in which emissions will spike, is the summertime, precisely when all our children will be outdoors, playing at the Wellington Community park, riding their bikes through our neighborhoods. According to the American Lung Association,

> "Children have more respiratory infections than adults, which also seems to increase their susceptibility to air pollution.
> Furthermore, children don't behave like adults, and their behavior also affects their vulnerability. They are outside for longer periods
> and are usually more active when outdoors. Consequently, they inhale more polluted outdoor air than adults typically do." (https://www.lung.org/clean-air/outdoors/who-is-at-risk/children-and-air-pollution#:~:text=Children%20have%20more%20respiratory%20infections,their%20susceptibility%20to%20air%20pollution.&text=Furthermore%2C%20children%20don't%20behave,usually%20more%20active%20when%20outdoors

3. At the 1hr 56m mark Ms. Lea Schnider from the Larimer County Health Department stated that, "air toxics are really understudied." She goes on to talk about how the oil and gas industry didn't have to comply with as many safety regulations until AFTER air toxics were studies in more depth. I am very concerned that as a self-reporting industry there is little incentive for the asphalt industry to actually invest the time and money to make sure we are all safe.

4. Ms. Schnider also stated at the 3hr 23m mark that, "the (Connell) plant DOES produce air toxins." This statement along with point 3 above should really give us pause as a community.

And finally, I believe the **Adjustments Committee failed to follow the rules set forth in the Town of Wellington Land Use Code** when they approved a setback variance for Connell**. Specifically section 4.03.21 subsection B1.** "Any Industrial and Manufacturing, Heavy use producing and curating toxic chemicals or conducting animal slaughtering shall be located at least two thousand six hundred forty (2,640) feet from any residential district, religious land use, medical care facility or school." It is a fact that Connell's Asphalt plant will be producing and releasing toxic chemicals into the air as a direct result of their asphalt production. This should not only disqualify them from the variance granted, but also prohibit them from operating on the proposed heavy industrial parcel they are seeking approval on based on it's proximity to a residential district.

Thank you for your time and energy on this. It really matters.

Written Public Comments
3:00pm 4/28/2023

Kim Cruz-Rodenbeck
3255 Wild West Ln

I have also attached my comments to the Board of Trustees (March 28, 2023) to make sure they get into the record for this meeting. Thank you.

To The Wellington Board of Trustees,

I am writing to respectfully request that you reconsider the appropriateness of having Heavy Industrial zoned parcels of land adjacent to residential and public zoned parcels which contain parks where the most vulnerable people in our community spend much of their time…our children.

The following quotes are taken from the Land Use Leadership Alliance Training Program Guidance Manual, a publication of the Colorado Chapter of the American Planning Association. Here is the link to the publication: https://www.law.du.edu/documents/rmlui/workshops/LinkingLandUse-Water-GuidanceManual.pdf

- "**The general purpose of zoning is to regulate uses of land and the physical improvements to land *in the interest of the public welfare*, without imposing undue burdens on landowners**."
- While the land owner is protected from undue burdens "**a land owner is not entitled to the most profitable or best use of his or her property.**"
- "**Prior court decisions have held that where a landowner has not been deprived of all reasonable economic uses of his or her land, a zoning regulation will generally be upheld.**"

Wellington is a bedroom community where many have moved to raise their children. According to the most recent census, 39.2% of our residence are under the age of 18 (https://www.census.gov/quickfacts/fact/table/wellingtontowncolorado/AFN120217). Many of those children live, go to school and play outside within a 2 mile radius of the currently zoned Heavy Industrial parcels within our town limits. Any future heavy industrial development would have a disproportionately negative impact on this population as they will spend most of their waking and sleeping hours in proximity to heavy industry.

The American Lung Association reports that,
"**Children have more respiratory infections than adults, which also seems to increase their susceptibility to air pollution. Furthermore, children don't behave like adults, and their behavior also affects their vulnerability. They are outside for longer periods and are usually more active when outdoors. Consequently, they inhale more polluted outdoor air than adults typically do.**" (https://www.lung.org/clean-air/outdoors/who-is-at-risk/children-and-air-pollution#:~:text=Children%20have%20more%20respiratory%20infections,their%20susceptibility%20to%20air%20pollution.&text=Furthermore%2C%20children%20don't%20behave,usually%20more%20active%20when%20outdoors.) Any additional pollutants released into the atmosphere by heavy industry, however nominal, would increase the possibility of respiratory issues in the short and long term for these most precious members of our community.

I have not been able to see the proposed zoning changes that are up for consideration by the Board of Trustees, but I do know that the proximity to homes, schools and recreational/outdoor

areas of the currently zoned Heavy Industrial properties seems problematic and inappropriate. Changing the currently zoned heavy industrial parcels to light industrial would be more consistent with the general purpose of zoning as stated above. Heavy Industry has no place in close proximity to residential property, parks or schools.

I respectfully request that the Board of Trustees and the Town of Wellington put our children's safety and the welfare of all its citizens **ABOVE** the interests of any heavy industry that may seek to operate within the town limits by eliminating any heavy industrial zoning that is, or would be, adjacent to residentially zoned parcels, parcels that are zoned open space that contain parks and schools/daycares.

Thank you for your time and consideration.

Kim Cruz-Rodenbeck
3255 Wild West Ln.
Wellington, CO 80549

COLORADO
Department of Public Health & Environment

December 5, 2022

SENT VIA ELECTRONIC MAIL

Brandon Martin
Connell Resources, Inc.
7785 Highland Meadows Pky. #100
Fort Collins, CO 80528

Re: Proposed Early Settlement Agreement in the Matter of Connell Resources, Inc.
AIRS No.: 069-0373
Case No.: 2022-180

Dear Brandon Martin:

Connell Resources, Inc. ("CRI") owns and operates the asphalt paving material plant located at 5150 SE Frontage Road, Fort Collins, Larimer County, Colorado ("Facility"). The Facility is subject to the terms and conditions of Colorado Construction Permit Number 00LR0746, Issuance 4 issued to CRI on November 30, 2020 ("Permit Number 00LR0746"); Colorado Air Quality Control Statutes; and Colorado Air Quality Control Commission ("AQCC") Regulations. The Facility's hot mix asphalt equipment (AIRS ID 069-0373-001), is relevant to this enforcement action.

On June 25, 2021, CRI conducted compliance testing on the Facility's hot mix asphalt equipment ("Compliance Test"). The Compliance Test was unobserved by the Colorado Air Pollution Control Division ("Division"). Based on the Compliance Test, and a review of records related to the Facility, the Division issued a Compliance Advisory to CRI on October 20, 2022. On November 15, 2022, the Division and CRI met to discuss the issues identified in the Compliance Advisory.

Based upon a review of the inspection, records related to the Facility, and the information provided by CRI, the Division has determined the following:

A. Pursuant to Permit Number 00LR0746, Condition 7, emissions of air pollutants from the Facility's hot mix asphalt equipment must not exceed 8.5 tons per year of NOx and 19.9 tons per year of CO. Pursuant to Permit Number 00LR0746, Condition 19, a source initial compliance test must be conducted on the main stack to measure and demonstrate compliance with the pollutant emission rates in the permit. The compliance test must be conducted in accordance with the Division's Compliance Test Manual. The Compliance Test conducted on June 25, 2021 was stopped by CRI before completion due to failing test results. CRI was therefore out of compliance with the hot mix asphalt equipment NOx and CO emission rates. From June 25, 2021 to October 20, 2021, CRI failed to demonstrate compliance with the hot mix asphalt equipment NOx and CO emission rates, violating Permit Number 00LR0746, Conditions 7 and 19.

On October 20, 2021, CRI successfully conducted a full compliance test of the hot mix asphalt equipment, demonstrating compliance with the emission rates in Permit Number 00LR0746.

The Colorado Air Pollution Prevention and Control Act, at § 25-7-122(1)(b), C.R.S., specifies the penalty for such violations. The monetary amount of the Division's settlement offer specified below takes into account, among other factors, the magnitude and severity of the violation, cooperation of the company, as well as the prior history of violations of air quality requirements associated with any of the company's facilities/operations in the State of Colorado (including a company's parent or subsidiary relations, if applicable). Settlement offers are based on the evaluation of the same factors and criteria in all cases. Based upon CRI's cooperation, and its efforts to bring its operations into compliance with the regulations and permit conditions identified above, the Division acknowledges that CRI has appropriately and adequately addressed all compliance issues identified above. In the interest of settling the matters cited herein, the Division therefore offers the following settlement in accordance with the Division's settlement policy.

1. Payment of a reduced penalty in the sum of **Seven Thousand Dollars ($7,000.00)**. Payment of the penalty precludes further enforcement by the Division for the above-described violation against CRI. The Division retains its authority to take enforcement actions based on any and all violations not specifically described above.

2. Entering into this settlement shall not constitute an admission of violation of the air quality laws, or the alleged facts relating thereto, nor shall any third party infer it to be such an admission in any administrative or judicial proceeding. However, CRI agrees not to challenge the factual or legal determinations herein, the Division's authority to bring, or the court's jurisdiction to hear, any action, insofar as it pertains to the matters contained herein, to enforce the terms of this settlement agreement. The described violation will constitute part of CRI's compliance history for any purpose for which such history is relevant.

This letter constitutes an offer of settlement and is not a demand for payment. Please contact me if you wish to discuss this offer of settlement. We remain willing to consider any information you wish to submit related to the violation. Please be advised, however, that the offer of settlement contained in this letter is predicated on resolving this matter within fifteen (15) days of the date of this settlement proposal letter. If you elect to continue the negotiation of this matter beyond that date, this offer shall be deemed withdrawn, and any penalty mitigation built into this settlement proposal may be revoked. If you require additional time to evaluate this settlement proposal or discuss remaining issues with the Division, however, please contact me regarding your request for an extension of the offer. Any extension of the offer, if agreed to by the Division, must be confirmed, in writing, by the Division.

If the above terms are acceptable to you, please have the appropriate person sign and return this letter and send a check in the sum of **$7,000.00**, made payable to the Colorado Department of Public Health and Environment, to

Air Pollution Control Division
Attn: Heather Wuollet
4300 Cherry Creek Drive South
APCD-SS-B1
Denver, Colorado 80246-1530

This offer of settlement, upon being fully endorsed by both the Division and CRI, shall constitute full and final resolution of the noncompliance issues identified herein and in the Compliance Advisory issued to CRI.

You may write or call to request a settlement conference if you wish to discuss the matter with representatives of the Division's compliance staff. If we do not receive a response from you within fifteen (15) days of the date of this letter, we will assume that you are not interested in resolving this matter as outlined above. Please call me, at 303-692-3259, or Heather Wuollet, at 720-515-0279, if you have any further questions regarding this matter.

Sincerely,

DocuSigned by:
17DC47B908A249B...
Shannon McMillan
Compliance and Enforcement Program Manager

I certify that I am authorized by Connell Resources, Inc. to execute this settlement agreement and bind Connell Resources, Inc., and any affiliated entities, to the terms and conditions of this agreement. I have read the above settlement and agree to the terms and conditions of this offer.

Name: John M Warren

Title: President

DocuSigned by:
01F3D0EAF45E47B...
Signature

970.223.3151
Telephone Number

12/19/2022
Date

cc: Shannon McMillan, APCD
Paul Carr, APCD
Heather Wuollet, APCD
Ben Cappa, APCD
Tom Roan, Attorney General's Office
Jeffrey Bishop, APCD
Beth Pilson, APCD
Tom Lovell, APCD
Michael Stovern, EPA (Region VIII)
File

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Thank you for your time and consideration.

Kim Cruz-Rodenbeck
3255 Wild West Ln.
Wellington, CO 80549

COLORADO
Department of Public Health & Environment

December 5, 2022

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Brandon Martin
Connell Resources, Inc.
7785 Highland Meadows Pky. #100
Fort Collins, CO 80528

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Denver, Colorado 80246-1530

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Sincerely,

DocuSigned by:
17DC47B908A249B...
Shannon McMillan
Compliance and Enforcement Program Manager

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Name: John M Warren

Title: President

DocuSigned by:
01F3D0EAF45E47B...
Signature

970.223.3151
Telephone Number

12/19/2022
Date

cc: Shannon McMillan, APCD
Paul Carr, APCD
Heather Wuollet, APCD
Ben Cappa, APCD
Tom Roan, Attorney General's Office
Jeffrey Bishop, APCD
Beth Pilson, APCD
Tom Lovell, APCD
Michael Stovern, EPA (Region VIII)
File

Written Public Comments
3:00pm 4/28/2023

Asphalt plant

Lori Flitcroft <lorisbassets1@aol.com>

Fri 4/28/2023 3:44 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Sir,

I am writing to you in support of the asphalt plant in Wellington, CO. I feel that most of the people against this plant are ill informed and honestly have no idea what they are talking about. It is very important to have industry in your town. I come from a small town in Kansas and most industry left that town. They barely survived. Luckily a technical school moved which brought money back in. I truly believe it is just a small contingency that opposes this plant. Please, do not bow to the minority which seems to the norm in our country. This town needs this plant. I am sure they will put back into the town. Thank you for your time.

Lori Flitcroft

RECEIVED

APR 2 6 2023

Wellington, CO

Board of Trustees

For 5/1/23 Planning Mtg.

Written Public Comments
3:00pm 4/28/2023

April 20, 2023

Wellington, CO

Dear Town of Wellington Trustees and appointed officials,

I'm writing this letter for three primary purposes:

1. I'm frustrated and upset that the amount of public input has decreased by one week, per Mr. Bird, Planning Commissioner. He has changed the routine of having written comments submitted to the Planning Commission no later than 3 pm on the meeting day. Just today, I learned that the cutoff for the May 1 meeting is tomorrow, April 21, at 3 pm! This certainly does not comply with the Theme, Reliable & Resilient Public Services, of the Comprehensive Plan. It almost appears to be a sabotage of getting as much public input as possible to reflect the truly diverse desires of the community. **Please reverse this decision!**

2. **I do not want the asphalt plant built downtown!** It counters the community themes written in our town's Comprehensive Plan (2021). It is an irrefutable source of detriment to the environment and health of our residents. Although the owners of the plant deny any causes of toxicity, the attached sampling of researched articles strongly refutes their claims:

    - "EPA Hot Asphalt Plant Emission Assessment Report, EPA Document #EPA 454R.00.019, December 2000." Please pay special attention to the following pages sections:
        - Pg.1, Sect. 1.2 – "Overview of the HMA (Hot Mix Asphalt) Industry."
        - Pg.11, Sect. 2.1.4 – "Emissions and Controls," especially the first paragraph listing the emissions from the two significant emissions categories. *A little more than "just water in that steam!"*
        - Pg. 19, Table 5 - estimated annual emissions for a typical batch mix plant dryer, hot screens, and mixers
        - Pgs. 20-26, Tables 6-12 - refer to the toxic contributions of additional production sources: plant load-out operations; storage tank emissions; drum mix dryers; drum mix plant silos; estimated annual yard VOC (volatile organic compounds) emissions.
        - Pg. 15, Sect. 2.3 – "Emission Factors for Other Generic Sources Associated with HAP Facilities:" - **these are often overlooked in discussing the *cumulative* toxic output of HAPs!**
            - Receipt of new aggregate
            - Transfer of aggregate from storage to the conveyor belt
            - Unpaved road dust emissions
            - Paved road dust emissions
            - Diesel exhaust emissions (think 20 trucks a day just idling in the yard while waiting to load or unload)

    - Center for HMA, Environmental, and Justice (CHEJ): "A Bad Place for An Asphalt Plant: An African American Community Fights Back," March 3, 2022. (Please relate this to our community with a particular focus on the severe health problems suffered by those living in proximity to a HAP): Cancer, Nervous system dysfunction, Liver damage.

    - Extracts from other articles:
        - Living near an HMA plant exposes residents to toxic air pollutants of polycystic aromatic oxide, sulfur dioxide, and hydrogen sulfide; volatile organic compounds; and metals. (North Carolina Department of Environmental Quality).

- Exposure to asphalt (Study by North Carolina government) and detrimental health effects include **breathing fumes**; irritate nose, throat, and lungs causing coughing, wheezing, shortness of breath, headache, dizziness, nausea, and vomiting; **contact** with asphalt: severe skin burns, dermatitis, acne-like lesions.

- "Timnath group opposing TopGolf to submit petitions Wednesday," Loveland Reporter-Herald, Dallas Heltzell, 3/27/23: This article from our neighboring town of Timnath reflects the concerns of residents about heavy industry taking over and their need for development plans to be congruent with their 2020 Comprehensive Plan.
  - Petition signatures more than double the needed signatures gathered to trigger a special election to block Topgolf. The ballot measure would stipulate land use/development parameters for future commercial industries.
  - The opposition focuses on wildlife protection and the negative impacts on residential quality of life.
  - Topgolf also does not remotely coincide with the goals of the town's Comprehensive Plan for future development, and this significantly concerns the residents. *Sound familiar?*

3. I thank you for attempting to promote the community themes in our Comprehensive Plan, with a focus on creating that "small town" feeling where tourists would be drawn to visit, thus boosting our economy. I doubt that 70 ft. smokestacks and an asphalt plant will contribute much to the atmosphere of a "charming" small town and be much of a tourist attraction. Nor would people using our projected parks and trails find it peaceful and placid to run/walk past a "delightfully" roiling, dusty, loud asphalt plant.

Please, do whatever it takes to revise zoning, land use codes, health codes, etc., **to halt the asphalt plant and any other heavy industries from ever being considered in our downtown in the future**. This request comes at a pivotal point in the design, vision, and desired characteristics of 'our little town.'

Thank you for your perseverance in reviewing this rather lengthy letter and for all your hard work in developing our unique town of Wellington with timely input from us, the residents.

Sincerely,

Sandra L Hunnicutt

Sandra L Hunnicutt
3940 Ginkgo St.
Wellington, CO 80549

P.S. I could not send this through email to each of you because your emails were ***blocked***. Therefore, the EPA report is not attached.

To whom it may Concern:

Wellington Planning Board,

I Nancy V. McKay
3803 Roosevelt ave, Wellington
970-342-5378, request to
Speak at the 5-1-23 6:30pm
Meeting pertaining to the
future planning on the Connell
Resources Asphalt plant. As
a Citizen of Wellington and
a homeowner I feel a strong
need to input.

Thank You
Nancy McKay

Town of Wellington
Planning Board
(May I meeting request)

Written Public Comments
3:00pm 4/28/2023

Asphalt Plant in Wellington

Claudia Simpson <claudiasimpson11@gmail.com>

Fri 4/28/2023 3:20 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Dear Mr Bird, please add my name to the list of people who oppose the building of an asphalt plant here in Wellington. This plant is not conducive to the wellbeing of the people of this community, especially the children. I have 6 grandchildren that are going or will be going to Eyestone and Rice. That fact that the plans are to build it so close to one of our parks and elementary school scares me!!! We will already be dealing with a not too distant landfill in our backyards, please stop this from happening!!! Sincerely, Claudia Simpson

Print

Planning Commission May 1, 2023 Public Comment - Submission #3035

Date Submitted: 4/25/2023

First and Last Name*

Stacie L Magruder

Email Address*

staciemagruder@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3294 thundering herd way

Public Comment for the Planning Commission May 1, 2023 Meeting

Strong opposition to the proposed asphalt plant. The priority for this commission should be the health and wellbeing of its residents that already undergo under representation in the community with high utility fee. When are the needs of the residents going to be the priority? My property value is the most important asset I own and I hope you will oppose the plant and put community first.

Optional File Attachment

Choose File No file selected

Optional File Attachment

Choose File No file selected

Optional File Attachment

Choose File No file selected

Print

Planning Commission May 1, 2023 Public Comment - Submission #3038

Date Submitted: 4/26/2023

First and Last Name*

Joe Harkins

Email Address*

jhark40@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3313 Firewater Ln

Public Comment for the Planning Commission May 1, 2023 Meeting

My family is strongly opposed to the proposed Asphalt plant. There is no â€œsafeâ€ asphalt plant that could be made at the proposed site because of its close proximity to others. To place a plant that produces severe pollutants less than a mile from neighborhoods, parks, a library, and a school is unethical. Why are we even considering putting an Asphalt plant this close to our community??? The Town leaders present today and all leaders of the Town of Wellington can and must do better. Stop wasting time and resources on a project that will harm the community. Turn your efforts to a project that will benefit our town. Reject the Asphalt Plant! Thank You.

Optional File Attachment

Choose File No file selected

Optional File Attachment

Choose File No file selected

Optional File Attachment

Choose File No file selected

Print

Planning Commission May 1, 2023 Public Comment - Submission #3040

Date Submitted: 4/26/2023

First and Last Name*

Page Melcher

Email Address*

Page.burdick@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3905 Eucalyptus St

Public Comment for the Planning Commission May 1, 2023 Meeting

I am opposed to the proposed development of the asphalt plant on the north west side of town. A search of peer-reviewed journal studies indicates there are negative respiratory effects to living near an asphalt plant. These negative health effects impact young children more than adults and I have two young kids who love to play outside. As a mother and a Public Health specialist I do not want to live so close to something that will have adverse effects on my childrenâ€™s future.

Optional File Attachment

Choose File | No file selected

Optional File Attachment

Choose File | No file selected

Optional File Attachment

Choose File | No file selected

Print

Planning Commission May 1, 2023 Public Comment - Submission #3041

Date Submitted: 4/26/2023

First and Last Name*

Brian Harrison

Email Address*

bah511@yahoo.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

bah511@yahoo.com

Public Comment for the Planning Commission May 1, 2023 Meeting

To the members of the planning commission: My name is Brian Harrison. I live at 9073 Painted Horse Ln. in Wellington. I am very concerned about the effects that the proposed hot mix asphalt plant would have on the health, property values, and culture of our community. Like many people in Wellington, I moved here because it gave me an opportunity to purchase a house and raise a family in a small town. I value both the new and old communities that exist here, and it is important that we prioritize the health of our residents, especially our children. One of the many cancer-causing chemicals that hot mix asphalt plants generate is benzene. In addition to causing cancer, this chemical damages the human nervous system in adults and affects the development of children. A representative from Connell stated that hot mix asphalt plants create less benzene than a fast food restaurant like the Burger King down the road, but that information is from a study paid for by the National Asphalt Pavement Association (https://www.sanbornhead.com/wp-content/uploads/2021/08/Emissions-Comparison-Report.pdf). There are, in fact, many known negative health effects from exposure to asphalt and other hydrocarbons. â€œAvailable epidemiological studies have shown statistically significant links between exposure to hydrocarbons and/or metal fume and childhood leukemia2 and between exposure to asphalt fume and a variety of cancers.â€ (https://www.epa.gov/sites/default/files/2020-10/documents/stkhld-opn.pdf). And there are even more unknown negative health effects. â€œSince EPAâ€™s current approach is based on considering each chemical by itself, knowledge about the health effects of each individual chemical will not be available for many decades. Further, even after this data has been compiled, the synergistic interactions between these chemicals in a complex mixture will not be available and would require further study.â€ (https://www.epa.gov/sites/default/files/2020-10/documents/stkhld-opn.pdf) I donâ€™t understand why a variance for setbacks and silo height were ever granted in the first place. We donâ€™t need an asphalt plant in Wellington, and we definitely donâ€™t need it to be built so close to existing and already-approved residential sites. I moved here to raise a family, not to put my familyâ€™s health at risk. I urge you to find the legal means to protect the residents in Wellington and stop the approval of this plant. Sincerely, Brian Harrison Buffalo Creek Resident 9073 painted Horse Ln. Wellington, CO

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Print

Planning Commission May 1, 2023 Public Comment - Submission #3037

Date Submitted: 4/26/2023

First and Last Name*

Kaitlyn Folmer

Email Address*

kaitlyn.pierson@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

14112 N County Road 7

Public Comment for the Planning Commission May 1, 2023 Meeting

Dear Planning Board, The Connell site plan doesnâ€™t meet the more stringent requirements that apply to toxic chemicals and so cannot be located at the proposed location. Land use code 4.03.21,B, regarding the production and curing of toxic chemicals requires these sites be located at least 2,640 feet from any residential district, religious land use, medical care facility, or school. I would appreciate you reading this article published by Wright County- in Minnesota (linked below). The article dives into the repercussions the town and people dealt with, the smell (doctors from across the country warn that smell equates to fume exposure), cites the CDC and OSHA, and all came to the same conclusion- â€œThe complex chemical composition of asphalt makes it difficult to identify the specific components responsible for adverse health effects observed in exposed workers. Known carcinogens have been found in asphalt fumes generated at worksites. Observations of acute irritation in workers from airborne and dermal exposures to asphalt fumes and aerosols and the potential for chronic health effects, including cancerâ€¦â€ The people living within the 2640 foot setback would be at great risk. The children playing, going to school, and growing up with in the 2640 foot setback would be at great risk. Approving this asphalt plant should not be a risk we are willing to take. This batch asphalt plant produces and curates toxic chemicals. The planning board should not approve this plan due to the producing and curing setback of 2,640 feet. No variance for this specific setback has been sought. Thanks for your consideration, Kaitlyn Article https://www.co.wright.mn.us/AgendaCenter/ViewFile/Item/6844?fileID=14104 If the link doesnâ€™t work- google â€œhow many people per year are affected by asphalt plantsâ€ and itâ€™s the first result.

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Health Issues with an Asphalt Plant Nearby

Here are some short quotes and abstracts from articles referencing the health problems that occur with working, and/or living near an Asphalt Plant.

Asphalt and Diesel Exhaust Fumes

> " Over a half-million workers are exposed to fumes from asphalt, a petroleum product used extensively in road paving, roofing, siding, and concrete work. Health effects from exposure to asphalt fumes include headache, skin rash, sensitization, fatigue, reduced appetite, throat and eye irritation, cough, and skin cancer. "

Reference: Asphalt Fumes - United States Department of Labor, Occupational Safety and Health Administration

Reference: Hot Mix Asphalt Plants - Truck Loading and Unloading

> " The primary emission sources associated with Hot Mix Asphalt(HMA) production are the dryers, hot bins, and mixers, which emit particulate matter (PM) and a variety of gaseous pollutants. Other emission sources found at HMA plants include storage silos, which temporarily hold the HMA; truck load-out operations, in which the HMA is loaded into trucks for hauling to the job site; liquid asphalt storage tanks; hot oil heaters, which are used to heat the asphalt storage tanks; and yard emissions, which consist of fugitive emissions from the HMA in truck beds. Emissions also result from vehicular traffic on paved and unpaved roads, aggregate storage and handling operations, and vehicle exhaust. "

> " The PM emissions associated with HMA production include the criteria pollutants PM-10 (PM less than 10 micrometers in aerodynamic diameter) and PM-2.5, hazardous air pollutant (HAP) metals, and HAP organic compounds. The gaseous emissions associated with HMA production include the criteria pollutants sulfur dioxide (SO 2), nitrogen oxides (NO x), carbon monoxide (CO), and volatile organic compounds (VOC), as well as volatile HAP organic compounds. "

Reference: EPA - Hot Mix Asphalt Plant Emission Assessment

Summary of Research on Diesel and Asphalt Hazards

Toxic Smell

> "It smells."

> "While a state study indicates the air quality in a neighborhood next to a controversial paving plant meets safety standards, neighbors say their problems with the plant are as much about quality of life as quality of air.
>
> The odor of asphalt coming from the R.C. & Sons paving plant has been a prime complaint of several residents of the nearby Grandview neighborhood."

Bangor Daily News - It smells, but Maine Asphalt Plant meets standards

> " Dr. Mitchell said that tiny particles in asphalt production plant emissions can cause lung damage, exacerbate breathing conditions and ultimately cause more severe problems. "

New York Times Article - Who Wants to Live Near an Asphalt Plant

Noise

Here are typical noise emissions from a Hot-Mix Asphalt Plant.

Noise Level	Distance from Center of Plant
85 dBA	50 feet (measured reference level)
78 dBA	100 feet
70 dBA	200 feet
63 dBA	400 feet
55 dBA	800 feet
46 dBA	1,600 feet
36 dBA	3,200 feet
24 dBA	6,400 feet

We do not know the assumptions that went into the measurements in this noise summary table.

Looking at the California study, we do not know the age or size/capacity of the plant(s) measured.

Remember that newer plants are quieter, and older plants make more noise.

Reference: Full Document - Caltrans - State of California

Overall Health Effects

> " The complex chemical composition of asphalt makes it difficult to identify the specific component(s) responsible for adverse health effects observed in exposed workers. Known carcinogens have been found in asphalt fumes generated at worksites. Observations of acute irritation in workers from airborne and dermal exposures to asphalt fumes and aerosols and the potential for chronic health effects, including cancer, warrant continued diligence in the control of exposures. "

Reference: CDC - Hazard Review - Health Effects of Occupational Exposure to Asphalt

What the Federal Government Regulates on Asphalt Plants and Air Quality

What federal rules apply to asphalt plants?

- Asphalt plant emissions of particulate matter (PM2.5 and PM10, carbon monoxide, sulfur dioxide nitrogen dioxide, and lead must not exceed National Ambient Air Quality Standards (NAAQS) at the property boundary.
- Asphalt plants manufactured after June 11, 1973, are subject to 40 CFR 60 Subpart I-New Source Performance Standards for Hot Mix Asphalt Plants. NSPS, Subpart I limits only the emissions of particulate matter from material handling systems.
- On November 8, 2002 , USEPA removed Asphalt Hot Mix Production from the Source Category List for which development of National Emission Standards for Hazardous Air Pollutants Standar is required.

Reference: North Carolina Division of Air Quality - Air Toxics and Asphalt Plants

Web Sites With More Information

Here are addition web sites that have information on Asphalt Plants and health effects.

- Hot Mix Asphalt Plants - Stakeholders Opinions Report - US EPA
- Fact Sheet - Hot Mix Asphalt Plants - Oregon Department of Environmental Quality
- Preventing Pollution at Hot Mix Plants - A Guide to Environmental Compliance and Pollution Prevention for Asphalt Plants in Missouri - State of Missouri
- Asphalt Plant Pollution - Blue Ridge Environmental Report
- Road Paving Asphalt - State of New Hampshire - Fact Sheet
- Asphalt - Hazardous Fact Sheet - State of New Jersey
- North Carolina Division of Air Quality - Air Toxics and Asphalt Plants

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We are PARC - Protectors of the Ammonoosuc River Corridor in Lisbon, New Hampshire.

You can contact PARC at

PARC
P.O. Box 515
Sugar Hill, New Hampshire.
03586

Fiscal Agent: Peter Nightingale
Phone #: (603) 616-9292

ASPHALT PLANT POLLUTION

Asphalt plants mix gravel and sand with crude oil derivatives to make the asphalt used to pave roads, highways, and parking lots across the U.S. These plants release millions of pounds of chemicals to the air during production each year, including many cancer-causing toxic air pollutants such as arsenic, benzene, formaldehyde, and cadmium. Other toxic chemicals are released into the air as the asphalt is loaded into trucks and hauled from the plant site, including volatile organic compounds, polycyclic aromatic hydrocarbons (PAHs), and very fine condensed particulates.[EPA]

Asphalt Fumes are Known Toxins. The federal Environmental Protection Agency (EPA) states "Asphalt processing and asphalt roofing manufacturing facilities are major sources of hazardous air pollutants such as formaldehyde, hexane, phenol, polycyclic organic matter, and toluene. Exposure to these air toxics may cause cancer, central nervous system problems, liver damage, respiratory problems and skin irritation." [EPA]. According to one health agency, asphalt fumes contain substances known to cause cancer, can cause coughing, wheezing or shortness of breath, severe irritation of the skin, headaches, dizziness, and nausea. [NJDHSS] Animal studies show PAHs affect reproduction, cause birth defects and are harmful to the immune system. [NJDHSS] The US Department of Health and Human Services has determined that PAHs may be carcinogenic to humans. [DHHS]

Health Impacts & Loss of Property Value. The Blue Ridge Environmental Defense League (BREDL), a regional environmental organization, has done two studies on the adverse impacts on property values and health for residents living near asphalt plants. A property value study documented losses of up to 56% because of the presence of a nearby asphalt plant. In another study, nearly half of the residents reported negative impacts on their health from a new asphalt plant. The door-to-door health survey found 45% of residents living within a half mile of the plant reported a deterioration of their health, which began after the plant opened. The most frequent health problems cited were high blood pressure (18% of people surveyed), sinus problems (18%), headaches (14%), and shortness of breath (9%). [BREDL]

Flawed Tests Underestimate Health Risks. In addition to smokestack emissions, large amounts of harmful "fugitive emissions" are released as the asphalt is moved around in trucks and conveyor belts, and is stored in stockpiles. A small asphalt plant producing 100 thousand tons of asphalt a year may release up to 50 tons of toxic fugitive emissions into the air. [Dr. R. Nadkarni] Stagnant air and local weather patterns often increase the level of exposure to local communities. In fact, most asphalt plants are not even tested for toxic emissions. The amounts of these pollutants that are released from a facility are estimated by computers and mathematical formulas rather than by actual stack testing, estimates that experts agree do not accurately predict the amount of toxic fugitive emissions released and the risks they pose. According to Dr. Luanne Williams, a North Carolina state toxicologist, 40% of the toxins from asphalt plant smokestacks even meet air quality standards—and for the other 60% of these emissions, the state lacks sufficient data to determine safe levels.

BE SAFE: Take Precautionary Action to Protect Our Communities from Asphalt Plant Air Pollution

OSHA ARCHIVE

NOTICE: This is an OSHA Archive Document, and no longer represents OSHA Policy. It is presented here as historical content, for research and review purposes only.

Asphalt Fumes

Over a half-million workers are exposed to fumes from asphalt, a petroleum product used extensively in road paving, roofing, siding, and concrete work. When hot asphalt is applied in a molten state, it generates toxic fumes. Workers exposed to asphalt fumes are at risk of developing headaches, rashes, cough, and possibly cancer. There is no OSHA standard for asphalt fumes. OSHA is developing an action plan to reduce worker exposures to this hazard but is not initiating rulemaking at this time.

Hazard Description

NIOSH estimated that over 500,000 workers were potentially exposed to asphalt fumes (1). OSHA estimated in 1992 that over 300,000 construction workers were exposed primarily in road-paving and roofing operations (2). Exposures vary considerably between different types of asphalt work (i.e. roofing vs. paving) and the different worker jobs (i.e. kettle operator vs. paver operator.) More research needs to be performed to determine and control important factors which cause increased worker exposures (i.e. application temperatures, type of equipment used, environmental conditions, workplace practices, and asphalt constituents.)

The acute effects of exposure to asphalt fumes include headache, skin rash, fatigue, reduced appetite, throat and eye irritation, and cough. Asphalt paving workers, for example, have reported breathing problems, asthma, bronchitis, and skin irritation (6). A recent study has shown that some of these effects occur at exposures of 0.5 to 1.3 mg/m3 (3).

Human studies have reported lung, stomach, and skin cancers following chronic exposures to asphalt fumes. However, these studies have been inconclusive, and the possible chronic effects to workers following exposures to asphalt fumes are areas of continuing investigations. One recent summary analysis of the available human studies found a nearly twofold increase in risk of lung and stomach cancer among roofers. Increased risks were also noted for other asphalt workers for lung, stomach, and bladder cancer, and for leukemia (4).

Laboratory studies have shown chemical extracts of asphalt fumes to have cancer-causing and mutagenic properties. For example, painting of asphalt extracts on mouse skin produces tumors that increase with dose (7). Other laboratory studies show DNA changes in mouse lung and skin cells (8) and in human fetal cells exposed to asphalt fume extracts (9). Urinalysis of exposed workers shows mutations in laboratory tests (10).

Current Status

OSHA does not have a standard for asphalt fumes although it proposed a 5 mg/m3 permissible exposure limit (PEL) in 1992 (5). OSHA's quantitative risk assessment estimated a significant risk of lung cancer among exposed workers at levels as low as 0.2 mg/m3.

The American Conference of Governmental Industrial Hygienists (ACGIH) currently recommends a Threshold Limit Value (TLV) of 5 mg/m3 as an 8-hour time weighted average. In 1977, the National Institute for Occupational Safety and Health (NIOSH) recommended a 5 mg/m3 15 minute short-term exposure limit. NIOSH is developing a new Criteria Document for asphalt fumes and expects to make new recommendations for exposure limits within six months.

The International Agency for Research on Cancer (IARC) found:

- "There is sufficient evidence for the carcinogenicity of extracts of steam-refined bitumens, air-refined bitumens and pooled mixtures of steam- and air-refined bitumens in experimental animals."
- There is limited evidence for the carcinogenicity of undiluted steam-refined bitumens and for cracking-residue bitumens in experimental animals.
- There is inadequate evidence for the carcinogenicity of undiluted air-refined bitumens in experimental animals.
- There is inadequate evidence that bitumens alone are carcinogenic to humans."

Rationale

Asphalt fume exposure meets several of the criteria for designation as an OSHA priority. In particular, the known and potential health effects are serious and a large number of workers are potentially exposed, especially considering high industry turnover rates. although the human studies of workplace cancer have limitations, there is considerable experimental evidence of cancer risk. There is also evidence of acute health effects among workers exposed to asphalt fumes.

References

1. NIOSH; National Occupational Exposure Survey; 1981-1983.
2. Federal Register, vol. 57, no. 114, June 12, 1992. Air Contaminants; Proposed Rule. pp. 26001-26602.
3. Chase, R.M., Liss, G.M., Cole, D.C., and Heath, B. 1994. Toxic health effects including reversible macrothrombocytosis in workers exposed to asphalt fumes. Am. J. Indus. Med. 25:279-289.
4. Partanen, T. and Boffetta, P. 1994. Cancer risk in asphalt workers and roofers: review and meta-analysis of epidemiologic studies. Am. J. Indus. Med. 26:721-740.
5. Federal Register vol. 57, June 12, 1992. Air Contaminants; Proposed Rule. p. 26182-26190 deals specifically with asphalt fume.
6. Norseth T, Waage J, and Dale I. Acute Effects and Exposure to Organic Compounds in Road Maintenance Workers Exposed to Asphalt. Am J Ind Med; 1991; 20:737-44.
7. "Assessment of the Cocarcinogenic/Promoting Activity of Asphalt Fumes;" U.S. Department of Health and Human Services, National Institute for Occupational Safety and Health; Contract 200-83-2612; December 1989.

New Jersey Department of Health and Senior Services

HAZARDOUS SUBSTANCE FACT SHEET

Common Name: **ASPHALT**

CAS Number: 8052-42-4
DOT Number: NA 1999 (Asphalt)
UN 1999 (Tars, Liquid)
DOT Hazard Class: 3 (Flammable)

RTK Substance number: 0170
Date: January 2001 Revision: April 2007

HAZARD SUMMARY

* **Asphalt** can affect you when breathed in.
* Extracts of certain *Asphalts* have been shown to cause cancer in animals.
* **Asphalt** *fumes* can irritate the eyes on contact.
* Breathing **Asphalt** *fumes* can irritate the nose, throat and lungs causing coughing, wheezing and/or shortness of breath.
* Contact can irritate and cause severe burns of the skin and may cause dermatitis and acne-like lesions.
* Exposure to **Asphalt** *fumes* can cause headache, dizziness, nausea and vomiting.
* Long-term contact can cause skin pigment change which is made worse by sunlight exposure.
* *Cutback* and *Rapid Curing* **Asphalt** are FLAMMABLE and FIRE HAZARDS.
* **Asphalt** is derived from *Petroleum*. **Asphalt** and *Coal Tar Pitch* are different. If you are actually working with *Coal Tar* chemicals, *CONSULT THE NEW JERSEY DEPARTMENT OF HEALTH AND SENIOR SERVICES HAZARDOUS SUBSTANCE FACT SHEETS ON COAL TAR PITCH AND COAL TARS.*
* *Asphalt, Oxidized* (CAS # 64762-93-4) is a carcinogen. *CONSULT THE NEW JERSEY DEPARTMENT OF HEALTH AND SENIOR SERVICES HAZARDOUS SUBSTANCE FACT SHEET ON ASPHALT, OXIDIZED.*

IDENTIFICATION

Asphalt is a blackish-brown solid, semi-solid or liquid, depending on the formulation or mixture of **Asphalt** used. **Asphalt** *fumes* are produced during the manufacture and heating of **Asphalt**, which is used for road building and roofing, and in rubber and adhesives.

REASON FOR CITATION

* **Asphalt** is on the Hazardous Substance List because it is cited by ACGIH, DOT, NIOSH, IARC and NFPA.
* Definitions are provided on page 5.

HOW TO DETERMINE IF YOU ARE BEING EXPOSED

The New Jersey Right to Know Act requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information and training concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard (29 CFR 1910.1200) requires private employers to provide similar training and information to their employees.

* Exposure to hazardous substances should be routinely evaluated. This may include collecting personal and area air samples. You can obtain copies of sampling results from your employer. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).
* If you think you are experiencing any work-related health problems, see a doctor trained to recognize occupational diseases. Take this Fact Sheet with you.

WORKPLACE EXPOSURE LIMITS

NIOSH: The recommended airborne exposure limit is **5 mg/m^3**, which should not be exceeded during any 15-minute period.

ACGIH: The recommended airborne exposure limit is **0.5 mg/m^3** (for the *inhalable fraction* of the *Benzene*-soluble aerosol), averaged over an 8-hour workshift.

WAYS OF REDUCING EXPOSURE

* Where possible, enclose operations and use local exhaust ventilation at the site of chemical release. If local exhaust ventilation or enclosure is not used, respirators should be worn.
* Wear protective work clothing.
* Wash thoroughly immediately after exposure to **Asphalt** and at the end of the workshift.
* Post hazard and warning information in the work area. In addition, as part of an ongoing education and training effort, communicate all information on the health and safety hazards of **Asphalt** to potentially exposed workers.

This Fact Sheet is a summary source of information of all potential and most severe health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

HEALTH HAZARD INFORMATION

Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to **Asphalt**:

* **Asphalt** *fumes* can irritate the eyes on contact.
* Breathing **Asphalt** *fumes* can irritate the nose, throat and lungs causing coughing, wheezing and/or shortness of breath.
* Contact can irritate and cause severe burns of the skin and may cause dermatitis and acne-like lesions.
* Exposure to **Asphalt** *fumes* can cause headache, dizziness, nausea and vomiting.

Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to **Asphalt** and can last for months or years:

Cancer Hazard

* While **Asphalt** has not been identified as a carcinogen, it should be HANDLED WITH CAUTION since extracts of certain **Asphalts** have been shown to cause cancer in animals.

Reproductive Hazard

* According to the information presently available to the New Jersey Department of Health and Senior Services, **Asphalt** has not been tested for its ability to affect reproduction.

Other Long-Term Effects

* Long-term contact can cause skin pigment change which is made worse by sunlight exposure.
* **Asphalt** *fumes* can irritate the lungs. Repeated exposure may cause bronchitis to develop with cough, phlegm, and/or shortness of breath.

MEDICAL

Medical Testing

Before beginning employment and at regular times after that, for those with frequent or potentially high exposures, the following are recommended:

* Lung function tests

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).

Mixed Exposures

* Because smoking can cause heart disease, as well as lung cancer, emphysema, and other respiratory problems, it may worsen respiratory conditions caused by chemical exposure. Even if you have smoked for a long time, stopping now will reduce your risk of developing health problems.

Conditions Made Worse By Exposure

* Exposure to sunlight may make skin effects of **Asphalt** worse.

WORKPLACE CONTROLS AND PRACTICES

Unless a less toxic chemical can be substituted for a hazardous substance, **ENGINEERING CONTROLS** are the most effective way of reducing exposure. The best protection is to enclose operations and/or provide local exhaust ventilation at the site of chemical release. Isolating operations can also reduce exposure. Using respirators or protective equipment is less effective than the controls mentioned above, but is sometimes necessary.

In evaluating the controls present in your workplace, consider: (1) how hazardous the substance is, (2) how much of the substance is released into the workplace and (3) whether harmful skin or eye contact could occur. Special controls should be in place for highly toxic chemicals or when significant skin, eye, or breathing exposures are possible.

In addition, the following controls are recommended:

* Where possible, automatically pump liquid **Asphalt** from drums or other storage containers to process containers.
* Before entering a confined space where **Asphalt** may be present, check to make sure that an explosive concentration does not exist.

Good **WORK PRACTICES** can help to reduce hazardous exposures. The following work practices are recommended:

* Workers whose clothing has been contaminated by **Asphalt** should change into clean clothing promptly.
* Contaminated work clothes should be laundered by individuals who have been informed of the hazards of exposure to **Asphalt**.
* Eye wash fountains should be provided in the immediate work area for emergency use.
* If there is the possibility of skin exposure, emergency shower facilities should be provided.
* On skin contact with **Asphalt**, immediately wash or shower to remove the chemical. At the end of the workshift, wash any areas of the body that may have contacted **Asphalt**, whether or not known skin contact has occurred.

* Do not eat, smoke, or drink where **Asphalt** is handled, processed, or stored, since the chemical can be swallowed. Wash hands carefully before eating, drinking, applying cosmetics, smoking, or using the toilet.

PERSONAL PROTECTIVE EQUIPMENT

WORKPLACE CONTROLS ARE BETTER THAN PERSONAL PROTECTIVE EQUIPMENT. However, for some jobs (such as outside work, confined space entry, jobs done only once in a while, or jobs done while workplace controls are being installed), personal protective equipment may be appropriate.

The OSHA Personal Protective Equipment Standard (29 CFR 1910.132) requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

Clothing

* Avoid skin contact with **Asphalt**. Wear protective gloves and clothing. Safety equipment suppliers/manufacturers can provide recommendations on the most protective glove/clothing material for your operation.
* All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Eye Protection

* Wear indirect-vent, impact and splash resistant goggles when working with liquids.
* Wear a face shield along with goggles when working with corrosive, highly irritating or toxic substances.
* Contact lenses should not be worn when working with this substance.

Respiratory Protection

IMPROPER USE OF RESPIRATORS IS DANGEROUS. Such equipment should only be used if the employer has a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing, and medical exams, as described in the OSHA Respiratory Protection Standard (29 CFR 1910.134).

* Where the potential exists for exposure over **0.5 mg/m^3**, use a NIOSH approved full facepiece respirator with an organic vapor cartridge and particulate prefilters. Increased protection is obtained from full facepiece powered-air purifying respirators.
* If while wearing a filter or cartridge respirator you can smell, taste, or otherwise detect **Asphalt**, or if while wearing particulate filters abnormal resistance to breathing is experienced, or eye irritation occurs while wearing a full facepiece respirator, leave the area immediately. Check to make sure the respirator-to-face seal is still good. If it is, replace the filter or cartridge. If the seal is no longer good, you may need a new respirator.
* Be sure to consider all potential exposures in your workplace. You may need a combination of filters, prefilters or cartridges to protect against different forms of a chemical (such as vapor and mist) or against a mixture of chemicals.
* Where the potential exists for exposure over **5 mg/m^3**, use a NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode.

HANDLING AND STORAGE

* Prior to working with **Asphalt** you should be trained on its proper handling and storage.
* **Asphalt**, when HEATED, can give off toxic *Hydrogen Sulfide gases*.
* **Asphalt** may ignite or explode when mixed with NAPHTHA, other VOLATILE SOLVENTS, and LIQUID OXYGEN.
* **Asphalt** is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE).
* Store in tightly closed containers in a cool, well-ventilated area.
* Sources of ignition, such as smoking and open flames, are prohibited where *Cutback* and *Rapid Curing* **Asphalt** are used, handled, or stored.
* Metal containers involving the transfer of *Cutback* and *Rapid Curing* **Asphalt** should be grounded and bonded.
* Use only non-sparking tools and equipment, especially when opening and closing containers of *Cutback* and *Rapid Curing* **Asphalt**.

QUESTIONS AND ANSWERS

Q: If I have acute health effects, will I later get chronic health effects?

A: Not always. Most chronic (long-term) effects result from repeated exposures to a chemical.

Q: Can I get long-term effects without ever having short-term effects?

A: Yes, because long-term effects can occur from repeated exposures to a chemical at levels not high enough to make you immediately sick.

Q: What are my chances of getting sick when I have been exposed to chemicals?

A: The likelihood of becoming sick from chemicals is increased as the amount of exposure increases. This is determined by the length of time and the amount of material to which someone is exposed.

Q: When are higher exposures more likely?
A: Conditions which increase risk of exposure include physical and mechanical processes (heating, pouring, spraying, spills and evaporation from large surface areas such as open containers), and "confined space" exposures (working inside vats, reactors, boilers, small rooms, etc.).

Q: Is the risk of getting sick higher for workers than for community residents?
A: Yes. Exposures in the community, except possibly in cases of fires or spills, are usually much lower than those found in the workplace. However, people in the community may be exposed to contaminated water as well as to chemicals in the air over long periods. This may be a problem for children or people who are already ill.

Q: Don't all chemicals cause cancer?
A: No. Most chemicals tested by scientists are not cancer-causing.

Q: Should I be concerned if a chemical causes cancer in animals?
A: Yes. Most scientists agree that a chemical that causes cancer in animals should be treated as a suspected human carcinogen unless proven otherwise.

Q: But don't they test animals using much higher levels of a chemical than people usually are exposed to?
A: Yes. That's so effects can be seen more clearly using fewer animals. But high doses alone don't cause cancer unless it's a cancer agent. In fact, a chemical that causes cancer in animals at high doses could cause cancer in humans exposed to low doses.

The following information is available from:

New Jersey Department of Health and Senior Services
Occupational Health Service
PO Box 360
Trenton, NJ 08625-0360
(609) 984-1863
(609) 984-7407 (fax)

Web address: http://www.state.nj.us/health/eoh/odisweb/

Industrial Hygiene Information
Industrial hygienists are available to answer your questions regarding the control of chemical exposures using exhaust ventilation, special work practices, good housekeeping, good hygiene practices, and personal protective equipment including respirators. In addition, they can help to interpret the results of industrial hygiene survey data.

Medical Evaluation
If you think you are becoming sick because of exposure to chemicals at your workplace, you may call personnel at the Department of Health and Senior Services, Occupational Health Service, who can help you find the information you need.

Public Presentations
Presentations and educational programs on occupational health or the Right to Know Act can be organized for labor unions, trade associations and other groups.

Right to Know Information Resources
The Right to Know Infoline (609) 984-2202 can answer questions about the identity and potential health effects of chemicals, list of educational materials in occupational health, references used to prepare the Fact Sheets, preparation of the Right to Know Survey, education and training programs, labeling requirements, and general information regarding the Right to Know Act. Violations of the law should be reported to (609) 984-2202.

>>>>>>>>>>>>>>>>> EMERGENCY INFORMATION <<<<<<<<<<<<<<<<<

Common Name: **ASPHALT**
DOT Number: **NA 1999 (Asphalt)**
UN 1999 (Tars, Liquid)
DOT Hazard Class: **3 (Flammable)**
NAERG Code: **130**
CAS Number: **8052-42-4**

Hazard rating	NJDHSS	NFPA
FLAMMABILITY	-	1, 2 or 3
REACTIVITY	-	0
FLAMMABLE OR COMBUSTIBLE DEPENDING ON FORMULATION POISONOUS GASES ARE PRODUCED IN FIRE CONTAINERS MAY EXPLODE IN FIRE		

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

FIRE HAZARDS

* *Cutback* and *Rapid Curing* **Asphalt** are FLAMMABLE.
* *Typical* or *Medium* to *Slow Curing* **Asphalt** is COMBUSTIBLE.
* Use dry chemical, CO_2, water spray, or a foaming agent.
* Water may cause frothing so do not apply solid streams of water directly on **Asphalt**.
* POISONOUS GASES ARE PRODUCED IN FIRE including *Sulfer Oxides* and *Hydrogen Sulfide*.
* CONTAINERS MAY EXPLODE IN FIRE.
* Use water spray to keep fire-exposed containers cool.
* Vapors may travel to a source of ignition and flash back.
* Vapor is heavier than air and may travel a distance to cause a fire or explosion far from the source.
* If employees are expected to fight fires, they must be trained and equipped as stated in the OSHA Fire Brigades Standard (29 CFR 1910.156).

SPILLS AND EMERGENCIES

If **Asphalt** is spilled or leaked, take the following steps:

* Evacuate personnel and secure and control entrance to the area.
* Eliminate all ignition sources.
* Absorb liquids in vermiculite, dry sand, earth, or a similar material and deposit in sealed containers.
* Ventilate and wash area after clean-up is complete.
* Keep **Asphalt** out of a confined space, such as a sewer, because of the possibility of an explosion.
* It may be necessary to contain and dispose of **Asphalt** as a HAZARDOUS WASTE. Contact your state Department of Environmental Protection (DEP) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.
* If employees are required to clean-up spills, they must be properly trained and equipped. The OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) may apply.

FOR LARGE SPILLS AND FIRES immediately call your fire department. You can request emergency information from the following:

CHEMTREC: (800) 424-9300
NJDEP HOTLINE: 1-877-WARN-DEP

HANDLING AND STORAGE (See page 3)

FIRST AID

For POISON INFORMATION call 1-800-222-1222

Eye Contact
* Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting upper and lower lids.

Skin Contact
* Quickly remove contaminated clothing. Immediately wash contaminated skin with large amounts of soap and water.

Breathing
* Remove the person from exposure.
* Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
* Transfer promptly to a medical facility.

PHYSICAL DATA

Flash Point:
Cutback Asphalt: less than 50°F (10°C)
Slow to *Rapid Curing Asphalt*: 80°F (27°C) to 225°F (107°C)
Typical Asphalt: greater than 400°F (204°C)
Water Solubility: Insoluble

OTHER COMMONLY USED NAMES

This Fact Sheet can also be used for:
Alphalt (Cutback) RTK # 3172
Chemical Name:
Asphalt
Other Names:
Road Tar; Mineral Pitch; Petroleum Pitch; Bitumen

NEW JERSEY DEPARTMENT OF HEALTH AND SENIOR SERVICES
Right to Know Program
PO Box 368, Trenton, NJ 08625-0368
(609) 984-2202

Amador County News

Study Reveals Dangers of Asphalt Plants

NEW STUDY REVEALS ASPHALT PLANT DANGERS
http://www.bredl.org/press/2007/Young-McQueenasphaltplant.htm

Today at a press conference in Spruce Pine, the Mitchell County Citizens for Clean Air and the Blue Ridge Environmental Defense League released an air pollution study of the proposed Young & McQueen asphalt plant which shows that air toxins would be deposited far from the plant site. The League's report shows dangerous levels offsite of formaldehyde, benzene and arsenic.

The study concludes that formaldehyde would exceed the state's health-based air pollution limit at 200 meters beyond the plant property line. Even worse, the study concludes that benzene would be deposited at dangerous levels 1.8 miles away and that arsenic would be deposited at dangerous levels 2.17 miles away.

Janet Marsh, the League's Executive Director, said, "The state has long maintained that their computer modeling is conservative and health protective, while we have long maintained what we now can demonstrate—that the state's approach cannot protect human health while ignoring huge amounts of asphalt plant pollution." The new study points out that the state permit fails to include the asphalt tank heater and a 10,000 gallon liquid asphalt storage tank. Marsh continued, "The state can't have it both ways: they can't claim that their hands are tied by these

exemptions and that their permit means that area residents are safe from pollution."

Louis Zeller, who authored the report, used the US Environmental Protection Agency's worst-case computer model for air pollution from the proposed asphalt plant. This EPA model calculates ground-level air poisons as well as smokestack sources. Having accessed this worst-case model only two weeks ago, the League chose the Young & McQueen plant for its first study.

Dr. James Carroll, a local resident, said, "The Mitchell County Citizens for Clean Air was formed to protect our health, our homes and our community. We know that if this plant is built, it will create bad smells, increased dust and poisonous chemicals like formaldehyde and arsenic. We want our local officials to protect us from polluting industries like this asphalt plant by keeping them away from populated areas, and we want the state to protect us by denying this air pollution permit."

Sue Dayton, who coordinates the League's NC Health Communities Project, said, "We are particularly concerned about the emissions of arsenic, benzene and formaldehyde. Both arsenic and benzene are known to cause cancer, and, in addition to being a suspected human carcinogen, formaldehyde is an acute irritant, causing coughing, wheezing, nausea, headaches and asthma."

Both organizations recognize that the state's air pollution permit does not consider plant location. The Mitchell County Board of Commissioners has the power under state statute to adopt an asphalt plant moratorium and implement a protective polluting industries ordinance.

Return to Front-page

E-mail a comment for posting here...
Remember to include the title of the article for

Addendum

May 1, 2023 Planning Commission Agenda Packet

This addendum to the May 1, 2023 Planning Commission agenda packet contains written public comments received before 3:00pm on April 28, 2023 that did not get included in the agenda packet published on April 28, 2023.

The agenda packet posted on April 28, 2023 is available for review on the Town's website at https://www.wellingtoncolorado.gov/Archive.aspx?AMID=56.

Print

Planning Commission May 1, 2023 Public Comment - Submission #3042

Date Submitted: 4/26/2023

First and Last Name*

Alyssa McGarvey

Email Address*

lissy.mcgarvey@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3948 Eucalyptus Street

Public Comment for the Planning Commission May 1, 2023 Meeting

I am opposed to the proposed asphalt plant in Wellington. The chemical and noise from the plant are enough for me to not want it here.

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Planning Commission May 1, 2023 Public Comment - Submission #3043

Date Submitted: 4/26/2023

First and Last Name*

Erin

Email Address*

erin5mcguirk@outlook.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

6992 Grassy Range Dr. Wellington, CO 80549

Public Comment for the Planning Commission May 1, 2023 Meeting

We do not want the Asphalt Plant here in Wellington so close to where my son attends school. We do not want to be exposed to such harsh chemicals. Air quality is already an issue.

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Planning Commission May 1, 2023 Public Comment - Submission #3044

Date Submitted: 4/26/2023

First and Last Name*

paul d Wakefield

Email Address*

pdwfield@yahoo.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

8912 Smoke Signal Way

Public Comment for the Planning Commission May 1, 2023 Meeting

This is in regards to the Asphalt plant meeting on may 1st. I have uploaded copies of three recent Asphalt plant accidents. Please review them for consideration to oppose the approval of the asphalt plant north of Buffalo Creek subdivision. 1. The Superior, Wi accident affected thirty six residents and eleven employees. People were evacuated up to 10 miles away. 2. The Ardmore asphalt explosion left one employee dead where they store a lot of volatile chemicals. 3. Tank explodes at asphalt plant in ADAMS COUNTY as a result of an electrical fire. Lastly, my other concern is: How is the Wellington fire department, the town of Wellington and Larimer county prepared to respond to such accidents?

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Ardmore asphalt plant.docx

Optional File Attachment

Tank explodes at asphalt plant 11.docx

Optional File Attachment

United Asphalts plant in Commerce.docx

Tank explodes at asphalt plant

ADAMS COUNTY – Southwest Adams County Fire and Rescue says an asphalt tank at Lafarge exploded Monday morning.

No one was hurt and the damage was minimal. A wooden deck on top of the tank and the motor was damaged.

Fire Chief George Ditolla says the cause of the explosion is still under investigation although it appears to be electrical in nature.

Author: ColleenLocke
Published: 8/6/2007 1:38:59 PM
Updated: 1:38 PM MDT August 6, 2007

No one was hurt and the damage was minimal. A wooden deck on top of the tank and the motor was damaged.

Fire Chief George Ditolla says the cause of the explosion is still under investigation although it appears to be electrical in nature.

COMMERCE CITY, Colo. -- Fire officials say an asphalt tank caught fire at the United Asphalts plant in Commerce City this morning.

A witness told Denver7 there was an explosion.

Gregg Vest, was working security detail at a nearby business when he heard a loud boom, ran outside and saw smoke coming from one of the tanks at the asphalt plant at 4306 E. 60th Avenue.

"I called 911," he said.

Vest, snapped several photos of the black smoke emanating from the plant site.

Vest said he saw a crew member on a fork lift trying to control the blaze with a fire extinguisher.

An Adams County Fire Department spokesperson said the fire broke out around 11:25 a.m. as the crew tried to heat the tank "to get the right consistency."

There were no injuries.

One dead after explosion at Ardmore asphalt plant

Friday, July 16th 2021, 10:50 AM CDT
Updated:
Friday, July 16th 2021, 6:38 PM CDT
By **Lexy French**

ARDMORE, Okla. (KTEN) -- One person was killed after an explosion and fire at an Ardmore asphalt plant on Friday morning.

Ardmore police Chief Kevin Norris said they began receiving calls around 10 a.m. concerning the blast at Asphalt Express Enterprises at 415 North Plainview Road on the city's west side, not far from the Michelin tire plant.

"Firefighters arrived on the scene and found heavy flames and smoke coming from the back of the compound ... where they stored a lot of their volatile chemicals," said Ardmore Fire Department spokesperson Jason Woydziak.

Thick black smoke rose from the scene and could be seen for miles around.

Norris confirmed that one person died in the blast; no identity was released. The chief said no one else was injured.

"We don't know what the cause of the fire is," Chief Norris said. "Right now that is under investigation, and then OSHA will come in and do an investigation."

He said it may be several months before the origin of the blast can be identified.

Concerned family members of employees were asked to meet officers stationed nearby at the car wash at Broadway and Plainview Road for help in contacting loved ones.

The fire was reported under control as of 12:45 p.m.

Phone calls to the company by the AP rang unanswered on Friday and neither the fire department nor emergency services immediately replied to messages seeking comment.

According to its website, Asphalt Express provides transportation, storage and sales of bulk liquids such as asphalt and various types of oil at the Ardmore plant.

Retrieved April 26, 2023, from 10 news Okla. **By Lexy French**

https://www.kten.com/story/44324469/fire-breaks-out-at-ardmore-asphalt-facility

Print

Planning Commission May 1, 2023 Public Comment - Submission #3045

Date Submitted: 4/26/2023

First and Last Name*

Joe Hayes

Email Address*

diverhayes@yahoo.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3328 Wild West lane wellington 80549

Public Comment for the Planning Commission May 1, 2023 Meeting

We are trying to work together as a city to fight hidden things, power and greed. We feel that the city employees are trying to sneak something into the town without letting us know about it. Luckily one of our neighbors found out about it, and notified us. We encourage more people to get involved and are asking that the truth be known that they are Toxic chemicals coming from the asphalt plant. This is not what the Connell companies representative presented to us and tried to say â€œ only steam comes out no chemicals, no more than a gas stationâ€. There is Also evidence that Connell has been out of compliance in the past & was fined $7k via a Settlement Agreement with the CDC. We didnâ€™t move here to be pushed out by greedy people who want to sell their families land that used to be a farm for millions of dollars to be an asphalt plant instead and right next to where our children go to play.

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Planning Commission May 1, 2023 Public Comment - Submission #3046

Date Submitted: 4/26/2023

First and Last Name*

Larry M. Rice

Email Address*

larryriceoc1@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

9073 Flaming Arrow Avenue

Public Comment for the Planning Commission May 1, 2023 Meeting

Dear Mr. Bird, Simply and to the point, I am a Wellington resident who resides and owns a home in Buffalo Creek subdivision, located to the west of the proposed Hot Asphalt Plant that is being considered for construction behind Wellington Community Park. I want to express in the strongest means possible that I oppose any such development in our community! Why? In plain terms that anyone can understand: IT STINKS! The smell, full of toxic gases and emissions. The eyesore (really, does anyone want to look out and see this ugly construction site?). The increase in heavy truck traffic within our town (as if we need any MORE traffic). The reduction in property values (who would like to have their home situated downwind of the asphalt fumes?). Noise pollution (yes, there are residents of Wellington who appreciate its small-town tranquility). And why is this hot asphalt plan even being considered to be located in Wellington? Hmmmâ€¦.letâ€™s think about that for a second. Money? Greed? Short-sighted, ill-informed thinking? All of the above? I think â€œall of the above.â€ I implore you, Mr. Bird, and the rest of the town trustees, including the mayor, to stop this ill-conceived idea from going any further. Do NOT allow this asphalt plan to be situated anywhere within Wellington. Not only for us current residents, but for those who might want to call Wellington their home in the future. Itâ€™s just a plain bad idea that should have never have been considered in the first place. Itâ€™s time to stop it now. Wellington does not need it. We do not need it! Thanks you for your time and consideration. Please do the right thing. Sincerely, Larry Rice Buffalo Creek Estates Sent from my iPhone

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Planning Commission May 1, 2023 Public Comment - Submission #3047

Date Submitted: 4/26/2023

First and Last Name*

Robby Oxford

Email Address*

jessicaoxford10@yahoo.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

6902 Grassy Range Dr.

Public Comment for the Planning Commission May 1, 2023 Meeting

To whom it may concern, We are all about growth and prosperity for our town, however allowing a large, toxic, company such as an asphalt plant to move in brings a lot of negative effects to our community. Some of these negatives include unwanted traffic, as well as all the health risks that it would bring, including breathing in toxic chemicals and potential water contamination in already questionable water, etc... The smell is just another negative aspect to add to this list of reasons why a plant does not belong here. I don't usually speak up, but this is a concern in which myself and many others do not agree with. We should not be allowing this to happen to our town. Thank you for your time and consideration of our opinion.

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Planning Commission May 1, 2023 Public Comment - Submission #3048

Date Submitted: 4/26/2023

First and Last Name*

Lorene Simpson

Email Address*

Lrsimpson25@gmail

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

6915 Grassy Range Dr

Public Comment for the Planning Commission May 1, 2023 Meeting

As a new homeowner in the state of Colorado and Wellington, I would like to express my concern over the Cornell asphalt plan and its toxic chemicals. It cannot be located at the proposed location due to the set back requirements of 2640 feet from any residential district, school, medical facility or religious area. DO NOT APPROVE THIS PLAN as the plant produces and curates toxic chemicals. Thank you for taking the property owners concern. Lorene Simpson

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Planning Commission May 1, 2023 Public Comment - Submission #3049

Date Submitted: 4/26/2023

First and Last Name*

Nathan Schmidt

Email Address*

nds.schmidt@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3233 Grizzly Way Wellington Co

Public Comment for the Planning Commission May 1, 2023 Meeting

I have lived in Wellington for six years, and we are wanting to start a family soon, putting an asphalt plant near our neighborhood (Buffalo Creek) would cause health issues for us, as well as drastically lower the value of our house. If we want this city to continue to grow, we cannot put a toxic and loud commercial enterprise so close to our neighborhoods, schools, and playgrounds. Please use some common sense and do not allow the asphalt plant to be built in such close proximity to the city. Think 10-20 years from now and what would be in the best interest of the city and for the people that call this place home.

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Planning Commission May 1, 2023 Public Comment - Submission #3050

Date Submitted: 4/26/2023

First and Last Name*

Jennieann West

Email Address*

jennieann9378@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3294 Wild West Ln. Wellington, CO

Public Comment for the Planning Commission May 1, 2023 Meeting

OPPOSED to proposed asphalt plant. Please do not ruin our beautiful community of Buffalo Creek and the community park with a plant this close to our houses and playground for our children.

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Print

Planning Commission May 1, 2023 Public Comment - Submission #3051

Date Submitted: 4/26/2023

First and Last Name*

Chad Mickschl

Email Address*

chad.guides@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

6915 Grassy Range Dr

Public Comment for the Planning Commission May 1, 2023 Meeting

I am against the decision to approve the Asphalt Plat from being built at the current location within Wellington town limits. 1.Â The town of Wellington was re-zoned in 2022 with the land that Connell Resources Â wants to develop zoned as Heavy Industrial.Â As Wellington was re-zoned, Heavy Industrial land came with setback requirements of 1000ft linear and 45ft height restrictions.Â The claim by Connell Resources that the land is not suitable for Heavy Industrial use with current setbacks should have led town planners to decide that this property should be re-zoned to Light Industrial to limit the setback needs.Â The need for a greater setback of 2640ft is actually more appropriate given the language in the Land Use Code Section 4.03.21 B curating toxic chemicals.Â Especially since it is adjacent to a residential neighborhood, a park and school.Â Additionally, the asphalt plant will not only impact the nearby neighborhoods, but our entire small town as the air quality will be impacted. 2.Â I have issues with the lack of informed decision making to grant the setback variance as well.Â It does not appear the town of Wellington has done any environmental (air quality, water quality and quantity, soil erosion), traffic impact, view shed impacts, noise, environmental justice for underserved communities, or economic impacts analyses that this will have on the health and safety of Wellington residents and wildlife such as migrating birds.Â The town must clearly understand and communicate to the public, the risks and/or benefits associated with the Asphalt Plant. This has yet to have been completed. Â Based on other locations where Asphalt Plants are located near neighborhoods, property values decreased 56% according to Blue Ridge Environmental Defense League (BREDL). BREDL also found that 45% of residents living within a half mile of a new asphalt plant reported a deterioration of their health, which began after the plant opened. Known toxins also come with an Asphalt Plant such as odor, formaldehyde, hexane, phenol, polycyclic organic matter, and toluene. The CDCâ€™s National Institute for Occupational Safety & Health states, â€œKnown carcinogens have been found in asphalt fumes generated at work sites.â€* Exposure to these air toxins may cause cancer, central nervous system problems, liver damage, respiratory problems, and skin irritation (EPA Asphalt Plant Emission Assessment Report 2000). The town of Wellington has a number of human health and safety issues to deal with currently, they do not need to add another issue. The responsibility of the Town of Wellington and its elected representatives is the health, safety, and well being of its residents.Â If this asphalt plant is approved, the town is falling far short of this responsibility. Â 3.Â The economic impact on the residents and the town will be noticeable.Â Residents will lose property value and will likely look to move out of town.Â With issues Wellington is already trying to deal with (train crossings, water quality, water price, concentrated feed lots, close proximity to the highway), this will likely be the final thing to tilt residents to leave.Â Businesses will also likely leave and close as their consumers will leave town. Â 4.Â There are certainly better locations for the Asphalt Plant to be located.Â Connell Resources likes to mention that homes have been built in Fort Collins next to their plants, however that is a homeowners decision.Â With this approval, homeowners were not able to make a decision to live next to an Asphalt Plant, the town of Wellington is poorly making that decision for them.Â As elected officials, you must stand up for your constituents. There are large swaths of county land in Larmier and Weld where this could be located away from residential areas.Â Connell Resources claims that the counties don't want the Asphalt Plants, but there is a process to get those approved there.Â There are also areas within Weld County where these plants are welcomed. Connell Resources also claimed that they could open in Carr (where they get their aggregate) but its too cold and windy for transporting?Â There are common mitigations such as lining and insulating trucks for transport.Â Asphalt plants exist in far colder places than the Front Range of Colorado. It's time for the town of Wellington to STOP being Fort Collins' dumping ground. Thank you for taking comments and I trust the right decision will be made regarding the health, safety, and viability of residents and the town of Wellington. Chad Mickschl

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Planning Commission May 1, 2023 Public Comment - Submission #3054

Date Submitted: 4/27/2023

First and Last Name*

Jessica R Howe

Email Address*

colacinoj@yahoo.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

8802 Raging Bull Lane

Public Comment for the Planning Commission May 1, 2023 Meeting

I have COPD and a history of breast cancer. Having an asphalt company in town will exacerbate by COPD and I wonâ€™t be able to live here. I cannot afford to move. We are highly against this plant being built here due to health concerns. Thank you

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Planning Commission May 1, 2023 Public Comment - Submission #3055

Date Submitted: 4/27/2023

First and Last Name*

Aaron Hackett

Email Address*

aaron.e.hackett@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3337 Grizzly Way

Public Comment for the Planning Commission May 1, 2023 Meeting

Town of Wellington Planning Commission, I am extremely opposed to the proposed Asphalt Plant. I have a home that would be very close to this plant and I am very worried about chemical exposure, associated health impacts, noise pollution, and loss of property value. My wife is pregnant and as a parent-to-be I am appalled at the idea of raising my child near such a toxic industrial facility. The idea of putting an asphalt plant right in the center of a residential area when there are literally thousands of open acres near enough to be of no economic detriment is quite frankly one of the most ludicrous proposals I have ever heard. There is absolutely no reason to expose large numbers of children, mothers, and elderly individuals to the toxic fumes an asphalt plant would produce. The town, county, and state recently spent an extremely large sum of money building a new school that would be in the near vicinity to this proposed plant and therefore expose all the students, staff, and parents to these fumes. A simple solution to my and other's concerns would be to relocate the proposed plant to a significantly less populated area north or east of town. Aaron Hackett

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Planning Commission May 1, 2023 Public Comment - Submission #3056

Date Submitted: 4/27/2023

First and Last Name*

Trevor Vilkaitis

Email Address*

tvilkaitis@hotmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3282 Grizzly Way

Public Comment for the Planning Commission May 1, 2023 Meeting

To whom it may concern, In regards to the proposed asphalt plant, I strongly oppose the decision to allow the plant to be near Wellington. As a resident and homeowner in the Buffalo creek subdivision this will directly effect me and my family. Not only will my home value be compromised, but the pollution and health effects on me, my children and my animals is unacceptable. Also, Wellington is already on an infrastructure system that has been spread thin for years. For years now we have been on water restrictions, constant power outages and the traffic at peak times such as school start and finish times is already an issue. This area is not capable of supporting what is already here plus any industrial plant of any kind. Please take these concerns into consideration when discussing this asphalt plant near Wellington. Thank you.

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Planning Commission May 1, 2023 Public Comment - Submission #3057

Date Submitted: 4/27/2023

First and Last Name*

Ben Leistikow

Email Address*

ben.leistikow@me.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

8605 Citation Ct, Wellington

Public Comment for the Planning Commission May 1, 2023 Meeting

Dear Planning Board, The intent of this letter is that the Connell site plan doesnâ€™t meet the stringent requirements that apply to toxic chemicals and so cannot be located at the proposed location nor does a continuance for air modeling help with this. Land use code 4.03.21,B, regarding the production and curating of toxic chemicals requires these sites to be located at least 2,640 feet from any residential district, religious land use, medical care facility, or school. Batch asphalt plants produce toxic chemicals in the forms of HAPs and PAHs. Colorado Department of Public Health & Environment refer to these chemicals as toxic in their documentation. Additionally Lea Schneider from Larimer County Department of Public Health & Environment was quoted in the Coloradoan and at the previous meeting referring to these chemicals as toxic. John Warren also referenced these chemicals as toxic at major source levels. The code does not care about levels it only refers to if there are toxic chemicals. This batch asphalt plant produces and curates toxic chemicals. The planning board should not approve this plan due to the producing and curating setback of 2,640 feet. There is no variance for this setback. Thanks for your consideration, Ben Leistikow

Optional File Attachment

Proposed Wellington asphalt plant approval delayed.pdf

Optional File Attachment

This fact sheet answers.pdf

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PAH FAQ.pdf

Polycyclic Aromatic Hydrocarbons (PAHs) - ToxFAQs™

This fact sheet answers the most frequently asked health questions (FAQs) about polycyclic aromatic hydrocarbons (PAHs). For more information, call the CDC Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to polycyclic aromatic hydrocarbons usually occurs by breathing air contaminated by wild fires or coal tar, or by eating foods that have been grilled. PAHs have been found in at least 600 of the 1,430 National Priorities List (NPL) sites identified by the Environmental Protection Agency (EPA).

What are polycyclic aromatic hydrocarbons?

(Pronounced pŏl′ī-sī′klĭk ăr′ə-măt′ĭk hī′drə-kar′bənz)

Polycyclic aromatic hydrocarbons (PAHs) are a group of over 100 different chemicals that are formed during the incomplete burning of coal, oil and gas, garbage, or other organic substances like tobacco or charbroiled meat. PAHs are usually found as a mixture containing two or more of these compounds, such as soot.

Some PAHs are manufactured. These pure PAHs usually exist as colorless, white, or pale yellow-green solids. PAHs are found in coal tar, crude oil, creosote, and roofing tar, but a few are used in medicines or to make dyes, plastics, and pesticides.

What happens to PAHs when they enter the environment?

- PAHs enter the air mostly as releases from volcanoes, forest fires, burning coal, and automobile exhaust.
- PAHs can occur in air attached to dust particles.
- Some PAH particles can readily evaporate into the air from soil or surface waters.
- PAHs can break down by reacting with sunlight and other chemicals in the air, over a period of days to weeks.
- PAHs enter water through discharges from industrial and wastewater treatment plants.
- Most PAHs do not dissolve easily in water. They stick to solid particles and settle to the bottoms of lakes or rivers.
- Microorganisms can break down PAHs in soil or water after a period of weeks to months.
- In soils, PAHs are most likely to stick tightly to particles; certain PAHs move through soil to contaminate underground water.
- PAH contents of plants and animals may be much higher than PAH contents of soil or water in which they live.

How might I be exposed to PAHs?

- Breathing air containing PAHs in the workplace of coking, coal-tar, and asphalt production plants; smokehouses; and municipal trash incineration facilities.
- Breathing air containing PAHs from cigarette smoke, wood smoke, vehicle exhausts, asphalt roads, or agricultural burn smoke.
- Coming in contact with air, water, or soil near hazardous waste sites.
- Eating grilled or charred meats; contaminated cereals, flour, bread, vegetables, fruits, meats; and processed or pickled foods.
- Drinking contaminated water or cow's milk.
- Nursing infants of mothers living near hazardous waste sites may be exposed to PAHs through their mother's milk.

Agency for Toxic Substances and Disease Registry
Division of Toxicology and Human Health Sciences
ATSDR
CS265956-A

Polycyclic Aromatic Hydrocarbons

How can PAHs affect my health?

Mice that were fed high levels of one PAH during pregnancy had difficulty reproducing and so did their offspring. These offspring also had higher rates of birth defects and lower body weights. It is not known whether these effects occur in people.

Animal studies have also shown that PAHs can cause harmful effects on the skin, body fluids, and ability to fight disease after both short- and long-term exposure. But these effects have not been seen in people.

How likely are PAHs to cause cancer?

The Department of Health and Human Services (DHHS) has determined that some PAHs may reasonably be expected to be carcinogens.

Some people who have breathed or touched mixtures of PAHs and other chemicals for long periods of time have developed cancer. Some PAHs have caused cancer in laboratory animals when they breathed air containing them (lung cancer), ingested them in food (stomach cancer), or had them applied to their skin (skin cancer).

Is there a medical test to show whether I've been exposed to PAHs?

In the body, PAHs are changed into chemicals that can attach to substances within the body. There are special tests that can detect PAHs attached to these substances in body tissues or blood. However, these tests cannot tell whether any health effects will occur or find out the extent or source of your exposure to the PAHs. The tests aren't usually available in your doctor's office because special equipment is needed to conduct them.

Has the federal government made recommendations to protect human health?

The Occupational Safety and Health Administration (OSHA) has set a limit of 0.2 milligrams of PAHs per cubic meter of air (0.2 mg/m^3). The OSHA Permissible Exposure Limit (PEL) for mineral oil mist that contains PAHs is 5 mg/m^3 averaged over an 8-hour exposure period.

The National Institute for Occupational Safety and Health (NIOSH) recommends that the average workplace air levels for coal tar products not exceed 0.1 mg/m^3 for a 10-hour workday, within a 40-hour workweek. There are other limits for workplace exposure for things that contain PAHs, such as coal, coal tar, and mineral oil.

Glossary

Carcinogen: A substance that can cause cancer.

Ingest: Take food or drink into your body.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for polycyclic aromatic hydrocarbons. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information?

For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Human Health Sciences, 1600 Clifton Road NE, Mailstop F-57, Atlanta, GA 30329-4027.

Phone: 1-800-232-4636.

ToxFAQs™ Internet address via WWW is http://www.atsdr.cdc.gov/toxfaqs/index.asp.

ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

Coloradoan.

BUSINESS

Approval of asphalt plant in Wellington put on hold for more air quality data

Pat Ferrier
Fort Collins Coloradoan

Published 11:03 a.m. MT March 7, 2023 | **Updated 12:33 p.m. MT March 7, 2023**

Wellington's planning commission delayed a decision about a new asphalt plant in north Wellington to get more information on what level of toxins, if any, are dispersed into the air.

During a four-hour hearing, residents living near the proposed Connell asphalt plant at 3548 E. County Road 66 voiced concerns about air pollution, noise and truck traffic the plant may generate. The plant would mix asphalt for use in roads and highways.

The site is in an industrial zone on a lot south of County Road 66 between North County Road 7 and North County Road 9, adjacent to Buffalo Creek subdivision and the undeveloped Sundance subdivision.

Connell Resources' current plant, which is nearing the end of its lifespan, is just south of the Harmony Road and Interstate 25 intersection in Timnath. Connell plans to close the plant and redevelop it as a commercial and residential project, including a potential Topgolf entertainment center.

The planning commission is the last approval Connell needs before it can apply for a building permit. The Wellington Board of Adjustments approved two variances for the plant in October, including allowing a 70-foot silo and an 800-foot buffer from residential areas.

Wellington's land use code limits heights in the industrial zone to 45 feet and requires a 1,000-foot buffer from neighborhoods.

Flooded with last-minute emails and in-person comments from neighbors questioning the levels of benzene, formaldehyde and other toxins that could be emitted from the plant, commissioners stepped on the brakes, asking town planners to find additional resources and data to help them sort through conflicting information.

"Are there going to be toxic chemicals emitted at this plant?" Commissioner Lowrey Moyer asked. "Is the 800-foot buffer enough? Are our kids going to be OK? As a resident with four kids, I want to know."

Lea Schneider, an environmental health planner with Larimer County, said the plant does produce air toxics — pollutants that are known or suspected to cause cancer or other serious health effects — but the concentrations depend on production levels and equipment.

An analysis of potential air toxics at a larger asphalt plant near the Poudre Trail in Fort Collins had emissions that were within acceptable levels even for the closest neighbor and at the trailhead, she said. "But each asphalt plant is individual. Air dispersion modeling will be a huge asset to evaluate what needs to be done to protect the community if this is approved."

Wellington's land use code and the state require the plant to be tested regularly for air pollutants.

John Warren, president of Connell Resources, said that in 2002 the Environmental Protection Agency removed asphalt plants from its list of major sources of hazardous air pollution under the Clean Air Act and concluded asphalt plants do not have the potential to emit hazardous air pollution approaching major source levels.

Connell will comply with all emission regulations, but emissions coming from the plant are similar to emissions from everyday sources, he said. "It's a misnomer that's what coming out of the stack is asphalt fumes," he said. "It's steam coming off the natural gas used to

heat aggregates. We use a lot of natural gas, but (the emissions) are no different from what's coming off the furnace at your house."

A report from Sanborn, Head & Associates of Denver reported in an emissions comparison report that the benzene emissions from the combustion of fuel are equivalent to a single gas station or single fast-food restaurant in a year. In a letter sent to commissioners, resident Katie Meyer urged the board to require a 2,640-foot setback, which the Wellington land use code recommends for heavy industrial and manufacturing uses.

"The town has due diligence to find the correct unbiased research and data to make sure the land use code is properly followed," she wrote.

Jason Waldo, whose family has owned the property next door for 45 years, said Connell has addressed his family's concerns. "As a family, we feel this is a good opportunity to have a quality ... company as neighbors."

The property has been zoned industrial for years, and given that the asphalt plant will operate seasonally, from about April to November, Waldo said his family supports the project.

About the proposed Connell Resources asphalt plant in Wellington

Acres: 35
Estimated number of truck trips during production season: 50 to 60 per day
Operating hours/months: 7 a.m. to 5 or 6 p.m., April through November
Employees: 35

Polycyclic Aromatic Hydrocarbons (PAHs) - ToxFAQs™

This fact sheet answers the most frequently asked health questions (FAQs) about polycyclic aromatic hydrocarbons (PAHs). For more information, call the CDC Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to polycyclic aromatic hydrocarbons usually occurs by breathing air contaminated by wild fires or coal tar, or by eating foods that have been grilled. PAHs have been found in at least 600 of the 1,430 National Priorities List (NPL) sites identified by the Environmental Protection Agency (EPA).

What are polycyclic aromatic hydrocarbons?

(Pronounced pŏl′ī-sī′klĭk ăr′ə-măt′ĭk hī′drə-kar′bənz)

Polycyclic aromatic hydrocarbons (PAHs) are a group of over 100 different chemicals that are formed during the incomplete burning of coal, oil and gas, garbage, or other organic substances like tobacco or charbroiled meat. PAHs are usually found as a mixture containing two or more of these compounds, such as soot.

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Print

Planning Commission May 1, 2023 Public Comment - Submission #3058

Date Submitted: 4/27/2023

First and Last Name*

Ayla Leistikow

Email Address*

Ayla.leistikow@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

8605 Citation Ct

Public Comment for the Planning Commission May 1, 2023 Meeting

Dear Planning Board, The intent of this letter is to bring attention to our 2,640â€™ setback for producing and curating toxic chemicals. Itâ€™s frustrating to hear the EPA say they donâ€™t have the resources or money to deal with toxic chemicals coming from asphalt plant emissions, so they leave it up to each state. Colorado has been severely neglecting families by not putting money into research for this industry. In the documents Iâ€™ve submitted, you can see North Carolina is very upfront about these toxic chemicals. New Jersey has information that poisonous gases are produced in a fire, containers may explode. A quick google search shows asphalt plant explosions happen more often than they should. Asking for a continuance for the air dispersion study is useless. The air dispersion study is finding thresholds for these toxic chemicals, Connell wouldnâ€™t be able to do the study without producing toxic chemicals. The land use code does not reference thresholds in the setback, the plant has to simply produce toxic chemicals. I am asking the board to deny the continuance and apply the 2,640ft setback for producing and curating toxic chemicals. I have also included emails from the Weld County planner, and Larimer County planner stating Connellâ€™s options for finding a safer location away from families. Thanks, Ayla Leistikow

Optional File Attachment

County planners.pdf

Optional File Attachment

Poisonous gases.pdf

Optional File Attachment

Environmental Quality.pdf

>>>>>>>>>>>>>>>>> EMERGENCY INFORMATION <<<<<<<<<<<<<<<<<

Common Name: **ASPHALT**
DOT Number: **NA 1999 (Asphalt)**
UN 1999 (Tars, Liquid)
DOT Hazard Class: **3 (Flammable)**
NAERG Code: **130**
CAS Number: **8052-42-4**

Hazard rating	NJDHSS	NFPA
FLAMMABILITY	-	1, 2 or 3
REACTIVITY	-	0
FLAMMABLE OR COMBUSTIBLE DEPENDING ON FORMULATION POISONOUS GASES ARE PRODUCED IN FIRE CONTAINERS MAY EXPLODE IN FIRE		

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

FIRE HAZARDS

- *Cutback* and *Rapid Curing* **Asphalt** are FLAMMABLE.
- *Typical* or *Medium* to *Slow Curing* **Asphalt** is COMBUSTIBLE.
- Use dry chemical, CO_2, water spray, or a foaming agent.
- Water may cause frothing so do not apply solid streams of water directly on **Asphalt**.
- POISONOUS GASES ARE PRODUCED IN FIRE including *Sulfer Oxides* and *Hydrogen Sulfide*.
- CONTAINERS MAY EXPLODE IN FIRE.
- Use water spray to keep fire-exposed containers cool.
- Vapors may travel to a source of ignition and flash back.
- Vapor is heavier than air and may travel a distance to cause a fire or explosion far from the source.
- If employees are expected to fight fires, they must be trained and equipped as stated in the OSHA Fire Brigades Standard (29 CFR 1910.156).

SPILLS AND EMERGENCIES

If **Asphalt** is spilled or leaked, take the following steps:

- Evacuate personnel and secure and control entrance to the area.
- Eliminate all ignition sources.
- Absorb liquids in vermiculite, dry sand, earth, or a similar material and deposit in sealed containers.
- Ventilate and wash area after clean-up is complete.
- Keep **Asphalt** out of a confined space, such as a sewer, because of the possibility of an explosion.
- It may be necessary to contain and dispose of **Asphalt** as a HAZARDOUS WASTE. Contact your state Department of Environmental Protection (DEP) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.
- If employees are required to clean-up spills, they must be properly trained and equipped. The OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) may apply.

FOR LARGE SPILLS AND FIRES immediately call your fire department. You can request emergency information from the following:

CHEMTREC: (800) 424-9300
NJDEP HOTLINE: 1-877-WARN-DEP

HANDLING AND STORAGE (See page 3)

FIRST AID

For POISON INFORMATION call 1-800-222-1222

Eye Contact
- Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting upper and lower lids.

Skin Contact
- Quickly remove contaminated clothing. Immediately wash contaminated skin with large amounts of soap and water.

Breathing
- Remove the person from exposure.
- Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
- Transfer promptly to a medical facility.

PHYSICAL DATA

Flash Point:
Cutback Asphalt: less than 50°F (10°C)
Slow to *Rapid Curing Asphalt*: 80°F (27°C) to 225°F (107°C)
Typical Asphalt: greater than 400°F (204°C)
Water Solubility: Insoluble

OTHER COMMONLY USED NAMES

This Fact Sheet can also be used for:
Alphalt (Cutback) RTK # 3172
Chemical Name:
Asphalt
Other Names:
Road Tar; Mineral Pitch; Petroleum Pitch; Bitumen

NEW JERSEY DEPARTMENT OF HEALTH AND SENIOR SERVICES
Right to Know Program
PO Box 368, Trenton, NJ 08625-0368
(609) 984-2202

NORTH CAROLINA
Environmental Quality

Asphalt Plants

Hot mix asphalt is a proportioned mixture of dried aggregate and liquid asphaltic concrete cement used as roadway paving material. Aggregate is a graded mixture of crushed stone, sand and recycled asphalt paving. Liquid asphaltic concrete cement is a mixture of hundreds of organic compounds that remain after crude oil refining. There more than 150 asphalt plants in North Carolina with DAQ Air Quality Permits.

How does an asphalt plant work?

There are two types of asphalt plants, batch mix and drum mix (/air-quality/drum-mix/download?attachment). In a drum mix facility, undried aggregate and heated asphalt are placed directly into the rotary drum dryer, where they are mixed. The asphalt produced can be stored on site in heated storage silos or loaded directly into trucks and transported off-site. In a batch mix (/air-quality/batch-mix/download?attachment) facility, the aggregate is dried separately in a rotary drum dryer and stored in heated bins. Heated aggregate measured per batch in a weigh box and a proportional amount of heated asphalt are mixed in a pugmill and either stored on-

site in heated storage silos or loaded directly into trucks for transport off-site.

How are asphalt plants regulated by DAQ?

- All asphalt plants must obtain an air quality permit.
- Asphalt plants are subject to state regulations for criteria pollutant emissions of particulate matter, carbon monoxide, sulfur dioxide, nitrogen dioxide and volatile organic compounds. Most asphalt plant air quality permits include production limits to avoid applicability of Prevention of Significant Deterioration (PSD) rules (/air-quality/d0530/download?attachment).
- A DAQ currently active asphalt plant permit reflects what specific equipment can be operated at a specific location. As asphalt plants consist of portable equipment modules, an asphalt plant may be moved and operated at numerous permitted locations depending on paving contracts.
- In November 1999 DAQ issued an asphalt plant permitting policy (/water-quality/chemistry-lab/certification/memos/991118/download), which requires new and modified asphalt plant applications to quantify all 97 Toxic Air Pollutants (TAPs) emitted to determine the need for air toxics permit limits using EPA AP-42 emissions.
  - If the emissions of a specific TAP are below their regulatory threshold in NC Regulation 15A NCAC 2Q.0711 (/air-quality/q0711/download?attachment), an air quality permit is not required.
  - If the TAP emissions exceed its threshold, a dispersion modeling demonstration must be performed. The results of this model must show that the emissions are below the acceptable ambient level (AAL) listed in NC Regulation 15A NCAC 2D.1104 (/air-quality/d1104/download?attachment), and air quality permit emission limit, for the respective TAP not to exceed the AAL, is required.
- Air pollutant emissions from asphalt plants can be calculated using the DAQ

Asphalt Plant Spreadsheet (.xls) (/documents/files/hma/download).

- In August 13, 2013 DAQ issued the Emission Testing Frequency Policy (/air-quality/hot-mix-asphalt-plant-performance-testing/download?attachment), which establishes the baseline testing frequency of 120 months, unless other factors require more frequent testing schedule.

Why are there are so many asphalt plants?

North Carolina has the second largest state-maintained highway system in the United States. The state has about 80,000[1] miles of roads, with more under construction every year. In addition, roads generally need resurfacing every 12 to 15 years, so about 4,400 miles of roads are repaved each year. Paving is difficult at lower temperatures, and highway contractors must reject asphalt that is not hot enough (at least 250oF). That means asphalt plants must be located fairly close to road construction sites.

What TAPs do asphalt plants emit?

Toxic air pollutants compounds emitted from asphalt plants include polycyclic aromatic compounds, volatile organic compounds, metals and hydrogen sulfide.

Toxic air pollutants (TAPs) emitted from asphalt plant[2]

Toxic Air Pollutant	Emitted from drum dryer and hot oil heater	Emitted from material handling and storage
Acetaldehyde	yes	no
Acrolein	yes	no

Formaldehyde	yes	yes
Phenol	no	yes
Styrene	no	yes
Trichlorofluoromethane (CFC 111)	no	yes
Methyl chloroform	yes	yes
Methyl ethyl ketone	yes	yes
Toluene	yes	yes
Xylene	yes	yes
Methylene chloride	no	yes
Soluble Chromate Compounds, as Chromium (VI)	yes	no
n-Hexane	yes	yes
Manganese & compounds	yes	no
Mercury	yes	no

Nickel & Compounds	yes	no
Carbon disulfide	no	yes
Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	yes	no
Arsenic & Compounds	yes	no
Benzene	yes	yes
Benzo(a)pyrene	yes	yes
Hydrogen Sulfide	yes	yes
Beryllium	yes	no
Cadmium	yes	no
Hexachlorodibenzo-p-dioxin, 1,2,3,6,7,8	yes	no
Hydrogen Chloride (hydrochloric acid)	yes	no
Perchloroethylene (tetrachloroethylene)	no	yes
Trichloroethylene	no	yes

From: Tom Parko Jr. tparko@weldgov.com
Subject: RE: Zoning county land
Date: Jan 26, 2023 at 8:55:27 AM
To: Ayla Leistikow ayla.leistikow@gmail.com

Good morning, Ayla.

Yes, the County's I-3 industrial zone district can accommodate asphalt and concrete batch plants with a Site Plan Review (SPR). Please see attached. See Section 23-3-330.C.4.

Sincerely,
Tom Parko
Director, Dept. of Planning Services
Weld County

-----Original Message-----
From: Ayla Leistikow <ayla.leistikow@gmail.com>
Sent: Wednesday, January 25, 2023 3:39 PM
To: Tom Parko Jr. <tparko@weldgov.com>
Subject: Zoning county land

Caution: This email originated from outside of Weld County Government. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hello,

I have a question regarding zoning. Can an asphalt company buy county land and get it rezoned to heavy industrial for a batch asphalt plant?

Thanks,
Ayla

From: Lea Schneider schneils@co.larimer.co.us
Subject: Re: Wellington asphalt plant
Date: Jan 11, 2023 at 9:34:04 AM
To: Ayla Leistikow ayla.leistikow@gmail.com

Good morning Ayla!

I did not see the connell made it to planning commission on Mon...is that true?

1. Connell could purchase land in unincorporated Larimer County and apply to rezone the land. This would require the company to submit a sketch plan application with Larimer County, hold a public meeting, then apply for a public hearing rezoning application. They would also have to complete a Special Review process either combined or separate applications. This process could take over a year or more.

Print

Planning Commission May 1, 2023 Public Comment - Submission #3059

Date Submitted: 4/27/2023

First and Last Name*

Randi Vilkaitis

Email Address*

Randinicole502@hotmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3282 grizzly way

Public Comment for the Planning Commission May 1, 2023 Meeting

To whom it may concern, In regards to the proposed asphalt plant, I strongly oppose the decision to allow the plant to be near Wellington. As a resident and homeowner in the Buffalo creek subdivision this will directly effect me and my family. Not only will my home value be compromised, but the pollution and health effects on me, my children and my animals is unacceptable. Also, Wellington is already on an infrastructure system that has been spread thin for years. For years now we have been on water restrictions, constant power outages and the traffic at peak times such as school start and finish times is already an issue. This area is not capable of supporting what is already here plus any industrial plant of any kind. Please take these concerns into consideration when discussing this asphalt plant near Wellington. Thank you.

Optional File Attachment

Choose File | No file selected

Optional File Attachment

Choose File | No file selected

Optional File Attachment

Choose File | No file selected

Print

Planning Commission May 1, 2023 Public Comment - Submission #3061

Date Submitted: 4/28/2023

First and Last Name*

David Goodness

Email Address*

dgoodness@comcast.net

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

7090 Grassy Range Dr

Public Comment for the Planning Commission May 1, 2023 Meeting

To Whom it May Concern: I recently learned of the proposed development of an asphalt plant near the Wellington Community Park. I am very disappointed that this is being considered. Not only do I live in Wellington, but I take my granddaughter to the Community Park to enjoy the playgrounds and water park. There are no benefits to this plan as everyone knows an asphalt plant is a heavy industry that produces toxic chemicals, which will affect the health of people and the environment. There must be a safe distance between this project and citizens of Wellington. I hope I can be assured that the leaders of this community have the health and safety interests of its citizens in mind. Thank you

Optional File Attachment

Choose File No file selected

Optional File Attachment

Choose File No file selected

Optional File Attachment

Choose File No file selected

Print

Planning Commission May 1, 2023 Public Comment - Submission #3062

Date Submitted: 4/28/2023

First and Last Name*

Dr. Fred Condos

Email Address*

fjc448@gmail ,com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

8994 Raging Bull Lane

Public Comment for the Planning Commission May 1, 2023 Meeting

My name is Dr. Fred Condos. I am retired and reside at the above stated address in the Buffalo Creek neighborhood. Our home is almost 3/4 of a mile from the proposed Connell Resources Hot Batch Asphalt Plant. I oppose the approval of Connell's application! The Town has not provided sufficient indications to the citizens of Wellington that answer the following: How will the construction of an Asphalt Plant within the city limits of Wellington benefit its' residents? Will it benefit us to be exposed to known health hazards from the proposed Asphalt Plant emissions particularly Nitrogen Oxides? See attachment from the U.S. Center for Disease Control Medical Management Guidelines for Nitrogen Oxides describing the health hazards posed even by the acceptable emission levels of Nitrogen Oxides. On June 20, 2021, The Colorado Department of Health & Environment issued an Out of Compliance status for excessive Carbon Monoxide and Nitrogen Oxides emission rates from the asphalt baghouse to the Connell Asphalt Plant in Fort Collins. The Stack Test and attending documents can be obtained from the Colorado Department of Health $ Environment. The Commission likely already has that information. Will it happen here too? How would that benefit us? Will it benefit us to be exposed to the excessive noise associated the process from trucks, loading and unloading aggregate materials, as well as truck trave to and from plant? Will it benefit us to have the park, people's back yards, schools the Community Park and neighborhoods barren of people on hot days and nights from the smell and particulates emitting from the plant stack? . Are the road conditions adequate to support the excessive truck loads a day. Who is responsible to improve and maintain the road improvements? Will these needs be a benefit to us? Will it benefit us when our property values drop because of an asphalt plant in our city limits? Most of us worked hard and planned carefully to make a happy, secure, quiet and safe home and environment to live, raise our children and spend our retirement years absent a preposterous and intrusive thing like an asphalt plant as a neighbor, Please answer us about how we benefit with an asphalt plant in our backyards? I am not convinced! Will our quality of life, our peace and happiness be improved and benefit us if the plant is built.

Optional File Attachment

Nitrogen Oxides _ Medical Management Guidelines _ Toxic Substance Portal .pdf

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Toxic Substances Portal

Medical Management Guidelines for Nitrogen Oxides

(NO, NO_2, and others)

CAS# 10102-43-9, 10102-44-0
UN# 1660 (NO), 1067 (NO_2), 1975 (Mixture)

PDF Version [295 KB]

Synonyms for nitric oxide (NO) include mononitrogen monoxide and nitrogen monoxide. Synonyms for nitrogen dioxide (NO_2) include dinitrogen tetroxide, nitrogen peroxide, nitrogen tetroxide, and NTO. Synonyms for mixtures of nitrogen oxides include nitrogen fumes and nitrous fumes.

- Persons exposed only to nitrogen oxide gases do not pose substantial secondary contamination risks. Persons whose clothing is contaminated with liquid nitrogen oxides can secondarily contaminate others by direct contact or through off-gassing vapors.
- Nitric oxide and nitrogen dioxide are nonflammable liquids or gases; however, they will accelerate the burning of combustible materials. Odor generally provides an adequate warning of acute exposure providing the higher oxides (NO_2, N_2O_4 and N_2O_5) are present. Nitric oxide (NO) is odorless and nitrous oxide (N_2O) has only a very faint odor.
- The primary route of exposure to nitrogen oxides is by inhalation, but exposure by any route can cause systemic effects. Nitrogen oxides are irritating to the eyes, skin, mucous membranes, and respiratory tract. On contact with moisture, nitrogen dioxide forms a mixture of nitric and nitrous acids.

General Information

Description

Nitrogen oxides represent a mixture of gases designated by the formula NO_x. The mixture includes nitric oxide (NO), nitrogen dioxide (NO_2), nitrogen trioxide (N_2O_3), nitrogen tetroxide (N_2O_4), and nitrogen pentoxide (N_2O_5). The toxicity of nitrous oxide (N_2O) or laughing gas, which is used as an anesthetic, is different from that of the other nitrogen oxides and is not discussed in this protocol.

The most hazardous of the nitrogen oxides are nitric oxide and nitrogen dioxide; the latter exists in equilibrium with its dimer, nitrogen tetroxide. Nitric oxide is a colorless gas at room temperature, very sparingly soluble in water. Nitrogen dioxide is a colorless to brown liquid at room temperature and a reddish-brown gas above 70°F poorly soluble in water. Nitric oxide is rapidly oxidized in air at high concentrations to form nitrogen dioxide.

Routes of Exposure

Inhalation

Nitrogen oxides (NO_2, N_2O_4, N_2O_3 and N2O5) are irritating to the upper respiratory tract and lungs even at low concentrations. Only one or two breaths of a very high concentration can cause severe toxicity. Odor is generally an adequate warning property for acute exposures. Nitrogen dioxide is heavier than air, such that exposure in poorly ventilated, enclosed, or low-lying areas can result in asphyxiation.

Children exposed to the same levels of nitrogen oxides as adults may receive larger doses because they have greater lung surface area:body weight ratios and increased minute volumes:weight ratios. In addition, they may be exposed to higher levels of nitrogen dioxide than adults in the same location because of their short stature and the higher levels of nitrogen

dioxide found nearer to the ground.

Skin/Eye Contact

Exposure to relatively high air concentrations can produce eye irritation and inflammation.

Children are more vulnerable to toxicants affecting the skin because of their relatively larger surface area:body weight ratio.

Ingestion

Both nitrogen dioxide and nitric oxide are gases at room temperature. However, nitrogen dioxide exists as a liquid below 21°C and, if ingested, will cause gastrointestinal irritation or burns.

Sources/Uses

Nitrogen oxides form naturally during the oxidation of nitrogen-containing compounds such as coal, diesel fuel, and silage. Nitrogen oxides are also formed during arc welding, electroplating, engraving, dynamite blasting, as components of rocket fuel, and nitration reactions such as in the production of nitro-explosives, including gun-cotton, dynamite and TNT. They are produced commercially, usually as the first step in the production of nitric acid, either by the direct oxidation of atmospheric nitrogen in the electric arc (Birkeland-Eyder Process) or by the catalytic oxidation of anhydrous ammonia (Oswald Process). Trace metal impurities most likely cause nitrogen oxides to form in nitric acid and its solutions. Nitrogen oxides are intermediates in the production of lacquers, dyes, and other chemicals and are important components of photo-oxidant smog.

Standards and Guidelines

Nitric Oxide: OSHA PEL (permissible exposure limit) = 25 ppm (averaged over an 8-hour workshift)

NIOSH IDLH (immediately dangerous to life or health) = 100 ppm

Nitrogen Dioxide: OSHA PEL (permissible exposure limit) = 5 ppm (Ceiling)

NIOSH IDLH (immediately dangerous to life or health) = 20 ppm

Nitrogen Dioxide AIHA ERPG-2 (maximum airborne concentration below which it is believed that nearly all persons could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms that could impair their abilities to take protective action) = 15 ppm

Physical Properties

Nitric Oxide

Description: Colorless gas Yellow-brown liquid or red-brown gas

Warning properties: Non-irritating, odorless and colorless gas; no adequate 1-5 ppm; warning for acute exposure unless accompanied by NO_2 or another higher oxide as is usual.

Molecular weight: 30.0 daltons

Boiling point (760 mm Hg): -241°F (-152°C)

Freezing point: -263°F (-164°C)

Vapor pressure: >760 mm Hg at 68°F (20°C)

Gas density: 1.0 (air = 1)

Water solubility: Water soluble

Flammability: Not flammable, but will accelerate burning of combustible materials

Nitrogen Dioxide

Description: Yellow-brown liquid or red-brown gas

Warning properties: Irritating, sharp odor at adequate warning for acute exposure; inadequate warning for chronic exposure.

Molecular weight: 46.0 daltons

Boiling point (760 mm Hg): 70°F (21°C)

Freezing point: 12°F (-11°C)

Vapor pressure: 720 mm Hg at 68°F (20°C)

Gas density: 1.5 (air = 1)

Water solubility: Highly soluble, but reacts with water to form a mixture of nitric and nitrous acids.

Flammability: Not flammable, but will accelerate burning of combustible materials

Incompatibilities

Nitrogen dioxide and nitric acid react with combustible materials, chlorinated hydrocarbons, carbon disulfide, and ammonia. May react violently with cyclohexane, fluorine, formaldehyde and alcohol, nitrobenzene, petroleum, and toluene.

Health Effects

- Most of the higher oxides of nitrogen are eye, skin, and respiratory tract irritants. Nitrogen dioxide is a corrosive substance that forms nitric and nitrous acids upon contact with water; it is more acutely toxic than nitric oxide, except at lethal concentrations when nitric oxide may kill more rapidly.Nitric oxide is a potent and rapid inducer of methemoglobinemia.
- Exposure to nitrogen oxides may result in changes of the pulmonary system including pulmonary edema, pneumonitis, bronchitis, bronchiolitis, emphysema, and possibly methemoglobinemia. Cough, hyperpnea, and dyspnea may be seen after some delay.
- Damage to, and subsequent scarring of, the bronchioles may result in a life-threatening episode several weeks following exposure involving cough, rapid, shallow breathing, rapid heartbeat, and inadequate oxygenation of the tissues.
- Populations that may be particularly sensitive to nitrogen oxides include asthmatics and those with chronic obstructive pulmonary disease or heart disease.

Acute Exposure

Nitrogen dioxide is thought to damage lungs in three ways: (1) it is converted to nitric and nitrous acids in the distal airways, which directly damages certain structural and functional lung cells; (2) it initiates free radical generation, which results in protein oxidation, lipid peroxidation, and cell membrane damage; and (3) it reduces resistance to infection by altering macrophage and immune function. There may be an immediate response to exposure to nitrogen oxide vapors that may include coughing, fatigue, nausea, choking, headache, abdominal pain, and difficulty breathing. A symptom-free period of 3 to 30 hours may then be followed by the onset of pulmonary edema with anxiety, mental confusion, lethargy, and loss of consciousness. If survived, this episode may be followed by bronchiolitis obliterans (fibrous obstruction of the bronchioles) several weeks later. Any of these phases can be fatal.

Children do not always respond to chemicals in the same way that adults do. Different protocols for managing their care may be needed.

Respiratory

The higher nitrogen oxides are respiratory irritants. The primary site of toxicity is the lower respiratory tract. Low concentrations initially may cause mild shortness of breath and cough; then, after a period of hours to days, victims may suffer bronchospasm and pulmonary edema. Inhalation of very high concentrations can rapidly cause burns, spasms, swelling of tissues in the throat, upper airway obstruction, and death.

Exposure to certain chemicals can lead to Reactive Airway Dysfunction Syndrome (RADS), a chemically- or irritant-induced type of asthma.

Children may be more vulnerable to corrosive agents than adults because of the relatively smaller diameter of their airways. Children also may be more vulnerable because of relatively increased minute ventilation per kg and failure to evacuate an area promptly when exposed.

Cardiovascular

Absorption of nitrogen oxides can lead to a weak rapid pulse, dilated heart, chest congestion, and circulatory collapse.

Hematologic

High-dose exposure may convert Fe^{+2} in hemoglobin to Fe^{+3}, by virtue of the presence of nitric oxide (NO), causing methemoglobinemia and impaired oxygen transport.

Dermal

Higher nitrogen oxides are skin irritants and corrosives. Skin moisture in contact with liquid nitrogen dioxide or high concentrations of its vapor can result in nitric acid formation, which may lead to second-and third-degree skin burns. Nitric acid may also cause yellowing of the skin and erosion of dental enamel.

Because of their relatively larger surface area:body weight ratio, children are more vulnerable to toxicants affecting the skin.

Ocular

Liquid nitrogen oxides cause severe eye burns after brief contact. High concentrations of the gas cause irritation and, after prolonged exposure, may cause clouding of the eye surface and blindness.

Potential Sequelae

Obstruction of the bronchioles may develop days to weeks after severe exposure. Patients suffer malaise, weakness, fever, chills, progressive shortness of breath, cough, hemorrhage of the lungs or bronchioles, blue or purple coloring of the skin, and respiratory failure. This condition may be confused with the adult respiratory distress syndrome secondary to infectious diseases such as miliary tuberculosis.

Victims of inhalation exposure may suffer reactive airways dysfunction syndrome (RADS) after a single acute, high-dose exposure.

Chronic Exposure

Chronic exposure to nitrogen oxides is associated with increased risk of respiratory infections in children. Permanent restrictive and obstructive lung disease from bronchiolar damage may occur.

Carcinogenicity

Nitrogen oxides have not been classified for carcinogenic effects.

Reproductive and Developmental Effects

Nitric oxide and nitrogen dioxide are not included in *Reproductive and Developmental Toxicants*, a 1991 report published by the U.S. General Accounting Office (GAO) that lists 30 chemicals of concern because of widely acknowledged reproductive and developmental consequences. Methemoglobin inducers are considered harmful to the fetus and nitrogen dioxide has been shown to be fetotoxic in rats and has affected behavior and growth statistics in newborn mice. Nitrogen dioxide also causes DNA damage, mutations, sister chromatid exchanges, and other DNA aberrations.

Special consideration regarding the exposure of pregnant women may be warranted, since nitrogen oxides have been shown to be mutagenic and clastogenic, and fetotoxic in rats; thus, medical counseling is recommended for the acutely exposed pregnant woman.

Prehospital Management

- Victims exposed only to nitrogen oxide gases do not pose risks of secondary contamination to rescuers. Victims whose clothing or skin is contaminated with liquid nitrogen oxides or nitric acid can secondarily contaminate response personnel by direct contact or through off-gassing vapors.
- Most of the higher nitrogen oxides are eye, skin, and respiratory tract irritants. Initial respiratory symptoms after exposure to nitrogen oxides may be mild, but progressive inflammation of the lungs may develop several hours to days after exposure. Noncardiogenic pulmonary edema may develop even if initial pulmonary signs were minimal. Exposures may result in methemoglobinemia, depending upon the presence of nitric oxide (NO) in the gas mixture.
- There is no antidote for nitrogen oxides. Primary treatment consists of respiratory and cardiovascular support. Methylene blue may be necessary to treat methemoglobinemia.

Hot Zone

Rescuers should be trained and appropriately attired before entering the Hot Zone. If the proper equipment is not available, or if rescuers have not been trained in its use, assistance should be obtained from a local or regional HAZMAT team or other properly equipped response organization.

Rescuer Protection

Nitrogen oxides are severe respiratory tract irritants.

Respiratory Protection: Positive-pressure, self-contained breathing apparatus (SCBA) is recommended in response situations that involve exposure to potentially unsafe levels of nitrogen oxides.

Skin Protection: Chemical-protective clothing is recommended when repeated or prolonged contact with liquids of nitrogen oxides or with high concentrations of nitrogen oxide vapors is anticipated because skin irritation or burns may occur.

ABC Reminders

Quickly access for a patent airway, ensure adequate respiration and pulse. If trauma is suspected, maintain cervical immobilization manually and apply a cervical collar and a backboard when feasible.

Victim Removal

If victims can walk, lead them out of the Hot Zone to the Decontamination Zone. Victims who are unable to walk may be removed on backboards or gurneys; if these are not available, carefully carry or drag victims to safety.

Consider appropriate management of chemically contaminated children, such as measures to reduce separation anxiety if a child is separated from a parent or other adult.

Decontamination Zone

Victims exposed only to nitrogen oxide gases may appear to have no skin or eye irritation. However, they should still be decontaminated as described below as irritation may not become evident until washing commences.

Rescuer Protection

If exposure levels are determined to be safe, decontamination may be conducted by personnel wearing a lower level of protection than that worn in the Hot Zone (described above).

ABC Reminders

Quickly access for a patent airway, ensure adequate respiration and pulse. Stabilize the cervical spine with a collar and a backboard if trauma is suspected. Administer supplemental oxygen as required. Assist ventilation with a bag-valve-mask device if necessary.

Basic Decontamination

Victims who are able may assist with their own decontamination. Remove and double-bag contaminated clothing and personal belongings.

Flush exposed skin and hair with water for 20 minutes. Use caution to avoid hypothermia when decontaminating children or the elderly. Use blankets or warmers when appropriate.

Immediately begin irrigation of exposed or irritated eyes with plain water or saline and continue for at least 20 minutes. Remove contact lenses if easily removable without additional trauma. Continue eye irrigation during other basic care and transport.

If the victim has ingested a solution of nitrogen oxides or nitric acid, **do not induce emesis**. Do not administer activated charcoal. Victims who are conscious and able to swallow should be given 4 to 8 ounces of water or milk.

Consider appropriate management of chemically contaminated children at the exposure site. Also, provide reassurance to the child during decontamination, especially if separation from a parent occurs. If possible, seek assistance from a child separation expert.

Transfer to Support Zone

As soon as decontamination is complete, move the victim to the Support Zone.

Support Zone

Be certain that victims have been decontaminated properly (see *Decontamination Zone* above). Victims who have undergone decontamination pose no serious risks of secondary contamination to rescuers. In such cases, Support Zone personnel require no specialized protective gear.

ABC Reminders

Quickly access for a patent airway. If trauma is suspected, maintain cervical immobilization manually and apply a cervical collar and a backboard when feasible. Ensure adequate respiration and pulse. Administer supplemental oxygen as required and establish intravenous access if necessary. Place on a cardiac monitor.

Additional Decontamination

Continue irrigating exposed skin and eyes, as appropriate.

If the patient has ingested a solution of nitrogen oxides or nitric acid, **do not induce emesis**. Do not administer activated charcoal. Patients who are able to swallow should be given 4 to 8 ounces of water or milk, if not provided previously.

Advanced Treatment

In cases of respiratory compromise secure airway and respiration via endotracheal intubation. If not possible, perform cricothyroidotomy if equipped and trained to do so.

Treat patients who have bronchospasm with aerosolized bronchodilators. The use of bronchial sensitizing agents in situations of multiple chemical exposures may pose additional risks. Consider the health of the myocardium before choosing which type of bronchodilator should be administered. Cardiac sensitizing agents may be appropriate; however, the use of cardiac sensitizing agents after exposure to certain chemicals may pose enhanced risk of cardiac arrhythmias (especially in the elderly).

Consider racemic epinephrine aerosol for children who develop stridor. Dose 0.25-0.75 mL of 2.25% racemic epinephrine solution in 2.5 cc water, repeat every 20 minutes as needed, cautioning for myocardial variability.

Patients who are comatose, hypotensive, or are having seizures or cardiac arrhythmias should be treated according to advanced life support (ALS) protocols.

If evidence of shock or hypotension is observed begin fluid administration. For adults, bolus 1,000 mL/hour intravenous saline or lactated Ringer's solution if blood pressure is under 80 mm Hg; if systolic pressure is over 90 mm Hg, an infusion rate of 150 to 200 mL/hour is sufficient. For children with compromised perfusion administer a 20 mL/kg bolus of normal saline over 10 to 20 minutes, then infuse at 2 to 3 mL/kg/hour.

Transport to Medical Facility

Only decontaminated patients or patients not requiring decontamination should be transported to a medical facility. "Body bags" are not recommended.

Report to the base station and the receiving medical facility the condition of the patient, treatment given, and estimated time of arrival at the medical facility.

If a solution of nitrogen oxides, which means in effect a mixture of nitric (HNO_3) and nitrous (HNO_2) acids, has been ingested, prepare the ambulance in case the victim vomits toxic material. Have ready several towels and open plastic bags to quickly clean up and isolate vomitus.

Multi-Casualty Triage

Consult with the base station physician or regional poison control center for advice regarding triage of multiple victims. Because delayed respiratory compromise may occur even with minimal initial symptoms, all patients who have histories or evidence of exposure should be transported to a medical facility for evaluation. Because of the danger of acute, though delayed, onset of severe, life-threatening pulmonary edema from 3 to 30 hours after what may appear to have been quite a trivial exposure it is important that exposed subjects be maintained under medical surveillance for the first 48 hours post-exposure. If such are allowed to return home and acute pulmonary edema develops in a home environment during sleep it may not be possible to get the patient to resuscitative medical treatment in time. Others may be discharged at the scene after their names, addresses, and telephone numbers are recorded. Those discharged should be advised to seek medical care promptly if symptoms develop (see *Patient Information Sheet* below).

Emergency Department Management

- Patients exposed only to nitrogen oxide gases do not pose risks of secondary contamination to rescuers. Patients whose clothing or skin is contaminated with liquid nitrogen oxides or nitric acid can secondarily contaminate response personnel by direct contact or through off-gassing vapors.
- Most of the higher nitrogen oxides are eye, skin, and respiratory tract irritants. Initial respiratory symptoms after exposure to nitrogen oxides may be mild, but progressive inflammation of the lungs may develop several hours to days after exposure. Noncardiogenic pulmonary edema may develop even if initial pulmonary signs were minimal. Exposures may result in methemoglobinemia, depending upon the presence of nitric oxide (NO) in the gas mixture.
- There is no antidote for nitrogen oxides. Treatment consists of respiratory and cardiovascular support. Methylene blue may be necessary to treat methemoglobinemia.

Decontamination Area

Previously decontaminated patients may be transferred immediately to the Critical Care Area. Others require decontamination as described below.

Be aware that use of protective equipment by the provider may cause fear in children, resulting in decreased compliance with further management efforts.

Because of their relatively larger surface area:body weight ratio, children are more vulnerable to toxicants absorbed affecting the skin. Also, emergency room personnel should examine children's mouths because of the frequency of hand-to-mouth activity among children.

ABC Reminders

Evaluate and support airway, breathing, and circulation. Administer supplemental oxygen as required. Children may be more vulnerable to corrosive agents than adults because of the relatively smaller diameter of their airways. In cases of respiratory compromise secure airway and respiration via endotracheal intubation. If not possible, surgically create an airway.

Treat patients who have bronchospasm with aerosolized bronchodilators. The use of bronchial sensitizing agents in situations of multiple chemical exposures may pose additional risks. Consider the health of the myocardium before choosing which type of bronchodilator should be administered. Cardiac sensitizing agents may be appropriate; however, the use of cardiac sensitizing agents after exposure to certain chemicals may pose enhanced risk of cardiac arrhythmias (especially in the elderly).

Consider racemic epinephrine aerosol for children who develop stridor. Dose 0.25-0.75 mL of 2.25% racemic epinephrine solution in 2.5 cc water, repeat every 20 minutes as needed, cautioning for myocardial variability.

Patients who are comatose, hypotensive, or have seizures or ventricular arrhythmias should be treated in the conventional manner.

Basic Decontamination

Patients who are able may assist with their own decontamination. If the patient's clothing is wet with nitrogen oxides or nitric acid, remove and double-bag the contaminated clothing and all personal belongings.

Flush exposed skin and hair with water for 20 minutes (preferably under a shower). Use caution to avoid hypothermia when decontaminating children or the elderly. Use blankets or warmers when appropriate.

Begin irrigation of exposed eyes **immediately** and continue for at least 20 minutes. Remove contact lenses if easily removable without additional trauma to the eye. Continue irrigation while transporting the patient to the Critical Care Area.

If the patient has ingested a solution of nitrogen oxides or nitric acid, **do not induce emesis**. Do not administer activated charcoal. Activated charcoal is unlikely to be of benefit and may obscure endoscopic findings if GI tract irritation or burns are present. Patients who are conscious and able to swallow should be given 4 to 8 ounces of water or milk if not provided earlier.

Critical Care Area

Be certain that appropriate decontamination has been carried out (see *Decontamination Area* above).

ABC Reminders

Evaluate and support airway, breathing, and circulation as in *ABC Reminders* above. Administer supplemental oxygen as required. Children may be more vulnerable to corrosive agents than adults because of the relatively smaller diameter of their airways. Establish intravenous access in seriously symptomatic patients. Continuously monitor cardiac rhythm.

Patients who are comatose, hypotensive, or have seizures or ventricular arrhythmias should be treated in the conventional manner.

Inhalation Exposure

Administer supplemental oxygen by mask to patients who have respiratory symptoms. Treat patients who have bronchospasm with aerosolized bronchodilators. The use of bronchial sensitizing agents in situations of multiple chemical exposures may pose additional risks. Consider the health of the myocardium before choosing which type of bronchodilator should be administered. Cardiac sensitizing agents may be appropriate; however, the use of cardiac sensitizing agents after exposure to certain chemicals may pose enhanced risk of cardiac arrhythmias (especially in the elderly). Some clinicians recommend high doses of corticosteroids for seriously symptomatic patients, especially with severe bronchospasm; in patients with acute respiratory failure without bronchospasm, the value of steroids is unproven.

Consider racemic epinephrine aerosol for children who develop stridor. Dose 0.25-0.75 mL of 2.25% racemic epinephrine solution in 2.5 cc water, repeat every 20 minutes as needed, cautioning for myocardial variability.

Skin Exposure

If the skin was in contact with liquid nitrogen oxides or their solutions, chemical burns may occur; treat as thermal burns.

Because of their relatively larger surface area:body weight ratio, children are more vulnerable to toxicants affecting the skin.

Eye Exposure

Continue irrigation for at least 20 minutes. If liquid nitrogen oxides or nitric acid has been splashed in the eyes, irrigate until the pH of the conjunctival fluid has returned to normal. Test visual acuity. Examine the eyes for corneal damage and treat appropriately. Immediately consult an ophthalmologist for patients who have severe corneal injuries.

Ingestion Exposure

If the patient has ingested a solution of nitrogen oxides or nitric acid, **do not induce emesis**. Do not administer activated charcoal. Patients who are conscious and able to swallow should be given 4 to 8 ounces of water or milk if not provided earlier.

Consider endoscopy to evaluate the extent of gastrointestinal tract injury. Extreme throat swelling may require endotracheal intubation or cricothyroidotomy. Gastric lavage is useful in certain circumstances to remove caustic material and prepare for endoscopic examination. Consider gastric lavage with a small nasogastric tube if: (1) a large dose has been ingested; (2) the patient's condition is evaluated within 30 minutes; (3) the patient has oral lesions or persistent esophageal discomfort; and (4) the lavage can be administered within 1 hour of ingestion. Care must be taken when placing the gastric tube because blind gastric tube placement may further injure the chemically damaged esophagus or stomach.

Because children do no ingest large amounts of corrosive materials, and because of the risk of perforation from NG intubation, lavage is discouraged in children unless intubation is performed under endoscopic guidance.

Toxic vomitus or gastric washings should be isolated, e.g., by attaching the lavage tube to isolated wall suction or another closed container.

Antidotes and Other Treatments

There are no antidotes for nitrogen oxide poisoning. Methylene blue (tetramethylthionine chloride) should be considered for patients who have signs and symptoms of hypoxia (other than cyanosis) or for patients who have methemoglobin levels >30%. Cyanosis alone does not require treatment. Methylene blue may not be effective in patients who have G6PD deficiency and may cause hemolysis.

The standard dose of methylene blue is 1 to 2 mg/kg body weight (0.1 to 0.2 mL/kg of a 1% solution) intravenously over 5 to 10 minutes, repeated in 1 hour if needed. The total initial dose should not exceed 7 mg/kg. (Doses greater than 15 mg/kg may cause hemolysis.) Clinical response to methylene blue treatment is usually observed within 30 to 60 minutes. Side effects include nausea, vomiting, abdominal and chest pain, dizziness, diaphoresis, and dysuria.

Consider exchange transfusion in severely poisoned patients who are deteriorating clinically in spite of methylene blue treatment. Intravenous ascorbic acid administered to severely poisoned patients has not proved to be effective.

Administration of steroids is thought by some physicians to reduce the likelihood of the development of bronchiolitis obliterans by reducing inflammation and therefore lung damage. Steroids should be started soon after exposure and continued for 8 weeks, then tapered gradually. The data on steroid use to prevent late sequelae (bronchiolitis obliterans) is anecdotal and somewhat controversial.

Laboratory Tests

The diagnosis of acute nitrogen oxide toxicity is primarily based on respiratory symptoms and establishing a history of exposure to nitrogen oxides. Routine laboratory studies for all exposed patients include CBC, glucose, and electrolyte determinations. Additional studies for patients exposed to nitrous oxides include determination of methemoglobin levels. The condition of victims who have respiratory complaints should be evaluated with pulse oximetry (or ABG measurements), chest radiography, spirometry, and peak flow measurements. Pulse oximetry is not reliable if methemoglobin is present.

NO and NO_2 are metabolized to nitrite (NO_{2-}) and nitrate (NO_{3-}) and are excreted in the urine. The levels of these urinary metabolites are not medically useful but may be helpful in documenting exposure.

Disposition and Follow-up

Consider hospitalizing patients who have histories of significant inhalation exposure and are symptomatic.

Delayed Effects

Symptomatic patients should be observed in a controlled setting for 48 hours for delayed noncardiogenic pulmonary edema. All patients determined to have been exposed to nitrogen oxides should be advised that life-threatening symptoms may develop as late as several weeks after the exposure.

Patient Release

Patients who have been observed for several hours after minimal exposure and remain asymptomatic may be treated as outpatients. They should be advised to seek medical care promptly if symptoms develop (see *Nitrogen Oxides-Patient Information Sheet*). A patient whose symptoms resolve within 24 to 36 hours may be released with a follow-up appointment to assess pulmonary status.

Follow-up

Obtain the name of the patient's primary care physician so that the hospital can send a copy of the ED visit to the patient's doctor.

Close outpatient follow-up should be continued in patients who experienced significant respiratory compromise because these patients are at high risk of developing bronchiolitis obliterans within several weeks.

Patients who have corneal injuries should be reexamined within 24 hours.

Reporting

If a work-related incident has occurred, you may be legally required to file a report; contact your state or local health department.

Other persons may still be at risk in the setting where this incident occurred. If the incident occurred in the workplace, discussing it with company personnel may prevent future incidents. If a public health risk exists, notify your state or local health department or other responsible public agency. When appropriate, inform patients that they may request an evaluation of their workplace from OSHA or NIOSH. See Appendices III and IV for a list of agencies that may be of assistance.

Patient Information Sheet

This handout provides information and follow-up instructions for persons who have been exposed to nitrogen oxides.

Print this handout only. [44.1 KB]

What are nitrogen oxides?

Nitrogen oxides are a mixture of gases that each contain nitrogen and oxygen. Nitrogen oxides are formed naturally when fossil fuels (e.g., coal, oil, gas, kerosene) are burned and when silage containing nitrate fertilizer ferments in storage silos. They are also formed during electric arc welding, electroplating, and engraving. They are part of airborne smog and are partly indirectly responsible for the burning eyes, nose, and throat caused by air pollution, through formation of the intensely irritating compound peroxyacetylnitrate, PAN.

What immediate health effects can be caused by exposure to nitrogen oxides?

Breathing low levels of nitrogen oxides may cause brief, nonspecific symptoms such as cough, shortness of breath, tiredness, and nausea. However, even if removed from exposure, a person who has breathed nitrogen oxides can develop more serious lung injury over the next 1 to 2 days. Exposure to massive concentrations can cause sudden death due to lung injury and suffocation or choking. Generally, the more serious the exposure, the more severe the symptoms.

Can nitrogen oxides poisoning be treated?

There is no antidote for nitrogen oxide poisoning. Treatment for exposure usually involves giving the patient oxygen and medications to make breathing easier.

Are any future health effects likely to occur?

A single small exposure from which a person recovers quickly may not cause delayed or long-term effects. After a serious exposure or repeated exposures, a patient may develop asthma or other lung conditions.

What tests can be done if a person has been exposed to nitrogen oxides?

Specific tests for the presence of nitrogen oxides in blood or urine generally are not useful to the doctor. If a severe exposure has occurred, blood and urine analyses and other tests may show whether damage has been done to the lungs, heart, and brain. Testing is not needed in every case.

Where can more information about nitrogen oxides be found?

More information about nitrogen oxides can be obtained from your regional poison control center; your state, county, or local health department; the Agency for Toxic Substances and Disease Registry (ATSDR); your doctor; or a clinic in your area that specializes in occupational and environmental health. If the exposure happened at work, you may wish to discuss it with your employer, the Occupational Safety and Health Administration (OSHA), or the National Institute for Occupational Safety and Health (NIOSH). Ask the person who gave you this form for help in locating these telephone numbers.

Follow-up Instructions

Keep this page and take it with you to your next appointment. Follow *only* the instructions checked below.

Print instructions only. [44.1 KB]

[ ] Call your doctor or the Emergency Department if you develop any unusual signs or symptoms within the next 24 hours, especially:

[ ] Call your doctor or the Emergency Department if you develop any unusual signs or symptoms within the next 24 hours, especially:

- coughing or wheezing
- difficulty breathing, shortness of breath, or chest pain
- weakness, fatigue, or flu-like symptoms
- increased redness or pain or a pus-like discharge in the area of a skin burn

[ ] No follow-up appointment is necessary unless you develop any of the symptoms listed above.

[ ] Call for an appointment with Dr.____ in the practice of _____.

When you call for your appointment, please say that you were treated in the Emergency Department at _____ Hospital by_____and were advised to be seen again in ____days.

[ ] Return to the Emergency Department/Clinic on ____ (date) at _____ AM/PM for a follow-up examination.

[ ] Do not perform vigorous physical activities for 1 to 2 days.

[ ] You may resume everyday activities including driving and operating machinery.

[ ] Do not return to work for _____days.

[ ] You may return to work on a limited basis. See instructions below.

[ ] Avoid exposure to cigarette smoke for 72 hours; smoke may worsen the condition of your lungs.

[ ] Avoid drinking alcoholic beverages for at least 24 hours; alcohol may worsen injury to your stomach or have other effects.

[ ] Avoid taking the following medications: _____

[ ] You may continue taking the following medication(s) that your doctor(s) prescribed for you: _____

[ ] Other instructions: _____ _____

- Provide the Emergency Department with the name and the number of your primary care physician so that the ED can send him or her a record of your emergency department visit.
- You or your physician can get more information on the chemical by contacting: _____ or _____, or by checking out the following Internet Web sites: _____;_____.

Signature of patient _____ Date _____

Signature of physician _____ Date _____

Where can I get more information?

If you have questions or concerns, please contact your community or state health or environmental quality department or:

For more information, contact:
Agency for Toxic Substances and Disease Registry
Division of Toxicology and Human Health Sciences
4770 Buford Highway
Chamblee, GA 30341-3717
Phone: 1-800-CDC-INFO 888-232-6348 (TTY)
Email: Contact CDC-INFO

ATSDR can also tell you the location of occupational and environmental health clinics. These clinics specialize in recognizing, evaluating, and treating illnesses resulting from exposure to hazardous substances.

Page last reviewed: October 21, 2014

Print

Planning Commission May 1, 2023 Public Comment - Submission #3064

Date Submitted: 4/28/2023

First and Last Name*

Sue Burke

Email Address*

sue2nd9827@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

8714 Crossfire Drive

Public Comment for the Planning Commission May 1, 2023 Meeting

I am writing in opposition to approval for the asphalt plant planned for Wellington. From my research, I have learned that overall Connell Resources is a reputable company. This is not about Connell's reputation. No company is perfect, and no human beings are perfect. If the asphalt plant is approved, there WILL be increased traffic noise, there WILL be odors, and there WILL be accidents, spills, and unforeseen events. There can be no guarantees these things won't happen, and won't affect our little town and its residents. Because there is no "perfect," and because human error will always be there, the aftermath to your decision is huge. An asphalt plant does not belong here in Wellington, close to the Wellington Community Park, nearby subdivisions, downtown Wellington, an elementary school, in addition to the entirely of this small town. The consequences of anything not going "perfectly" are serious, now and into the future. This facility is also not appropriate for a "desirable town." When looking for a good place to raise families, retire, relocate, who is going to pick a town which has an asphalt processing plant so near to families, schools, parks? It is not a good move for the future of Wellington and attracting other types of businesses. If the asphalt plant is approved, what will be next with precedent set? Please deny the proposed location of the asphalt processing plant. There are many places that are more appropriate for a facility like this. Please keep our town as a desirable place to live.

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Planning Commission May 1, 2023 Public Comment - Submission #3065

Date Submitted: 4/28/2023

First and Last Name*

Shannon Evans

Email Address*

shannondevans@hotmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

Public Comment for the Planning Commission May 1, 2023 Meeting

As a concerned resident that lives and owns a home in Wellington, I donâ€™t agree with the idea of approving an asphalt plant that is in close proximity to Wellington Community Park, Buffalo Creek subdivision and would also affect the air quality/environment of the rest of the community/town for all the residents of Wellington. All of the toxins that are involved with asphalt plants can have so many negative effects on human health including, but not limited to cancer, autoimmune issues, neurologic issues. I am a board certified family medicine physician and have seen the effects industrial toxins have on humans and ask that you take into consideration your communitiesâ€™ health and well being and do not approve an asphalt plant right next to where children/adults play and people live. Sincerely, Shannon Evans

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Planning Commission May 1, 2023 Public Comment - Submission #3066

Date Submitted: 4/28/2023

First and Last Name*

Ryan Burtis

Email Address*

ryanbtownofwellington@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3234 Wild West Lane

Public Comment for the Planning Commission May 1, 2023 Meeting

I wanted to share several concerns about proposed asphalt plant. There is the potential for the plant to be harmful to the long term residential growth of Wellington as well as a potential negative impact on the quality of life for existing residents of the town. In addition, the fact that a local ordinance needed to be modified in order for this proposed asphalt plant to be allowed is a concern. I am concerned about what other local ordinances may need to be modified in the future to prompt business or industrial growth at the expense of residential growth. Another concern is that any potential buyers or renters looking at houses in the future may be discouraged from purchasing or renting due to concerns about noises or smells coming from the plant. As a result, the asphalt plant may have a detrimental effect on residential growth.

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Planning Commission May 1, 2023 Public Comment - Submission #3067

Date Submitted: 4/28/2023

First and Last Name*

Kimberly and Kevin Paganelli

Email Address*

Paganellikimberly@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

7101, Grassy Range Drive

Public Comment for the Planning Commission May 1, 2023 Meeting

To whom it may concern, We were shocked to hear the plan for an Asphalt plant here in Wellington. Not only was this surprising to hear because Wellington is a small rural town, but the plan to put it near so many neighboring houses and schools was alarming to say the least. We chose to raise our family in Wellington for its small town feel, farming community, and an overall healthier environment in comparison to areas in Northern Colorado that are more densely populated. It is absolutely heartbreaking that if the plans for the Asphalt plant come to pass, we will be forced to leave Wellington. We had many hopes that Wellingtons economy and infrastructure would continue to expand, as our young children grew, and we could benefit as a family from more businesses and families moving to town. We strongly feel an Asphalt plant will be the death of this potential in our community. Toxic fumes and chemicals released into our environment as our children grow, will not encourage more families or businesses to Wellington. We ask you to consider our plea to pass on this plan, and keep our children safe, as well as ensure Wellington's continued growth and expansion for years to come.

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Planning Commission May 1, 2023 Public Comment - Submission #3068

Date Submitted: 4/28/2023

First and Last Name*

Maureen Kudola

Email Address*

Mktagray@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

9016 painted horse ln

Public Comment for the Planning Commission May 1, 2023 Meeting

Iâ€™m writing this letter for those who it may concern, regarding the potential for the asphalt plant to be approved less than 2,640â€™ from the Buffalo creek neighborhood. It is my assertion that because asphalt batch plants are known for emitting toxic chemicals, such as Formaldehyde, Acetadelhyde, xylene and others, this asphalt plant MUST be considered heavy industry that curates toxic chemicals. And as such the 1,000 foot setback currently up for approval is wrong according to town land use codes. The board should recognize the health and welfare hazards to its citizens that use the Wellington Community Park and certainly those that reside in Buffalo Creek. Some of the chemicals curated by asphalt plants have been shown to cause headaches, severe breathing issues, cancer and birth defects. It would be irresponsible of the town to do anything other than classify this asphalt plant batch as industry that curates chemicals and toxins. Not to mention the negative property value impacts that it will have for every homeowner in Buffalo Creek. Property values will stagnate if not drop, which is of great concern to the hundreds of Wellington citizens that live in the Buffalo Creek community.

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Planning Commission May 1, 2023 Public Comment - Submission #3069

Date Submitted: 4/28/2023

First and Last Name*

Deborah Condos

Email Address*

dcondoscpp@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

8994 RAGING BULL LANE

Public Comment for the Planning Commission May 1, 2023 Meeting

Dear Planning Commissioners, **FACTS=TRUTH** **Fact**: The Larimer County Health Department representative assigned to the Connell Site Plan Review, Lea Schneider, states in her attached letter to the Town of Wellington that â€œhot mix asphalt plants release air pollutants.â€ â€œThe primary pollutants of concern include particulate matter, carbon monoxide, nitrogen oxides, volatile organic compounds, and/or sulfur oxides,â€ and, â€œAdditional non-criteria pollutants regulated by APCD include hazardous air pollutants (HAPS) as defined in the Air Quality Control Commission (AQCC) regulations.â€ The AQCC's website refers to the EPA's HAPS list. **Fact**: The EPA website states that two, among several hazardous air pollutants (HAPS) are Acetaldehyde and Arsenic. The attached EPA fact sheet on Acetaldehyde states that this hazardous air pollutant is â€œmainly used as an intermediate in the synthesis of other chemicals. Acute (short-term) exposure to acetaldehyde results in effects including irritation of the eyes, skin, and respiratory tract. Symptoms of chronic (long-term) intoxication of acetaldehyde resemble those of alcoholism.â€ **Fact**: The second EPA fact sheet attached states this about the hazardous air pollutant, Arsenic, â€œAcute (short-term), high-level inhalation exposure to inorganic arsenic has resulted in respiratory effects (cough, dyspnea, chest pain), gastrointestinal effects (nausea, diarrhea, abdominal pain), and central and peripheral nervous system effects.â€ Dyspnea, according to the Oxford dictionary, is difficult or labored breathing. The EPA fact sheet goes on to say that, â€œ Chronic (long-term) inhalation exposure to inorganic arsenic in humans is associated with skin, cardiovascular, and neurological effects.â€ All of the above is only a fraction of the reason I oppose the Connell asphalt plant being built in our backyards. The plant wonâ€™t just be in our backyards. All of Wellington and the surrounding areas will be affected by the plant. I donâ€™t believe any citizen of Wellington wants to breathe hazardous air pollutants on a daily basis. Do you? For the sake of our health, our children and grandchildrenâ€™s health and a thousand other reasons, please move to deny the site plan for Connell Resources asphalt plant! Thank you! Debbie Condos Wellington Buffalo Creek Resident

Optional File Attachment

Larimer Cnty Health Dept - Lea Schneider.pdf

Optional File Attachment

EPA Acetaldehyde Fact Sheet.pdf

Optional File Attachment

EPA Arsenic Compounds Fact Sheet.pdf

LARIMER COUNTY | HEALTH AND ENVIRONMENT

1525 Blue Spruce Drive, Fort Collins, Colorado 80524-2004, 970.498.6775, www.larimer.org/health/ehs/

TO: Paul Whalen
Senior Planner
Town of Wellington

FROM: Lea Schneider
Environemtnal Health Planner
Larimer County Department of Public Health & Environment

DATE: December 21, 2022

SUBJECT: Connell's Wellington Asphalt Plant Site Plan Referral Review

Larimer Department of Health and Environment (LCDHE) has reviewed the site plan application materials provided in the referral email dated November 29, 2022. In addition, LCDHE met with Connell Resources, Inc. on December 21, 2022. The following LCDHE comments include requirements of associated regulations as well as recommendations for the Town to consider for additional public health protections when evaluating the application for compatibility to the residential areas.

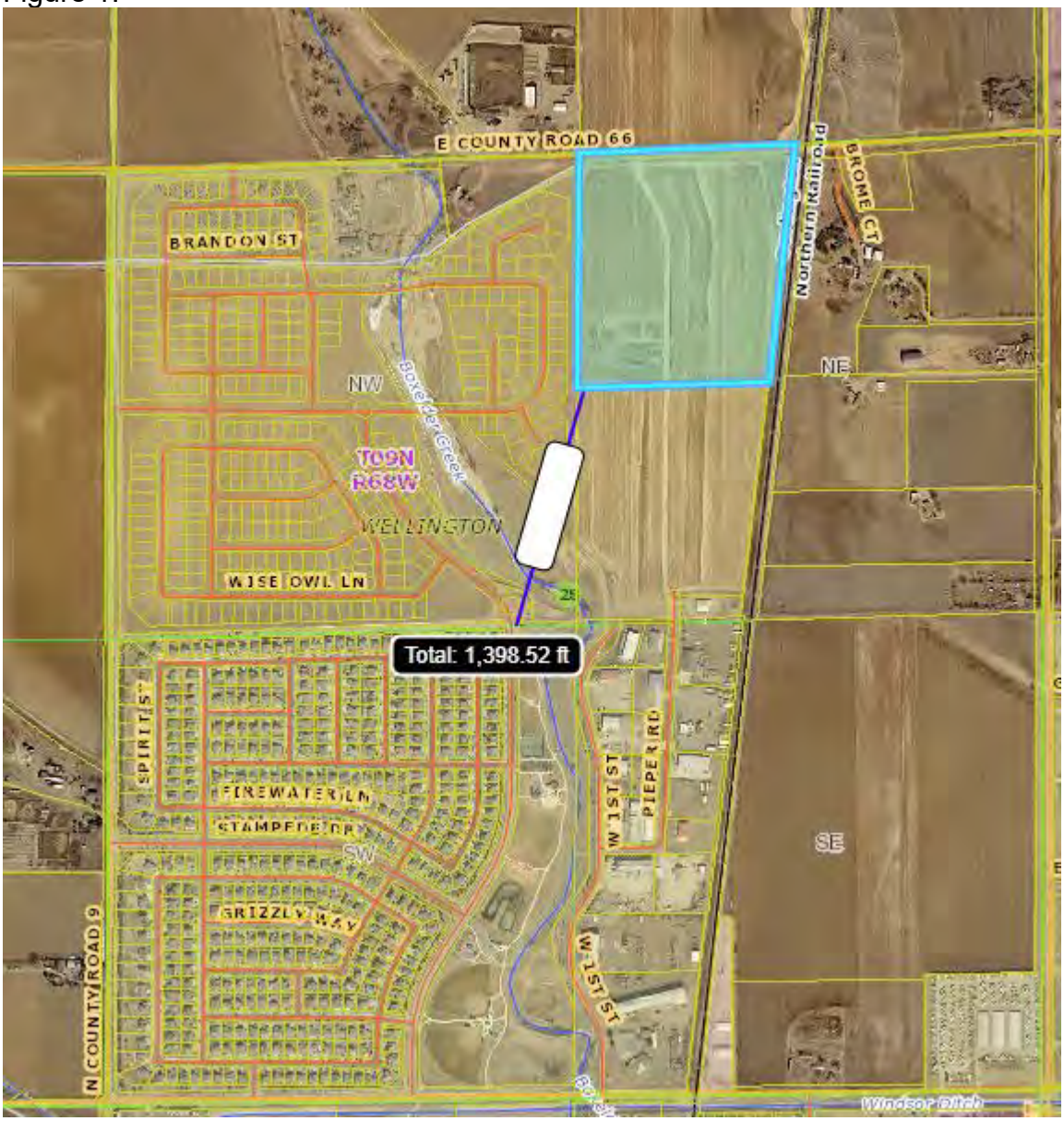
As a result of the submitted materials and meeting with Connell Resources, Inc., it is understood that Connell's existing asphalt batch plant operating near Timnath, Colorado, is proposed to be relocated to Parcel 8928000019 on East County Road 66 between North County Roads 7 and 9. The proposed improvements for the Site Plan include an office building, storage lean-to structure, welding and mechanical shop, garage, washing and fueling areas; landscaping and screening; paved parking, access and truck service roads; the relocated batch plant with associated cold storage bins, storage tanks/silos, resource stockpiles.

The operation will import and stockpile sand and aggregate resources via haul trucks for use in asphalt production, as well as process reclaimed asphalt pavement (RAP) on-site. Public utilities will supply water and sewer for new structures, while raw/well water will be transported from off-site for dust control during operations. Normal operating hours are between 7am to 6pm, Monday through Saturday with occasional work outside of normal operating hours for special projects such as evening construction for major traffic corridor infrastructure.

Though the property for the asphalt operation is zoned for I-Industrial uses under the zoning designation of Town of Wellington, there are residential uses in the area as shown in the Larimer County Assessor map shown below in Figure 1. A platted undeveloped residential community appears to be adjacent to the west and an existing developed residential community and outdoor recreational area to the south which are less than 1500 feet from the south property line of the asphalt property. The unincorporated parcels near the plant are zoned O-Open which is intended for rural

residential and agriculture uses. For this reason, it is recommended that the Town consider the residential compatibility as part of this review.

Figure 1.



Noise. Asphalt operations include noise generating activities such as road traffic, imported materials haulers, dump trucks for asphalt, off-road construction equipment with backup alarms moving aggregate resources around the site, crushing activities for RAP, conveyor belts moving material to the batch plant. For this reason noise impacts are recommended to be evaluated as part of this review process. It is not known if the Town of Wellington has a local noise ordinance, but Larimer County and the State of Colorado have standards for noise.

The County has adopted a noise ordinance (Ordinance No. 97-03) which specifies maximum sound levels of 55 dbA from 7am to 7pm at unincorporated residential

property lines as defined in the Ordinance. The ordinance is available on the County's website at: http://legacy.larimer.org/policies/noise.htm

In the absence of a Town of Wellington noise ordinance, the Colorado Revised Statute – ARTICLE 12 – Noise Abatement establishes noise levels at the property lines based on the use of adjacent properties which include residential areas except the adjacent parcel to the south which is also zoned I-Industrial.

Some site mitigations have been proposed including earthen berms of at least 10 feet to be installed along the north and west property lines; one-way haul truck movement on the site; location of noise producing activity to the northeast of the property; upgrading batch plant equipment. The Health Department recommends that the Town request a Predictive Sound Analysis with noise contour mapping to demonstrate that the proposed berms and additional mitigation strategies are adequate to protect future developed properties to the west and the existing residential uses to the north, but also to the east and the developed Buffalo Creek subdivision to the south/southeast.

It is also recommended that the operator signage include contact information such as a phone number and/or email for neighbors to report concerns directly to the operator in order to respond quicker to feedback for repairing or adjusting the noise-inducing activity.

Air Quality for Operations. Hot mix asphalt plants release air pollutants that are regulated by the Air Pollution Control Division (APCD) at the Colorado Department of Public Health and Environment (CDPHE). The primary pollutants of concern include particulate matter, carbon monoxide, nitrogen oxides, volatile organic compounds, and/or sulfur oxides. These criteria pollutants are regulated to meet the Environmental Protection Agency's National Ambient Air Quality Standards (NAAQS) which can be harmful to public health and the environment when not properly controlled. Additional noncriteria pollutants regulated by APCD include hazardous air pollutants (HAPS) as defined in the Air Quality Control Commission (AQCC) regulations..

Connell Resources, Inc. currently holds an APCD permit (00LR0746) for the asphalt batch plant proposed to be relocated to Wellington. This facility is routinely inspected by Larimer County Department of Health and Environment as contractors of APCD. A new APEN will need to be applied for and reviewed by APCD in order to establish new limitations and controls as part of the final construction (operating) permit for the new site. It is recommended that the Town request copies of the future applications and dust control plan for further evaluation on adequate controls for the residential uses.

LCDHE will continue to inspect the facility under the new air permit even within the Town of Wellington. Due to the lack of open mining on the property, aggregate material arriving pre-processed, and the current asphalt plant permit emission thresholds being in compliance with the NAAQS, it is not known if air emission dispersion modeling will be required for the future air permitting and will be evaluated by APCD at the time of APEN submittal.

To further evaluate the emission levels in relation to public health, compliance with NAAQS, and residential and recreation area compatibility, it is recommended that the

Town consider requesting emission dispersion modeling independent of the APCD permitting process to predict potential pollutant exposure. Air dispersion models are tools to approximate concentrations from one or more facilities or sources of air pollutants. When an air pollutant is emitted into the atmosphere, it is transported and dispersed by various atmospheric processes. Algorithms and equations have been developed to approximate (model) these atmospheric processes and have been incorporated into various computer codes (computer models). APCD typically uses the results from these computer models in their review of qualifying APEN/air permit applications. A modeled prediction is used to demonstrate if the emitting source will be in compliance with the NAAQS (as well as Colorado Ambient Air Quality Standards - CAAQS). If the model predicts an exceedance of the NAAQS and/or CAAQS, the applicant has the opportunity to adjust the facility emissions through operating hours, source parameters, source configuration, and other mitigation strategies in order to demonstrate compliance with all state and federal standards. Modeling is a good opportunity to examine control measures and potentially demonstrate compatibility with the residential and outdoor recreational uses.

Odors. Hot asphalt operations can produce odors depending on equipment, fuels, materials and processing. As part of compliance with the future air permit from APCD, the operation will be required to prevent excessive odors to comply with Colorado's Air Quality Control Commission Regulation 2 for Odor Emission. The regulation limits the emission of odorous air within areas used predominantly as residential or commercial purposes. This property in review is surrounded by a mix of commercial and residential uses as well as public recreation, therefore the more strict residential threshold for odors shall be complied with. Please note that it is a violation if odors are detected at property lines after the odorous air has been diluted with seven (7) or more volumes of odor free air using a nasal ranger operated by certified staff. Larimer County staff are certified in odor compliance and will evaluate complaints. Please note that compliance with APCD permitting and Regulation 2, as well as properly maintained and operating equipment will reduce the amount of emissions and therefore odors released from the property but does not create an odor-free operation.

Wetlands. No infromation was noted in the application materials regarding the intermittent waterway identified on the Larimer County Assessor's topography map. In referencing the Wetland Mapper developed by the U.S. Fish and Wildlife Service, the intermittent waterway has a preliminary identification as a riverine wetland. It is not known if there were earlier applications and/or discussions related to the topic of potential wetlands and a need for delineation.

Fugitive Dust during Construction. Colorado's air quality laws include requirements for controlling fugitive dust emissions during construction activities. Projects that are fewer than 25 acres and less than six months are not required to complete an APEN, but are still required to control fugitive dust and off-site transport. Additional information is avaible on the APCD website: https://cdphe.colorado.gov/apens-and-air-permits/air-permits-for-non-oil-gas

Water Quality. Potential water quality impacts associated with asphalt batch plants include sediments from in the truck wash down and stormwater runoff, and chemicals associated with the asphalt biding materials, fluids associated with trucks/off-road construction equipment, machinery and processing operations.

In this particular case, the submitted Ditesco drainage report indicates that a detention pond will be constructed in the southwest corner of the parcel with the intent to drain off-site. It is not known if there is a retention pond or other infrastructure to support the truck wash down area or other process water from the site.

Depending on the aforementioned process water and stormwater management, the non-extractive operations may be required to apply for either a 'Process and Stormwater Discharge Permit' or, if no process water will be discharged, a 'Stormwater Discharge Permit' from the Water Quality Control Division of the Colorado Department of Public Health and Environment. Please refer to the Water Quality Control Division's website: https://www.colorado.gov/pacific/cdphe/wq-commerce-and-industry-permits

A requirement for obtaining either permit is the preparation of a stormwater management plan. These plans must include identification of potential sources of pollution (including sediment, chemicals used in the mining operation, fuels, etc.) and selection of best management practices that will be implemented to control the potential pollutants. Under the terms of a state permit, the applicant is required to perform routine inspections and to prepare an annual report to address compliance with the stormwater management plan.

Fuel Storage Tanks. The Site Plan proposes the installation of on-site fuel storage and related pumping equipment. These items are regulated by the Colorado Department of Labor and Employment, Oil Inspection Section. Additional criteria may be required by the local fire authority. Information on their tank compliance plan submittal process is available at:
https://ops.colorado.gov/Petroleum/TankCompliance

Arsenic Compounds

Hazard Summary

Arsenic, a naturally occurring element, is found throughout the environment. For most people, exposure to arsenic, including to inorganic arsenic compounds, occurs through their diet. Acute (short-term), high-level inhalation exposure to inorganic arsenic has resulted in respiratory effects (cough, dyspnea, chest pain), gastrointestinal effects (nausea, diarrhea, abdominal pain), and central and peripheral nervous system effects. Chronic (long-term) inhalation exposure to inorganic arsenic in humans is associated with skin, cardiovascular, and neurological effects. Acute oral exposure to inorganic arsenic has resulted in effects on the digestive tract, respiratory tract, central nervous system (CNS), cardiovascular system, liver, and blood and has resulted in death. Chronic oral exposure to elevated levels of inorganic arsenic has resulted in gastrointestinal effects, anemia, peripheral neuropathy, skin lesions, hyperpigmentation, and liver and kidney damage in humans. EPA has concluded that inorganic arsenic is a human carcinogen. Evidence from human studies suggests that exposure to inorganic arsenic by inhalation may result in lung cancer, while exposure by ingestion may result in nonmelanoma skin cancer and bladder, kidney, liver, and lung cancers.

Arsine is a gas consisting of arsenic and hydrogen. It is extremely toxic to humans and can result in general malaise, headaches, apprehension, giddiness, shivering, thirst, vomiting, and abdominal pains with vomiting within a few hours of exposure. Arsine can be fatal if inhaled in sufficient quantities. EPA has not classified arsine for carcinogenicity.

Please Note:

- This fact sheet has a particular focus on inorganic arsenic compounds, including the gaseous arsenic compound arsine. The main sources of toxicity information for this fact sheet are EPA's Integrated Risk Information System (IRIS), which contains information on the carcinogenic effects of inorganic arsenic, including the unit cancer risk for inhalation exposure, and on effects of arsine; as well as the Agency for Toxic Substances and Disease Registry's (ATSDR's) Toxicological Profile for Arsenic.

Uses

- Inorganic arsenic is primarily used as a preservative to make wood resistant to rot and decay, although the use for certain residential items, such as decks and picnic tables, has been phased out. Inorganic arsenic is still used for this purpose in industrial applications. (1)
- The use of arsenic in agricultural or commercial pesticide applications has been restricted and is most recently limited to organic arsenic compounds in a limited number of approved uses. (1)
- Arsenic and its compounds have been used as alloy additives; in electronic devices, such as smartphones; in veterinary medicines; in pigment production; in glass manufacturing; as bronzing or decolorizing agents; in textile printing; in tanning; and other uses. (1,2)
- Until the 1940s, inorganic arsenic was used as a therapeutic agent in the treatment of various diseases, such as leukemia, psoriasis, and chronic bronchial asthma. Inorganic arsenic may still be used in homeopathic or folk remedies in the United States and other countries, and its use has reemerged in an FDA-approved treatment for

a specific type of leukemia. (1)

- Arsine is a gas that has much more limited usage than the other inorganic compounds. The use of arsine is primarily in electronics and semiconductor components manufacturing, organic syntheses, and lead-acid storage battery manufacturing. (2)

Sources and Potential Exposure

- Inorganic arsenic is found throughout the environment; it is released into the air by volcanoes, the weathering of arsenic-containing minerals and ores, and commercial and industrial processes. (1)
- General population exposure occurs through ingestion of contaminated drinking water or food. For most people, diet is the largest source of arsenic exposure, with smaller intakes from drinking water and air. Grains, produce, fish, and shellfish are significant sources of arsenic exposure via food. High arsenic levels have been found in fish and shellfish; however, arsenic in fish and shellfish exists primarily as two forms of organic arsenic (i.e., "fish arsenic") that are essentially nontoxic. Inorganic arsenic compounds are the predominant forms to which people are exposed. (1)
- Elevated levels of inorganic arsenic may be present in soil, either from natural mineral deposits or contamination from human activities, which may lead to dermal or ingestion exposure. (1)
- Workers at metal smelting facilities and nearby residents may be exposed to above-average inorganic arsenic levels from arsenic released into the air. (1,2)
- Other sources of inorganic arsenic exposure include burning wood treated with an arsenical wood preservative or dermal contact with wood treated with arsenic. (1)
- Arsine is formed when arsenic comes in contact with an acid. Most exposures to arsine have occurred after unintentional formation of arsine in the workplace of chemical, smelting, and refining industries. (2,9)

Assessing Personal Exposure

- Arsenic can be measured in blood, urine, hair, and fingernails. Measurement of inorganic arsenic in the urine is the best way to determine recent exposure (within the previous 1 to 2 days), while measuring inorganic arsenic in hair or fingernails can detect high-level exposures that occurred over the prior 6 to 12 months. (1)

Health Hazard Information

Acute Effects:

- Inorganic Arsenic (other than arsine)
  - Workers inhaling very high levels of arsenic over a short period have experienced respiratory tract symptoms (cough, chest pain, dyspnea, pulmonary edema), gastrointestinal effects (nausea, diarrhea, abdominal pain), and central and peripheral nervous system effects (peripheral neuropathy, frank encephalopathy). (1,2)
  - Ingestion of high levels inorganic arsenic over a short period has resulted in death. Acute oral exposure to lower levels has resulted in effects on the digestive tract (constriction of the throat, dysphagia, nausea, vomiting, watery diarrhea), respiratory tract (respiratory distress, hemorrhagic bronchitis), CNS (encephalopathy, weakness, delirium), cardiovascular system (hypotension, shock), the liver (increased enzymes and size), and blood (anemia, leukopenia). (1,2)
- Arsine
  - Inhaling high levels of arsine over very short periods has resulted in death; a half-hour exposure to 25 to 50 parts per million (ppm) can be lethal. (2,3)
  - Acute arsine poisoning can cause pulmonary edema, massive hemolysis with subsequent hemolytic anemia, and can cause kidney, liver, and heart damage. (2)
  - The major effects from short-term exposure to lower levels of arsine include headaches, vomiting,

abdominal pains, and effects on the blood, including hemolytic anemia, hemoglobinuria, and jaundice; these effects can lead to kidney failure. (2,3)

Chronic Effects (Noncancer):

- Inorganic Arsenic (other than arsine)
  - Chronic inhalation exposure of humans to elevated levels of inorganic arsenic has been associated with effects on the cardiovascular system and skin (including dermatitis, conjunctivitis, pharyngitis and rhinitis) and with nerve damage. (1,2,4)
  - EPA has not established a reference concentration (RfC) for inhalation exposure to inorganic arsenic. (4)
  - The California Environmental Protection Agency (CalEPA) has established a chronic inhalation reference exposure level (REL) of 0.000015 milligrams per cubic meter (0.000015 mg/m^3) estimated from an epidemiologic study indicating decreased intellectual function in 10-year-old children exposed to elevated arsenic in drinking water and assumptions for exposure and risk from inhalation exposure. The CalEPA REL is a concentration at or below which adverse health effects are not likely to occur. It is not a direct estimator of risk, but rather a reference point to gauge the potential effects. At lifetime exposures increasingly greater than the REL, the potential for adverse health effects increases. (4)
  - Chronic oral exposure of humans to elevated levels of inorganic arsenic has been associated with effects on the gastrointestinal system, blood, skin, eyes, lungs, heart, CNS, liver, and kidneys. Such effects include anemia, peripheral neuropathy, skin lesions, hyperpigmentation, gangrene of the extremities, vascular lesions, and liver or kidney damage. (1,4).
  - Some studies have reported an association between elevated arsenic levels in drinking water and neurocognitive or behavioral test results of school age children. (1)
  - Animal studies have reported effects on the blood, liver, and kidneys from oral exposure to inorganic arsenic. (1,4)
  - The EPA reference dose (RfD) for inorganic arsenic is 0.0003 milligrams per kilogram body weight per day (mg/kg/d) based on effects on the skin (hyperpigmentation and keratosis) and possible vascular effects reported in epidemiologic studies of exposure to contaminated drinking water . The RfD is an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral exposure to the human population (including sensitive subgroups) that is likely to be without appreciable risk of deleterious noncancer effects during a lifetime. (4)
  - EPA has medium confidence in the study on which the RfD for inorganic arsenic was based because although an extremely large number of people were included in the assessment (>40,000), the doses were not well characterized, and other contaminants were present. While extensive, the supporting human toxicity database is somewhat flawed; therefore, EPA has assigned medium confidence to the RfD. (4)

- Arsine
  - Long-term occupational exposure to arsine can damage skin and nerves and can affect the circulatory and hematopoietic systems and result in hemolytic anemia. At higher exposures, it may damage the spleen and kidney. (2, 3)
  - The EPA RfC for arsine is 0.00005 mg/m^3 based on effects on the blood and spleen, including hemolysis, abnormal red blood cell morphology, and increased spleen weight in rats, mice, and hamsters. (3)
  - EPA has assigned medium confidence to the RfC based on medium confidence in the database. While there were three inhalation animal studies and a developmental/reproductive study, there were no data available on human exposure. However, EPA has high confidence in the animal studies on which the RfC is based because the sample sizes were adequate, statistical significance was reported, concentration dose-response relationships were documented, three species were investigated, and both a no-observed-adverse-effect level (NOAEL) and a lowest-observed-adverse-effect level (LOAEL) were identified. (3)

Reproductive/Developmental Effects:

- Inorganic Arsenic
  - Studies have reported an association between maternal exposure to elevated arsenic levels in drinking water and low birth weights, neonatal death, and infant mortality. (1)
  - Ingested inorganic arsenic can cross the placenta in humans, exposing the fetus to the chemical. (1)
  - Oral animal studies have reported inorganic arsenic to produce developmental effects in offspring, including birth defects and neurobehavioral deficits. (1)

- Arsine
  - Human studies have indicated higher than expected spontaneous abortion rates in women in the microelectronics industry who were exposed to arsine. However, these studies have several limitations, including small sample size and exposure to other chemicals in addition to arsine. (3)
  - A National Toxicology Program (NTP) study found no adverse developmental effects in offspring of pregnant rats and mice exposed to arsine. (6)

Cancer Risk:

- Inorganic Arsenic
  - Human occupational studies have shown that inhalation exposure to inorganic arsenic increases the risk of lung cancer. (1,4)
  - Ingestion of inorganic arsenic in humans has been associated with an increased risk of nonmelanoma skin cancer and an increased risk of bladder, liver, kidney and lung cancers. (1,4)
  - No animal inhalation studies reporting cancer effects from inorganic arsenic exposure were identified. Most oral animal studies have not shown an association between inorganic arsenic exposure and cancer; however, a study in mice involving exposure to inorganic arsenic in drinking water reported an increased risk of lung tumors. (1)
  - EPA has concluded that inorganic arsenic is a human carcinogen. (4)
  - EPA used a mathematical model with data from an occupational study of arsenic-exposed copper smelter workers to estimate the probability of a person developing cancer from continuously breathing air containing a specified concentration of inorganic arsenic. EPA calculated an inhalation unit risk estimate of 4.3×10^{-3} per $\mu g/m^3$. EPA estimates that, if an individual were to continuously breathe air containing inorganic arsenic at an average of 0.0002 $\mu g/m^3$ (2×10^{-7} mg/m^3) over their entire lifetime, the person would theoretically have no more than a one-in-a-million increased chance of developing cancer as a direct result. Similarly, EPA estimates that continuously breathing air containing 0.002 $\mu g/m^3$ (2×10^{-6} mg/m^3) would result in not greater than a one-in-a-hundred thousand increased chance of developing cancer, and air containing 0.02 $\mu g/m^3$ (2×10^{-5} mg/m^3) would result in not greater than a one-in-ten thousand increased chance of developing cancer. For a detailed discussion of confidence in the potency estimates, please see IRIS. (4)
  - EPA has calculated an oral cancer slope factor of 1.5 per mg/kg/d for inorganic arsenic. The oral cancer slope factor is an estimate of the increased cancer risk from ingestion of 1 mg inorganic arsenic per kg body weight per day over a lifetime. (4)

- Arsine
  - EPA has not classified arsine for carcinogenicity. (3)
  - No cancer inhalation studies in humans or animals were available for arsine. (1)

Physical Properties

- Inorganic arsenic is a naturally occurring element in the earth's crust. (1)

- Pure inorganic arsenic is a gray-colored metal. Arsenic combined with elements such as oxygen, chlorine, and sulfur forms inorganic arsenic; inorganic arsenic compounds include arsenic pentoxide, arsenic trioxide, and arsenic acid. (1)
- The chemical symbol for arsenic is As, and it has a molecular weight of 74.92 g/mol. (2)
- The chemical formula for arsine is AsH_3, and it has a molecular weight of 77.95g/mol. (2)
- Arsine is an extremely flammable, colorless gas with a slight garlic-like odor. (2)
- Arsenic combined with carbon and hydrogen forms organic arsenic; organic arsenic compounds include arsanilic acid, arsenobetaine, and dimethylarsinic acid. (1)

Conversion Factors:

To convert concentrations in air (at 25 °C) from ppm to mg/m³:

mg/m³ = (ppm) × (molecular weight of the compound) / (24.45).

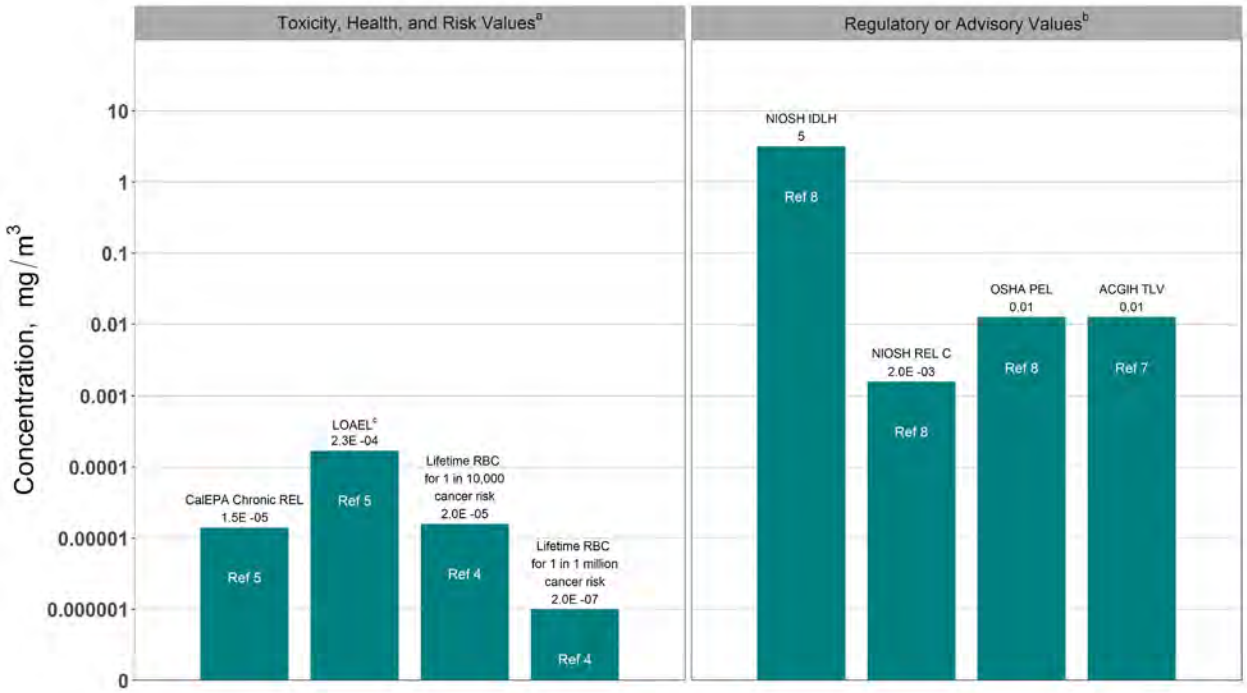
For inorganic arsenic: 1 ppm = 3.06 mg/m³.

For arsine: 1 ppm = 3.19 mg/m³

To convert concentrations in air from µg/m³ to mg/m³:

mg/m³ = (µg/m³) x (1 mg/1,000 µg)

Health Data from Inhalation Exposure (Inorganic Arsenic)



ACGIH TLV — American Conference of Governmental Industrial Hygienists threshold limit value expressed as a time-weighted average; the concentration of a substance to which most workers can be exposed without adverse effects.
LOAEL (Lowest-Observed-Adverse-Effect Level) — The lowest dose or concentration at which there was an observed toxic or adverse effect of a target organism distinguished from a normal or untreated organism of the same species.
CalEPA Chronic REL — California EPA Office of Environmental Health Hazard Assessment (OEHHA) chronic reference exposure level (REL) is the concentration at or below which no adverse health effect is anticipated for a lifetime exposure.
NIOSH IDLH — National Institute for Occupational Safety and Health's immediately dangerous to life or health concentration; IDLH values are established (1) to ensure that a worker can escape from a given contaminated environment in the event of failure of the respiratory protection equipment and (2) to indicate a maximum level

above which only a highly reliable breathing apparatus, providing maximum worker protection, is permitted.
NIOSH REL C (ceiling value) — NIOSH's recommended exposure limit ceiling; the concentration that should not be exceeded at any time.
OSHA PEL — Occupational Safety and Health Administration's permissible exposure limit expressed as a time-weighted average; the concentration of a substance to which most workers can be exposed without adverse effect, averaged over a normal 8-hour workday or a 40-hour workweek.
RBC (cancer risk-based concentration) — A calculated concentration of a chemical in air to which continuous exposure over a lifetime is estimated to be associated with a risk of contracting cancer not greater than the specified probability (e.g., 1-in-1 million).

[a]Toxicity, Health, and Risk numbers are toxicological values from animal testing or risk assessment values developed by EPA.
[b]Regulatory numbers are values that have been incorporated in Government regulations, while advisory numbers are nonregulatory values provided by Government or other groups as advice. OSHA numbers are regulatory, whereas NIOSH, ACGIH, and AIHA numbers are advisory.
[c]The concentration presented here is the LOAEL (calculated from the oral level) from the critical study used as the basis for the CalEPA chronic REL.

Summary updated April 2021.

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9. National Center for Environmental Health. Centers for Disease Control and Prevention. Cincinnati, OH. 2018. https://emergency.cdc.gov/agent/arsine/facts.asp

Acetaldehyde

75-07-0

Hazard Summary

Acetaldehyde is mainly used as an intermediate in the synthesis of other chemicals. It is ubiquitous in the environment and may be formed in the body from the breakdown of ethanol. Acute (short-term) exposure to acetaldehyde results in effects including irritation of the eyes, skin, and respiratory tract. Symptoms of chronic (long-term) intoxication of acetaldehyde resemble those of alcoholism. Acetaldehyde is considered a probable human carcinogen (Group B2) based on inadequate human cancer studies and animal studies that have shown nasal tumors in rats and laryngeal tumors in hamsters.

Please Note: The main sources of information for this fact sheet are EPA's Health Assessment Document for Acetaldehyde (1) and the Integrated Risk Information System (IRIS) (4), which contains information on inhalation chronic toxicity of acetaldehyde and the RfC. Other secondary sources include the International Agency for Research on Cancer (IARC) Monographs on Chemicals Carcinogenic to Humans. (6)

Uses

- The predominant use of acetaldehyde is as an intermediate in the synthesis of other chemicals. (1)
- Acetaldehyde is used in the production of perfumes, polyester resins, and basic dyes. Acetaldehyde is also used as a fruit and fish preservative, as a flavoring agent, and as a denaturant for alcohol, in fuel compositions, for hardening gelatin, and as a solvent in the rubber, tanning, and paper industries. (1,2)

Sources and Potential Exposure

- Acetaldehyde is ubiquitous in the ambient environment. It is an intermediate product of higher plant respiration and formed as a product of incomplete wood combustion in fireplaces and woodstoves, coffee roasting, burning of tobacco, vehicle exhaust fumes, and coal refining and waste processing. Hence, many individuals are exposed to acetaldehyde by breathing ambient air. It should be noted that residential fireplaces and woodstoves are the two highest sources of emissions, followed by various industrial emissions. (1)
- In Los Angeles, California, levels of acetaldehyde up to 32 parts per billion (ppb) have been measured in the ambient environment. (1)
- Exposure may also occur in individuals occupationally exposed to acetaldehyde during its manufacture and use. (1,2)
- In addition, acetaldehyde is formed in the body from the breakdown of ethanol; this would be a source of acetaldehyde among those who consume alcoholic beverages. (1)

Assessing Personal Exposure

- Acetaldehyde can be detected in the blood and breath to determine whether or not exposure has occurred. (12)

Health Hazard Information

Acute Effects:

- The primary acute effect of inhalation exposure to acetaldehyde is irritation of the eyes, skin, and

respiratory tract in humans. At higher exposure levels, erythema, coughing, pulmonary edema, and necrosis may also occur. (1)
- Acute inhalation of acetaldehyde resulted in a depressed respiratory rate and elevated blood pressure in experimental animals. (1)
- Tests involving acute exposure of rats, rabbits, and hamsters have demonstrated acetaldehyde to have low acute toxicity from inhalation and moderate acute toxicity from oral or dermal exposure. (3)

Chronic Effects (Noncancer):
- Symptoms of chronic intoxication of acetaldehyde in humans resemble those of alcoholism. (5)
- In hamsters, chronic inhalation exposure to acetaldehyde has produced changes in the nasal mucosa and trachea, growth retardation, slight anemia, and increased kidney weight. (1,4)
- The Reference Concentration (RfC) for acetaldehyde is 0.009 milligrams per cubic meter (mg/m^3) based on degeneration of olfactory epithelium in rats. The RfC is an estimate (with uncertainty spanning perhaps an order of magnitude) of a continuous inhalation exposure to the human population (including sensitive subgroups), that is likely to be without appreciable risk of deleterious noncancer effects during a lifetime. It is not a direct esimator of risk but rather a reference point to gauge the potential effects. At exposures increasingly greater than the RfC, the potential for adverse health effects increases. Lifetime exposure above the RfC does not imply that an adverse health effect would necessarily occur. (4)
- EPA has medium confidence in the principal studies because appropriate histopathology was performed on an adequate number of animals and a no-observed-adverse-effect level (NOAEL) and a lowest-observed-adverse-effect level (LOAEL) were identified, but the duration was short and only one species was tested; low confidence in the database due to the lack of chronic data establishing NOAELs and due to the lack of reproductive and developmental toxicity data; and, consequently, low confidence in the RfC. (4)
- EPA has not established a Reference Dose (RfD) for acetaldehyde. (4)

Reproductive/Developmental Effects:
- No information is available on the reproductive or developmental effects of acetaldehyde in humans.
- Acetaldehyde has been shown, in animals, to cross the placenta to the fetus. (1,4)
- Data from animal studies suggest that acetaldehyde may be a potential developmental toxin. In one study, a high incidence of embryonic resorptions was observed in mice injected with acetaldehyde. In rats exposed to acetaldehyde by injection, skeletal malformations, reduced birth weight, and increased postnatal mortality have been reported. (1,6)

Cancer Risk:
- Human data regarding the carcinogenic effects of acetaldehyde are inadequate. Only one epidemiology study is available that has several limitations including short duration, small number of subjects, and concurrent exposure to other chemicals and cigarettes. (1,4,6)
- An increased incidence of nasal tumors in rats and laryngeal tumors in hamsters has been observed following inhalation exposure to acetaldehyde. (1,4,6)
- EPA has classified acetaldehyde as a Group B2, probable human carcinogen. (1,4)
- EPA uses mathematical models, based on human and animal studies, to estimate the probability of a person developing cancer from breathing air containing a specified concentration of a chemical. EPA calculated an inhalation unit risk of 2.2×10^{-6} $(\mu g/m^3)^{-1}$. EPA estimates that, if an individual were to continuously breathe air containing acetaldehyde at an average of 0.5 $\mu g/m^3$ (5×10^{-4} mg/m^3) over his or her entire lifetime, that person would theoretically have no more than a one-in-a-million increased chance of developing cancer as a direct result of breathing air containing this chemical. Similarly, EPA estimates that breathing air containing 5.0 $\mu g/m^3$ (5×10^{-3} mg/m^3) would result in not greater than a one-in-a-hundred thousand increased chance of developing cancer, and air containing 50.0 $\mu g/m^3$ (5×10^{-2} mg/m^3) would result in not greater than a one-in-ten thousand increased chance of developing cancer. For a detailed discussion of confidence in the potency estimates, please see IRIS. (4)

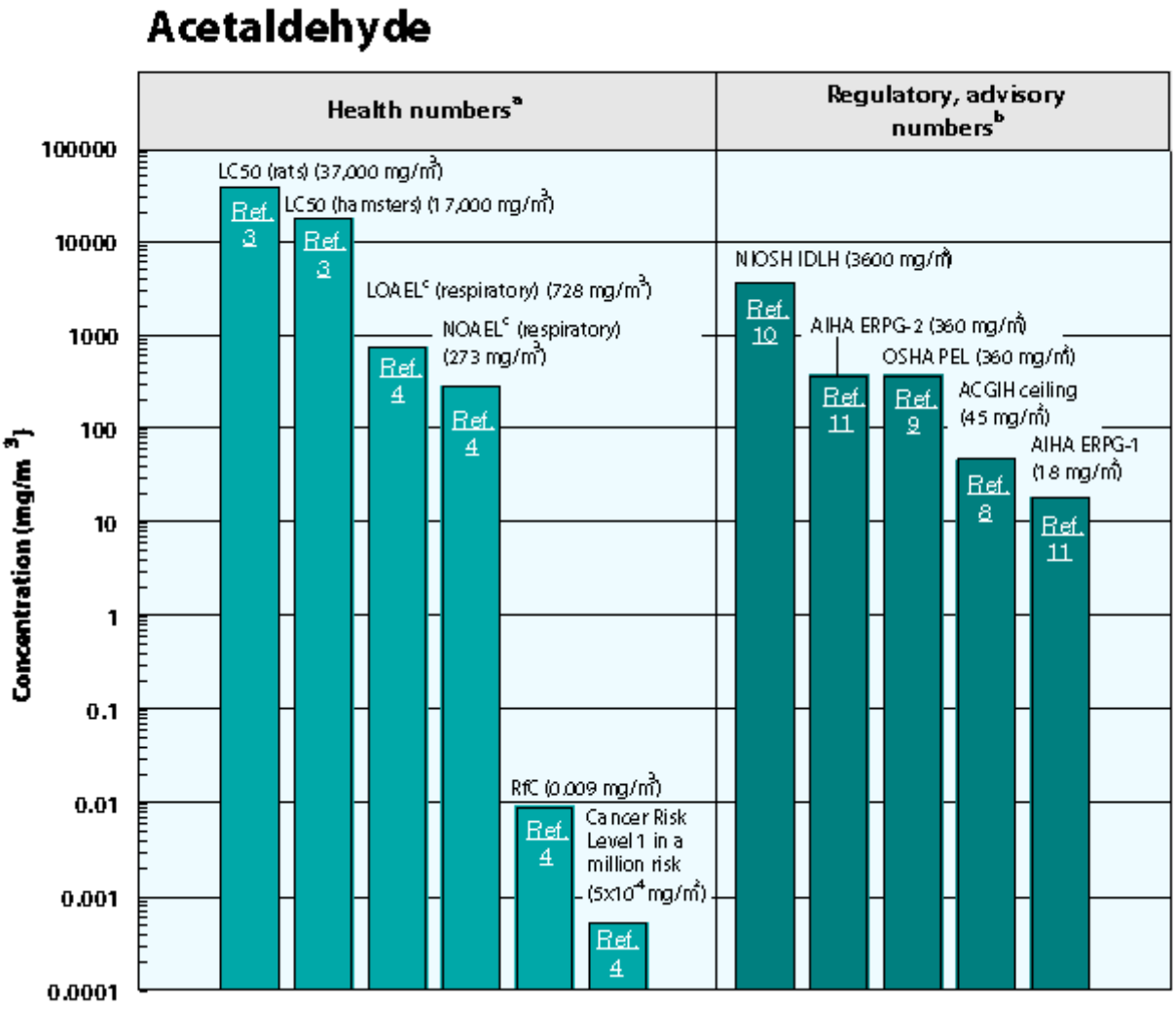
Physical Properties

- The chemical formula for acetaldehyde is CH_3CHO, and it has a molecular weight of 44.06 g/mol. (1)
- Acetaldehyde is a colorless mobile liquid that is flammable and miscible with water. (1,6)
- Acetaldehyde has a pungent suffocating odor, but at dilute concentrations it has a fruity and pleasant odor. The odor threshold of acetaldehyde is 0.05 parts per million (ppm) (0.09 mg/m^3). (1,7)
- The vapor pressure for acetaldehyde is 740 mm Hg at 20 °C, and it has a log octanol/water partition coefficient (log K_{ow}) of 0.43. (1)

Conversion Factors (only for the gaseous form):

To convert concentrations in air (at 25°C) from ppm to mg/m^3: mg/m^3 = (ppm) × (molecular weight of the compound)/(24.45). For acetaldehyde: 1 ppm = 1.8 mg/m^3. To convert concentrations in air from $\mu g/m^3$ to mg/m^3: mg/m^3 = ($\mu g/m^3$) × (1 mg/1,000 µg).

Health Data from Inhalation Exposure



AIHA ERPG--American Industrial Hygiene Association's emergency response planning guidelines. ERPG 1 is the maximum airborne concentration below which it is believed nearly all individuals could be exposed up to one hour without experiencing other than mild transient adverse health effects or perceiving a clearly defined objectionable odor; ERPG 2 is the maximum airborne concentration below which it is believed nearly all individuals could be exposed up to one hour without experiencing or developing irreversible or other serious health effects that could impair their abilities to take protective action.

ACGIH ceiling-- American Conference of Governmental and Industrial Hygienists' threshold limit value ceiling; the concentration of a substance that should not be exceeded during any part of the working exposure.
LC_{50} (Lethal Concentration $_{50}$)--A calculated concentration of a chemical in air to which exposure for a specific length of time is expected to cause death in 50% of a defined experimental animal population.
NIOSH IDLH --National Institute of Occupational Safety and Health's immediately dangerous to life or health limit; NIOSH recommended exposure limit to ensure that a worker can escape from an exposure condition that is likely to cause death or immediate or delayed permanent adverse health effects or prevent escape from the environment.
OSHA PEL --Occupational Safety and Health Administration's permissible exposure limit expressed as a time-weighted average; the concentration of a substance to which most workers can be exposed without adverse effect averaged over a normal 8-h workday or a 40-h workweek.

The health and regulatory values cited in this factsheet were obtained in December 1999.
[a] Health Numbers are toxicological numbers from animal testing or risk assessment values developed by EPA.
[b] Regulatory numbers are values that have been incorporated in Government regulations, while advisory numbers are nonregulatory values provided by the Government or other groups as advice. OSHA numbers are regulatory, whereas NIOSH, ACGIH, and AIHA numbers are advisory.
[c] The LOAEL and NOAEL are from the critical study used as the basis for the EPA RfC.

Summary created in April 1992, updated in January 2000

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Print

Planning Commission May 1, 2023 Public Comment - Submission #3070

Date Submitted: 4/28/2023

Addendum
May 1, 2023 Agenda Packet

First and Last Name*

Sarah Mickschl

Email Address*

sarahmickschl@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

6915 GRASSY RANGE DR

Public Comment for the Planning Commission May 1, 2023 Meeting

I am strongly against the decision to approve the Asphalt Plant from being built at the current location within Wellington town limits. 1.Â The town of Wellington was re-zoned in 2022 with the land that Connell Resources Â wants to develop zoned as Heavy Industrial.Â As Wellington was re-zoned, Heavy Industrial land came with setback requirements of 1000ft linear and 45ft height restrictions.Â The claim by Connell Resources that the land is not suitable for Heavy Industrial use with current setbacks should have led town planners to decide that this property should be re-zoned to Light Industrial to limit the setback needs.Â The need for a greater setback of 2640ft is actually more appropriate given the language in the Land Use Code Section 4.03.21 B curating toxic chemicals.Â Especially since it is adjacent to a residential neighborhood, a park and school.Â Additionally, the asphalt plant will not only impact the nearby neighborhoods, but our entire small town as the air quality will be impacted. 2.Â As a homeowner, teacher and involved member of ourÂ community I have issues with the lack of informed decision making to grant the setback variance as well.Â It does not appear the town of Wellington has done any environmental (air quality, water quality and quantity, soil erosion and discharge), traffic impact, view shed impacts, noice, environmental justice for underserved communities, or economic impacts analysis that this will have on the health and safety of Wellington residents and wildlife such as migrating birds.Â The town must clearly understand and communicate to the public, the risks and/or benefits associated with the Asphalt Plant. This has yet to have been completed. Â Based on other locations where Asphalt Plants are located near neighborhoods, property values decreased 56% according to Blue Ridge Environmental Defense League (BREDL).Â BREDL also found that 45% of residents living within a half mile of a new asphalt plant reported a deterioration of their health, which began after the plant opened.Â Â Known toxins also come with an Asphalt Plant such as odor, formaldehyde, hexane, phenol, polycyclic organic matter, and toluene. The CDCâ€™s National Institute for Occupational Safety & Health states, â€œKnown carcinogens have been found in asphalt fumes generated at work sites.â€* Exposure to these air toxins may cause cancer, central nervous system problems, liver damage, respiratory problems, and skin irritation (EPA Asphalt Plant Emission Assessment Report 2000). As a mother and teacher, it seems very irresponsibleÂ of the Council not to have the health and safety of its residents as its first and foremost priority. It is also stated in the Land Use Code, Section 1.01.1Â and Section 4.03.21, that the sole purpose of the code is for the health and safety of its residents. Clearly, theÂ Asphalt Plant violates the Land Use Code and should not be approved.Â Â The town of Wellington has a number of human health and safety issues to deal with currently, they do not need to add another issue. The responsibility of the Town of Wellington and its elected representatives is the health, safety, and well being of its residents.Â If this asphalt plant is approved, the town is falling far short of this responsibility. Â 3.Â The economic impact on the residents and the town will be noticeable.Â Residents will lose property value and will likely look to move out of town.Â With issues Wellington is already trying to deal with (train crossings, water quality, water price, concentrated feed lots, close proximity to the highway), this will likely be the final thing to tilt residents to leave.Â Businesses will also likely leave and close as their consumers will leave town. Â 4.Â There are certainly better locations for the Asphalt Plant to be located.Â Connell Resources likes to mention that homes have been built in Fort Collins next to their plants, however that is a homeowners decision.Â With this approval in Wellington, homeowners were not able to make a decision to live next to an Asphalt Plant, the town of Wellington is poorly making that decision for them.Â As elected officials, you must stand up for your constituents. There are large swaths of county land in Larmier and Weld where this could be located away from residential areas.Â Connell Resources claims that the counties don't want the Asphalt Plants, but there is a process to get those approved there.Â There are also areas within Weld County where these plants are welcomed. Connell Resources also claimed that they could open in Carr (where they get their aggregate) but its too cold and windy for transporting.Â There are common mitigations such as lining and insulating trucks for transport.Â These plants exist in far colder places than the Front Range of Colorado. It's time for the town of Wellington to STOP being Fort Collins' dumping ground. Thank you for taking comments and I trust the right decision will be made regarding the health, safety, and viability of residents and the town of Wellington. Sarah Mickschl

Optional File Attachment

-Land Use Code-ADOPTED.pdf

Optional File Attachment

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Optional File Attachment

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TOWN OF WELLINGTON
PLANNING COMMISSION
June 5, 2023
6:30 PM

Leeper Center, 3800 Wilson Avenue, Wellington CO

REGULAR MEETING

Individuals wishing to make public comments must attend the meeting in person or may submit comments by sending an email to birdca@wellingtoncolorado.gov. The email must be received by 3:00 p.m. Friday, June 2, 2023. After 3:00 p.m. on June 2, written public comments can not be accepted. The comments will be provided to the Commissioners at the meeting. Emailed comments will not be read during the meeting.

The Zoom information below is for online viewing and listening only.

Please click the link below to join the webinar:
https://us06web.zoom.us/j/86154011660?pwd=VnZxZlRtUHRmNCtVSVpOcDIvYjZlQT09
Passcode: 446308
Webinar ID: 861 5401 1660
Or One tap mobile:
US: +17207072699,,87576162114# or +12532158782,,87576162114# Or Telephone:
US: +1 720 707 2699 or +1 253 215 8782 or +1 346 248 7799

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1. CALL TO ORDER
2. ROLL CALL
3. ADDITIONS TO OR DELETIONS FROM THE AGENDA
4. PUBLIC FORUM
5. CONSIDERATION OF MINUTES
   A. Meeting Minutes of May 1, 2023
6. OLD BUSINESS
   A. Connell Resources Site Plan Review (Continued from May 1, 2023)
7. ANNOUNCEMENTS
8. ADJOURNMENT

The Town of Wellington will make reasonable accommodations for access to Town services, programs, and activities and special communication arrangements Individuals needing special accommodation may request assistance by contacting at Town Hall or at 970-568-3381 at least 24 hours in advance.

Planning Commission Meeting

Date: **June 5, 2023**
Submitted By: **Patty Lundy, Planning Analyst**
Subject: **Meeting Minutes of May 1, 2023**

EXECUTIVE SUMMARY

BACKGROUND / DISCUSSION

STAFF RECOMMENDATION

Approve the regular meeting minutes of May 1, 2023 as presented.

ATTACHMENTS

1. Minutes of May 1, 2023

TOWN OF WELLINGTON
PLANNING COMMISSION
May 1, 2023

MINUTES
REGULAR MEETING – 6:30 PM

1. CALL REGULAR MEETING TO ORDER – 6:30 p.m.

   The Planning Commission for the Town of Wellington, Colorado, met on May 1, 2023, at the Wilson Leeper Center, 3800 Wilson Avenue, Wellington, Colorado at 6:30 p.m.

2. ROLL CALL

Commissioners Present:	Eric Sartor, Chairperson Lisa Chollet Tim Whitehouse Bert McCaffrey Stephen Carman
Absent:	Lowrey Moyer Linda Knaack
Town Staff Present:	Cody Bird, Planning Director Paul Whalen, Planner III Patty Lundy, Planning Analyst

3. ADDITIONS TO OR DELECTIONS FROM THE AGENDA

   None

4. PUBLIC FORUM

   Ben Leistikow stated he thought the online form for public comments on the Connell site plan application might not be working. He did not see his comments in the packet for the meeting.

5. CONSIDERATION OF MINUTES

   A. Meeting Minutes of April 3, 2023

   Commissioner McCaffrey moved to approve the meeting minutes of April 3, 2023. Commissioner Chollet seconded.

   Yeas – Chollet, Whitehouse, McCaffrey, Carman, Sartor
   Nays – None
   Motion carried

6. NEW BUSINESS

A. **Site Plan Review - Connell Resources Asphalt Plant - Continued from March 6, 2023**

Cody Bird, Planning Director said that this was a continuation from the March 6th meeting. From that meeting there were questions asked and additional information requested. The Town received a letter from the applicant requesting a continuance until June 5, 2023 to allow additional time for the applicant's consultants to prepare the requested information, including an air dispersion model.

Commissioner Chollet mentioned that there were two Commissioners absent and felt they should be available for the vote on this topic.

Commissioner Carman wanted to know if the thirty (30) days would be enough. Bird replied that the applicant expected the studies and information to be available in the next two weeks and felt that it should be enough time.

Chairman Sartor thanked everyone for coming to the meeting and for sharing comments. He also thanked those who could not be at the meeting but took the time to write in their comments. He explained that usually there would be a staff presentation, applicant presentation as well as the Commissioner's having a discussion before opening a public hearing. Since the applicant has requested a continuance to allow time for the studies, the presentation materials were not available tonight. He stated the Commission would prefer to hear public comments at the next meeting when the information was presented, but also wanted to allow those present to make comments if they felt the need.

Commissioner Whitehouse pointed out there were about 180 pages of written public comments and other documents submitted for this meeting and about 91 pages from the last meeting. The Commissioners do read the comments submitted.

Patti Garcia, Town Administrator reported that there did appear to be some comments submitted online that did not get included in the packet. She will look into what happened and make sure the comments were included for the next meeting.

Matt Goepel asked what the Commission's mission statement is. He mentions that Commissioner Knaack had read it at the earlier meeting and thought it should be restated.

Nancy McKay did not believe that there were consultants or that they need more time to get the results. She also did not think that the setbacks should be changed for this company.

Ben Trabing wanted to know what experts the Town has to be able to understand the air dispersion models.

Dianne McQuaid would like to see the study report posted before the next meeting.

Josh Kerson does not believe that the high stacks should be allowed in our community due to the chemicals it lets off.

Erin Ramler said that since Mr. Warren already admitted there are chemicals, that the 2,640-foot minimum setback applies. He already has to get four permits for this so the decision should already be made to not allow it. Why do you need the other information to give you the details on the toxic chemicals? It should not be allowed because there are toxic chemicals.

Sara Mickshl and her sons Tyler and Cooper want the Commission to follow the Land Use Code and says the Commissioners job is to protect the community. It will also make all of the homes drop in price.

Fred Condos read a letter that the Commissioners already had for the audience. It was about Connell being out of compliance for over four months and not paying their fee for a year.

Dan Matlock said he had a friend that sat behind a wheel of one of the trucks for 20 years. He told him about the noise, chemicals and the changes that will happened to the community for the worse.

Chairman Sartor thanked everyone for their comments and stated that the Commissioners are listening. There have not been any decisions made on this application yet.

Commissioner Chollet wanted to clarify that the Planning Commission does not hear variances to change the setbacks. That was the role of the Board of Adjustments. Now it has come to the Planning Commission with the setback requirements, and they are to look at the site plan. The Land Use Code guides them to what the Commission considers for site plans. They are reading and listening to all the information and following all the steps. We all live here, and we are volunteers that do care. The Planning Commission does not get paid, and none are receiving any financial gain.

Chairman Sartor asked one more time if anyone else would like to share comments.

Ben Leistikow asked if the Town reached out to Larimer County and to the State about the toxic chemicals. Does the Town need help from others in the community that does know a lot about these topics.

Jason Janssen asked what the fire department is going to do and if they can handle anything that happens out there. He asked the Town to think about what this will do to the town. He asked why not let Carr (Carr, Colorado) have this plant? Let them have it.

Chairman Sartor asked for a motion to table the site plan.

Commissioner Chollet moved to table the site plan review for Connell Resources to the regular meeting of the Planning Commission to be held June 5, 2023 at 6:30pm at the Wilson Leeper Center.

Motion seconded by Commissioner McCaffrey.

Yeas – Chollet, Whitehouse, McCaffrey, Carman, Sartor
Nays – None
Motion carried

7. COMMUNICATIONS

Bird said that there are 3 other applicants for the June 5th meeting. He wanted to know if the Commissioners would be available for a special meeting for the other applicants since old business is first which would be the continuance from this meeting.

The Commissioners discussed this and said they could meet the following Monday which will be June 12th, 2023. Bird will reach out and ask the applicants if they could meet on June 12th, 2023.

Commissioner Whitehouse asked if there was a letter received from a State Representative on the Connell Resources Site Plan. Commissioner Chollet said that Senator Janice Marchman reached out to her by letter and phone call – She did not take the call. Bird stated staff received the letter and it will be included in the packet at the June 5th meeting.

8. ADJOURNMENT

Chairman Sartor adjourned the regular meeting at 7:06 PM.

Approved this_____day of _____, 2023

_____

Recording Secretary

Planning Commission Meeting

Date: June 5, 2023
Submitted By: Cody Bird, Planning Director
Subject: Connell Resources Site Plan Review (Continued from May 1, 2023)

EXECUTIVE SUMMARY

See attached staff report and supporting documentation.

BACKGROUND / DISCUSSION

STAFF RECOMMENDATION

Staff recommends the proposed site plan, subject to staff report comments and recommended conditions of approval (paragraph 15 above), satisfies the Findings for Approval for a site plan in accordance with the Land Use Code.

Below are motion options for the Planning Commission to consider. Town staff will also be available to assist the Planning Commission in modifying a motion option if desired to achieve the Planning Commission's intent.

1. Move to approve the site plans for Connell Resources subject to conditions identified in the staff report (paragraph 15).
2. Move to approve the site plans for Connell Resources subject to conditions identified in the staff report and also including condition(s) _____, _____, [...], and _____.
3. Move to deny the site plan for Connell Resources.

ATTACHMENTS

1. Staff Report
2. Site Plan Procedures
3. Location Map
4. Site Separation Exhibit
5. Town Presentation Slides
6. Applicant Narrative
7. Site Development Plans
8. Applicant Response and Exhibits
9. Refined Modeling Report - May 18, 2023
10. Refined Modeling Report - Appendix A
11. Refined Modeling Report - Appendix B
12. Addendum to Refined Modeling Report - May 26, 2023
13. Revised Traffic Impact Study
14. Larimer County Health Dept. Presentation Slides
15. Public Comments - Addendum to May 1, 2023 Packet
16. Public Comments - May 30, 2023

Planning Commission Meeting

Meeting Date: June 5, 2023 (Continued from May 1, 2023)

Submitted By: Cody Bird, Planning Director

Subject:

- Connell Resources Asphalt Plant Site Plan Review – A parcel of land situated in the NE ¼ Section 28, Township 9 North, Range 68 West of the 6th, P.M. Town of Wellington, County of Larimer, State of Colorado.

General Location:

South of E Larimer County Road 66 and west of the BNSF railroad crossing.

Applicant/Agent:

Applicant: John Warren, Connell Resources

Reason for request:

- Request review for a proposed site plan for a new Connell Resources Asphalt Plant facility.

Background Information:

- **Prior Meeting Information:** The site plan review application submitted by Connell Resources, Inc. was originally submitted for and heard at the March 6, 2023 Planning Commission meeting. Subsequently, the request was tabled to allow time to perform studies and address questions raised. A brief background is provided below:
- **March 6, 2023:** The request for site plan review was heard by the Planning Commission at the March 6th, 2023, regular meeting. The agenda item was continued to the May 1, 2023 Planning Commission meeting to allow more time to consider the volume of public comments and testimony presented. The Planning Commission also requested additional information and data prior to making a decision. The March 6, 2023 Planning Commission agenda packet, including written public comments received, is available on the Town's website at: https://www.wellingtoncolorado.gov/Archive.aspx?AMID=56.
- **May 1, 2023:** At the May 1st, 2023 regular meeting, the applicant requested a continuance to the June 5, 2023 regular meeting. The continuance was requested because the studies and reports the applicant contracted were not yet complete and time was needed to finish the reports and provide for review. The continuance was granted, and the agenda item was tabled to June 5, 2023. The May 1, 2023 Planning Commission agenda packet, including written public comments received, is available on the Town's website at: https://www.wellingtoncolorado.gov/Archive.aspx?AMID=56.
    - Additional public comments were submitted in writing and did not get included in the original May 1, 2023 agenda packet. The written public comments received were published in an amended packet also available on the Town's website at: https://www.wellingtoncolorado.gov/Archive.aspx?AMID=56.

- The following list identifies additional information requested by the Planning Commission and are addressed in this report and included attachments:
    - Air Dispersion Model and Air Emission Characterization
    - Emission Standards and Regulatory Agencies
    - Consideration of Adequate Separation and Setbacks
    - Traffic Impact Study
    - Noise Level Data and Information
    - Health and Environment Impacts
    - Consideration of Groundwater Impacts and Monitoring
    - Architectural Character and Building Elevations

- **Site Plan Review Process and Findings for Approval:**
    - A site plan review is submitted to Town staff for review in accordance with Section 2.12 of the Land Use Code (attached). Town staff reviews the site plan and may refer the application to other affected review agencies (example: Larimer County, utilities companies, school districts, other regulatory agencies, or others).
    - Town staff reviews site plans and presents the site plans and review findings to the Planning Commission. The Planning Commission is the final review and decision-making authority for a site plan application.
    - In reviewing a site plan application, the Planning Commission considers the Findings for Approval, Subsection 2.12.3, below:
        A. The site plan is consistent with the Comprehensive Plan and the intent stated in this Land Use Code.
        B. The lot size and lot dimensions are consistent with what is shown on the approved final plat.
        C. No buildings or structures infringe on any easements.
        D. The proposed site grading is consistent with the requirements of any applicable adopted storm drainage criteria or master drainage plans.
        E. The density and dimensions shown conform with Article 4 of this Code (Town Land Use Code) or the approved PUD requirements.
        F. The applicable Development Standards have been adequately addressed and the proposed improvements conform with Article 5 of this Code (Town Land Use Code).
    - In consideration of a site plan application, the Planning Commission may take one of the following actions:
        - Approve the site plan;
        - Approve the site plan with conditions of approval;
        - Deny the site plan application.

Staff Comments:

- The application for this site plan review request was submitted for the March 6, 2023 Planning Commission meeting and was subsequently tabled. As part of the review process, the site plan was referred to other reviewing agencies and review comments were received. The applicant submitted a second round of site plan drawings to address the initial review comments. Site plan drawings were updated to address review comments, and the applicant has also submitted a revised traffic impact study based on Town comments and Larimer County recommendations. The revised site plans and revised traffic impact study have been reviewed by Town staff and referral agencies.

- The applicant has also performed the necessary studies and models in response to the Planning Commission's request for additional information. The applicant has prepared a response letter and included applicable studies and reports attached as exhibits with their response letter. The applicant's letter is attached with this report.
- Below are topics the Planning Commission requested additional information and the analysis or reports that have been prepared in response to the questions.
- Air Dispersion Model and Air Emission Characterization
    - The site plans for this application were referred to Larimer County Department of Public Health and Environment (LCDPHE). LCDPHE recommended and the Planning Commission requested the applicant perform testing and studies for Air Dispersion and Air Emissions Characterization.
    - The applicant has contracted with Antea Group, a professional firm specializing in environment, health, safety and sustainability. Antea Group prepared modeling using AERMOD, the air quality dispersion modeling recommended and preferred by the U.S. EPA (Environmental Protection Agency).
        - EPA defines a preliminary risk-based screening approach for air toxics monitoring data sets. According to the EPA, the basic concept behind the risk-based initial screening level methodology is to evaluate air monitoring data sets using a framework that is, by design, relatively simple to perform yet conservative (i.e., health protective) in nature. This initial screening methodology is designed, through the use of conservative decisions, to identify pollutants for which risks are unlikely to be of concern. Accordingly, if all of the monitoring data "pass the screen" using this approach, the analyst may be able to conclude that the monitoring results are indicative of acceptably low risk and that a more robust analysis (were one to be done) would come to the same conclusion.
    - Antea Group prepared the modeling and submitted the results in a report dated May 18, 2023. The report was presented to LCDPHE for review (May 18, 2023 report attached).
        - The report details modeling for criteria pollutants as well as Hazardous Air Pollutants (HAPS).
        - The modeling is based upon the actual equipment the applicant proposes to locate on the site, actual and proposed topography, and meteorological data for the site.
        - The modeling is also based upon the maximum volume permitted for the proposed asphalt batch plant (a "worst-case scenario" approach).
        - The modeling evaluates receptor locations at the nearest residence (Waldo residence), Wellington Community Park, and Eyestone Elementary School.
    - Upon initial review, LCDPHE identified additional questions and requested updates to the modeling. Antea Group prepared an addendum to address LCDPHE comments (May 26, 2023 report attached).
    - LCDPHE determined that the air dispersion modeling for criteria pollutants and hazardous air pollutants were determined to be below both chronic and acute levels known to cause harmful health impacts under Federal and State screening values and health guideline values.
- Emission Standards and Regulatory Agencies
    - The U.S. EPA sets national standards for air pollutants. The Colorado Air Pollution Control Division is Colorado's regulatory agency that oversees compliance with national standards. Larimer County provides investigations and inspections for the State Air Pollution Control Division for operations located in Larimer County. Additional information for regulation and enforcement is included in LCDPHE's presentation and the applicant's responses.

- The LCDPHE presentation slides are included in this packet and includes tables of the screening limits for acute and chronic values for criteria pollutants and hazardous air pollutants.

- Consideration of Adequate Separation and Setbacks
  - The Board of Adjustment considered and approved a variance from the setback requirement defined in Subsection 4.03.21.A. of the Land Use Code for setbacks between an Industrial and Manufacturing, Heavy use and a residential district (1,000 ft. required). The Board of Adjustment granted a variance on October 27, 2022 reducing the setback distance for the proposed site to 800 ft., including conditions of approval.
  - At prior Planning Commission meetings and in public comments received, Subsection 4.03.21.B. has been brought up as possibly needing additional consideration.
    - 4.03.21.B. states: Any Industrial and Manufacturing, Heavy use producing and curating toxic chemicals or conducting animal slaughtering shall be located at least:
      1. Two thousand six hundred forty (2,640) feet from any residential district, religious land use, medical care facility, or school.
      2. One thousand three hundred twenty (1,320) feet from any commercial use.
      3. Six hundred sixty (660) feet from any Industrial and Manufacturing, Light use.
    - A hot mix asphalt plant is a permitted Industrial and Manufacturing, Heavy use.
    - "Producing and curating toxic chemicals" is not defined within the Land Use Code.
    - A hot mix asphalt plant utilizes aggregate materials (sand, gravel and recycled asphalt millings) that are heated and combined with bitumen (an oil by-product) to create hot asphalt. The raw materials involved are not generally considered to be hazardous and do not carry the "hazardous" placard label for transporting on State and County roadways.
    - Finished asphalt products are common in the built environment and are applied on State, County and local roadways, commercial parking lots, and driveways. The finished product is generally not considered to be a hazardous product. The temperature at which asphalt is mixed and applied may be considered dangerous due to the heat (approximately 250 degrees).
    - By-products of the hot mix asphalt process generate air emissions from the burning of natural gas and heating of the aggregate materials. Air emissions are regulated by Federal, State and County departments. Hot mix asphalt plants are permitted and regulated in accordance with applicable Federal, State and County air emission standards. There are no local standards that are more stringent than the State and EPA standards enforced through the State permitting process.
    - When the setback variance request was submitted to the Board of Adjustment, staff recommended that conditions of approval be considered to require obtaining and maintaining all applicable permits, including for air emissions.
    - Fuel storage and dispensing facilities are licensed and monitored by the State of Colorado Division of Oil and Public Safety. Containment and operational best management practices will be required in compliance with all regulatory requirements.
    - Subsection 4.03.21.B. also contemplates animal slaughtering - processes involved in animal slaughter are not a factor for this application.
    - Based upon the above, and the recommended condition to obtain and maintain all applicable permits, the 2,640 setback for "producing and curating toxic chemicals" was not identified as needing a variance.

        - Air dispersion modeling reports and evaluation of the equipment and proposed site development plan have identified and determined that expected air emissions will be below applicable chronic and acute screening values for criteria pollutants and hazardous air pollutants as established by the EPA.
        - Other setbacks contemplated in Subsection 4.03.21.B. from religious land uses, medical care facilities and schools (2,640 feet), commercial uses (1,320 feet), and other Industrial and Manufacturing, Light uses (660 feet) are all satisfied by the proposed site plan.
        - A site separation exhibit is attached with this report and includes radius distances of 800 ft., 1,000 ft. and 2,640 ft. to illustrate the relationships of the proposed site to surrounding development and key sites.
- Traffic Impact Study
    - A revised traffic impact study was prepared in response to Town and referral agency review comments. The revised traffic impact study is attached for reference.
    - The study identifies that the proposed site development will generate 254 daily trips, including passenger vehicles and large trucks (a trip is one vehicle, one way – thus a truck delivery to a site and returns is counted as two trips).
    - The truck routing plan is included in the traffic impact study and is identified as large trucks utilizing County Road 7 north to Owl Canyon Road so that truck traffic (except for local deliveries) will not negatively impact Town roads or intersections.
    - The study identifies that level of service will require improvements to local and regional roadways based upon the trip generation and identified routes. The applicant is required to improve roadways adjacent to the site in accordance with Town standards and improve county roadways impacted to Larimer County standards. This includes paving of County Road 66 from County Road 9 to County Road 7 and the addition of turning lanes at impacted intersections where required.
- Noise Level Data and Modeling
    - The applicant conducted an analysis of their existing site and equipment at their Timnath location to identify the base level of noise generation expected for site operations. The base information from the Timnath site was also modeled at the Wellington proposed location as a "Predictive Sound Analysis" with noise contour mapping to illustrate expected noise volumes generated by site operations. Both the existing conditions analysis of the Timnath site and the predictive analysis for the Wellington site are included in the applicant's response letter.
    - The highest volume expected from the site operations is at the location of the generator on the site (source = 83 decibels). Noise contour mapping illustrates that the decibel level diminishes further away from the source. The contour mapping also illustrates the effect of landscape berms to mitigate the effects of sound travel.
    - On the Wellington sound level predictive analysis, 55 decibels (limit defined by Larimer County) is expected to be exceeded beyond the property line (unmitigated, based on existing site conditions).
    - The recommendation from the predictive sound analysis for the Wellington site recommends constructing earth berms along the perimeter of the site at a height to adequately contain noise sources within the property lines.
        - The Board of Adjustment required earth berms as a condition of approval for the variances granted, including a 15-foot high earth berm along the west side of the site. The earth berms required by the Board of Adjustment are reflected on the site plans.
        - The Planning Commission may also make the earth berms a condition of approval for the site plans.

- Environmental Impacts
    - Questions arose at the March 6, 2023 Planning Commission regarding the need for environmental assessments and remediation plans.
        - Remediation plans are associated with properties that have contamination. There is no known contamination existing on the site. It is possible that the term "remediation" may have been used interchangeably with the term "reclamation." A reclamation plan may be a requirement for sites that extract raw materials and are associated with a mining and extraction permit. There are no extraction operations proposed as part of this site development plan. All aggregate materials will be brought from offsite.
        - The Town does not have any existing requirements for environmental assessments for land development processes. Hot mix asphalt plant permitting also does not require an environmental assessment.
        - The applicant contracted with a local Fort Collins, CO consulting firm specializing in biological, soil and risk assessment services to provide a wildlife mitigation plan.
        - The wildlife assessment identifies that the property proposed for development has limited wildlife habitat due to existing and past agricultural activities on the site and adjacent historic land uses.
        - There were no Threatened and Endangered Species habitat areas identified within or near the property area. Aquatic Native Species Conservation Waters along Boxelder Creek are outside the property development area and Pronghorn Winter Concentration habitat is identified as having limited habitat value due to current land uses.
        - The report does not identify any wildlife mitigation strategies as warranted for the property due to limited wildlife habitat on and near the property.

- Consideration of Groundwater Impacts and Monitoring
    - The applicant has committed to evaluate the existing groundwater quality conditions to establish a baseline of information for the site and identify any potential existing groundwater contamination prior to site development.
    - Two groundwater monitoring wells are also proposed to be installed by the applicant and registered with the State Engineering Office for ongoing monitoring and results available to the State and the Town.

- Architectural Character and Building Elevations
    - Discussion at the March 6, 2023 Planning Commission meeting identified a desire to have additional building architecture and building elevation information provided.
    - The applicant has provided material and color samples that would be utilized on site. Because full architectural plans and renderings have not been procured at this time, the applicant has provided photographs of buildings and structures that are typical of industrial and light industrial developments. All buildings on site are intended to be made of similar and compatible materials (excludes equipment and silos).
    - The site plan proposes and is required to provide earthen berms for screening and landscaping. The berms and landscaping are intended to screen site operations from public view. Only the main office building at the northwest corner of the site is intended to be visible from public view.

Site Plan Review:

The Findings for Approval for a site plan review are listed below along with Staff's recommendation for each finding.

Findings for Approval (Land Use Code Subsection 2.12.3)

A. The site plan is consistent with the Comprehensive Plan and the intent stated in this Land Use Code.

- The site development plan is supported by goals and strategies identified in the Comprehensive Plan in the following ways:
    - TE 2.5 Ensure new industrial developments are consistent with the Town's infrastructure master plans and the Town's water efficiency plan.
    - TE 4.1 Balance residential with commercial land uses to promote local job opportunities and needed services for residents.
    - CP 2.6 Identify partners and resource to build a campaign to promote air quality in and around Wellington to ensure air quality is maintained as Wellington and the North Front Range continues to grow.
    - F&P. 2.3. Require new development to demonstrate how they will connect to and improve the existing networks for active transportation, vehicular traffic, open space and parks, and essential infrastructure for water, wastewater, and stormwater.
- Development of the property for Industrial uses is consistent with the recommendations of the Future Land Use Map included in the Comprehensive Plan. The property is identified as Industrial on the Future Land Use Map and the proposed site development plan proposes a permitted Industrial land use.
- The Master Street Plan Map of the Comprehensive Plan identifies County Road 66 adjacent to the site as an Arterial Roadway. The applicant is preparing road improvement plans adjacent to the site for review by the Town in accordance with the Town's arterial roadway standards (and appropriate transitions back to County rural roadway standards where needed).
- The Town's Land Use Code establishes a variety of zoning district classifications according to the use of land and buildings with varying intensities of uses and standards whose interrelationships of boundary zones form a compatible pattern of land uses and buffer areas which enhance the value of each zone.
    - The Industrial District is intended to provide a location for large-format buildings for manufacturing, warehousing and distributing, indoor and outdoor storage.
        - Proposed development of the site includes large buildings, manufacturing and distribution and includes outdoor material storage.
    - Locations for the Industrial zone require good access to major arterial streets and adequate water, sewer and power.
        - The proposed development site is located adjacent to County Road 66, identified as an arterial roadway. Proposed development of the site includes County Road 66 as the primary access route and utilizes other arterial roadways (County Road 7, Owl Canyon Road and I-25) for large truck routes.
    - The Industrial District requires that dust, fumes, odors, smoke, vapor and noise shall be confined to the site and controlled in accordance with state air pollution laws
        - Recommended conditions of approval include obtaining and maintaining applicable State and County permits.
    - Approved outdoor storage areas, equipment and refuse areas shall be concealed form view from abutting rights-of-way and from adjoining residential districts.
- The Comprehensive Plan encourages economic growth that promotes diversity of employment and service opportunities in the town.

B. The lot size and lot dimensions are consistent with what is shown on the approved final plat.

- The property is not currently platted. The property is approximately 35 acres in size (including proposed road right-of-way that is to be dedicated). The property is proposed to be platted through a separate application process to dedicate the easements and right-of-way in accordance with the design of the site plan. The proposed site plans identify a single lot approximately 30 acres in size and would be sufficient to satisfy the lot size and dimension standards for the Industrial district.

C. No buildings or structures infringe on any easements.

- A plat is proposed to follow site plan review to dedicate required street right-of-way and utility easements. Right-of-way and easements are proposed to be aligned based upon Town needs for roads and utilities configurations. The proposed buildings and structures associated with the site plan will not encroach or infringe upon any platted, existing or proposed easements.

D. The proposed site grading is consistent with the requirements of any applicable adopted storm drainage criteria or master drainage plans.

- Town Public Works and Engineering staff have reviewed the proposed drainage report and site grading design. Town Engineering has commented that the site design is or will be made to comply with the applicable Town stormwater drainage criteria and the Town's adopted Stormwater Master Plan.

E. The density and dimensions shown conform with Article 4 of this Code (Town Land Use Code) or the approved PUD requirements.

- Density and dimension standards of Article 3 of the Land Use Code are followed. The size of the site provides far greater than the minimum required 1:1 floor area ratio. Yard setbacks (25 ft. front yard, 20-ft. side yard and 10-ft. rear yard) are all in compliance. There is no PUD recommended for this proposed site development plan.

F. The applicable Development Standards have been adequately addressed and the proposed improvements conform with Article 5 of this Code (Town Land Use Code).

- The Staff report provided for the March 6, 2023 Planning Commission identified Town Planning Dept. comments and Town Public Works and Engineering comments for site layout and design and technical criteria. The March 6, 2023 staff report comments are still valid for the proposed site development plan and are copied below.

The site is comprised of 35.56 acres. The property is proposed to be platted through a separate application process to memorialize the easements and dedications created and established through the site plan process. If the site plan is approved, the Town will be negotiating an agreement to re-align its existing water distribution line consistent with the establishment of the new easements, new private road and dedication of additional LCR 66 Right-of-Way.

1. Building Setbacks and dimensional standards for the Industrial Zone District: The proposed buildings will not encroach on any required building setbacks (Table 3.02.7 of the Town's Land Use Code: 25ft - Front; 20ft - side and 10ft – rear). The Board of Adjustment granted a variance on October 27, 2022 to increase the height of the silo (only the silo). The variance for structure height allows only the silo structure to exceed the maximum district height of 45 ft. The silo is allowed to be up to a maximum height of 70 ft.
2. Use Specific Standard Setback: Per Section 4.03.21-A, the Use Specific Standard for Heavy Industrial land use requires a 1,000-ft setback from any residential district or use. The Board of Adjustment granted a variance on October 27, 2022, allowing the use setback standard to be reduced to 800-ft from the property line to the heavy industrial operations.
3. Easements: The Town and applicant propose relocating the Town's existing water distribution utilities and adjusting or re-establishing new easements to accommodate the recommenced utility relocations. If the site plan is approved, the applicant will then submit a plat application to memorialize the adjusted LCR 66 right-of-way, and easement dedications. The proposed buildings and structures will not encroach on any platted, existing or proposed easements.

4. Streets and Access: A private roadway (future W. 1st Street) is proposed along the western property line adjacent to the North Poudre Irrigation Ditch/Sundance subdivision, granting two points of access to the Connell site. The public and Town will be granted access and use of the roadway via an easement that will be recorded by separate instrument and memorialized on a future plat application. The re-located Town utilities will be placed within this proposed access and utility easement. In addition, LCR 66 is scheduled for improvements to accommodate the increased heavy truck traffic and may require additional right-of-way dedications. Site access, including office and administration, is restricted to normal business hours of operation.
5. Pedestrian Connection: Sidewalks are proposed adjacent to the improved LCR 66 road along the northern property line in accordance with Town standards. As this is a heavy industrial facility and operates on private internal roads and driveways, the site's internal roadways do not have sidewalks. Due to the truck traffic associated with operations, sidewalks along the east side of the private road are not recommended. The applicant has requested, and staff has agreed, a sidewalk adjacent and west of the future W 1st Street is more practical to provide a connection to Wellington Community Park as a trail connection. Town staff, the Sundance developer and Connell Resources have had discussions about a possible pedestrian sidewalk, and subdivision access along the west side of the proposed private road to benefit Sundance subdivision and pedestrian access.
6. Parking: Parking is provided throughout the site for a variety of uses. Employee and customer parking with standard vehicle spaces 9 X 18 is provided at the main office (36 spaces), with employee-only parking limited to the welding/maintenance service areas (20 spaces) located along the western edge of the site. Restricted additional parking spaces of varying size and length are provided throughout the site for overnight parking and storage of heavy equipment—trucks, semis and earth-moving equipment. Access to the facility, including all parking spaces, is limited to normal business hours when the gates are open. Heavy industrial uses are required to provide a minimum of (1) parking space per each 1,000 sq. ft. of gross floor area. The buildings consist of 21,380 sq. ft. of floor area, requiring 22 parking spaces. Fifty-six parking spaces are proposed for employee and customer parking, exceeding the requirement.
    - SIZE: Parking spaces will comply with the minimum width and depth requirements. The drawing shows parking spaces that comply with these dimensions.
    - BICYCLE RACK INFO: A bicycle rack is proposed and located near the administrative office on the site plan.
    - SCREENING: The proposed parking lots are primarily screened from off-site public views by the perimeter landscape berm required as a condition of approval for a variance request by the Board of Adjustment. The Administration/Office building parking lot will be screened by a 4-5ft berm and landscape materials.
7. Circulation Aisles: Circulation aisles meet the minimum 24-ft. width requirement for two-way traffic circulation, and emergency vehicle access applicant has confirmed all measurements on the drawings.
8. ADA: ADA Standards for Accessible Design require accessible parking spaces based upon the total number of parking spaces provided on site. When (25) parking spaces are provided, a minimum of (1) accessible parking space is required, and (1) must be van accessible. Two accessible parking spaces are provided, meeting the requirement.
    - LOCATION/CLUSTER: The proposed office building is oriented north to south with the primary entrance located at the south-west corner. The ADA spaces are shown in this location. All spaces are van accessible spaces. Two accessible spaces are located near the public entrance on the west side of the building.
    - PATHWAY TO BUILDING OR CURBS: All ADA spaces have a curb cut with sidewalk ramps, and all have an ADA-compliant accessible path into the building.

- The applicant or their designated agent shall ensure that all accessible parking spaces and routes meet the requirements of ADA standards including locations, widths, aisles, slopes, signage, and pavement markings. Sufficient details shall be included and coordinated in the civil engineering and architectural plans, as provided.

9. Signage: Planning staff has requested approximate signage locations be shown on the site plan for relationship coordination purposes only. **Per the Town's Board of Adjustment COA#4, signage may not be located on the silos.** The applicant has been informed signage is permitted through a separate Town application procedure.
    - The current applicant intends to return with wall sign specifications at a later time in a separate application.
    - Staff requests Planning Commission authorization for staff to review all future submitted sign details (wall and monument signs) for this site and administratively approve.
10. Site Lighting: A photometric plan was provided with the site plans and was found to be in compliance with the Town's Exterior Lighting standards. Adequate lighting is essential for safe operation during the late evening hours, silo and tower walkways and passages must be adequately illuminated for employee safety.
    - The Town's maximum illumination level at the property line or 20-FT beyond, is 0.1 foot-candle. The plan complies with the 0.1 maximum illumination.
    - The Town has a minimum illumination level of 1.0 foot-candle for parking areas and pedestrian paths for safety and security. The parking and sidewalk along the west building elevation comply with the minimal 1.0 footcandle illumination criteria, the maintenance service and loading areas also comply with a minimal illumination level of 5.0 footcandles.
    - LIGHTING DETAILS: The applicant provided manufacturer cut-sheets with specific model details about the proposed light fixtures. Specified fixtures are acceptable.
    - CONCERNS OR DISCUSSION FOR APPLICANT: The lighting package has been reviewed and the plan with details and manufacturer cut sheets comply with the intent and spirit of the Town's land use code.
11. Landscape/Screening and Buffering: (Section 5.04.14): The applicant has proposed a landscape plan that satisfies the minimum (15%) required landscape for the project. Primarily focused on perimeter buffering, the required landscape improvements include a minimum of 8-ft width perimeter landscape area that may include a pervious surface such as rock mulch/native soils with (1) tree per 40-ft (25% of required trees are evergreen). In addition to the landscape required by the Town's Land Use Code, the Board of Adjustment also requested a fifteen-foot landscaped earthen berm along the west and northern property lines to screen the site from the adjacent residences. **(Per the Town's Board of Adjustment COA#3 a fifteen-foot earthen berm shall be required along the western property line to screen/buffer the adjacent residences).**
    - Street Trees: The town standard of (1) street tree is required for each 40 linear feet of street frontage for a minimum requirement of (60) trees. Sixty-one deciduous and evergreen trees are shown as accents to the earthen berm along LCR 66 and the proposed west roadway (W 1st Street). These trees are located on the landscape berm to enhance the screening effect.
    - Site Trees: Approximately 15% (or 232,350 SF) of the site is required for landscape with the proposed areas typically located along the site perimeter and on the berms. Approximately 6,000 SF of the required landscape area is proposed at the administration office, and at a ratio of (1) tree per 1,000 sq. ft. (6) site trees are required.
        - The (60) required street trees in the listed species are consistent with the Town's Landscape & Irrigation Design Manual standards and are acceptable.
        - The proposed street and site tree locations and species will define the property perimeter and right-of-way and enhance the screening effectiveness of the earthen berm.

        - The proposed office landscaping with reduced berm height will screen the parking lot and compliment the aesthetic quality of the office building environment.
        - The tree planting rhythm adds character to the LCR 66 ROW.
    - Shrubs/Ground coverage: Shrub and groundcover/native grasses are required in the vicinity of the admin/office. The 6,000 SF of landscape area thus requires (40) shrubs, (71) shrubs (31-grasses) have been provided and thus satisfy Town standards.
        - SHRUB/TREE SUBSTITUTION: Tree substitution is not proposed. The applicant has provided (108) shrubs & grasses and 167,334 SF of native grasses to meet the town code requirement
    - Parking Lot Trees/Shrubs/Screening: (Section 5.04.15) Parking lots with 10 or more spaces are required to provide trees in islands and shrubs, berms, fencing or a combination thereof for screening and buffering. A sufficient number of tree and shrub species and earthen berms are proposed to meet the parking lot island screening requirements to screen/buffer the parking lots from public views.
        - LIGHT/TREE CONFLICT: There are no lighting/tree conflicts at this time.
        - CONCERNS OR ITEMS FOR DISCUSSION: Adequate screening/buffering is provided to screen the parking lots to comply with the intent of the Town code.
    - Other:
        - SIGHT TRIANGLE CONCERNS: Landscaping is not proposed in the sight triangle areas on the private or LCR 66 ingress/egress roads. Visibility onto LCR 66 and the future W 1st Street will not be infringed by plant materials.
        - SEPARATE TAP: The Town requires a separate tap/meter for irrigation and a separate tap/meter for domestic use. However, the BOA recommended the Town provide a separate water tap/source for only the administration/office operations, and non-potable water provided for landscape and daily plant operations. The applicant stated the non-potable water would be delivered to the site via tank trucks. An irrigation plan was provided in the plan set indicating the irrigation water source is limited to non-potable water as recommended by the BOA. Town-supplied potable water should only be used for domestic/office uses. Location and size of water sources/taps/hydrants/POCs shall be indicated on the civil engineering plans.
        - POTABLE WATER/XERIC CONFIRMATION: Per the Board of Adjustments recommendation, the potable water provided by the Town should be limited for office use/human use & consumption only, the landscape and day-to-day plant operations will utilize a non-potable water source trucked into the site via water tanks. The landscape architecture firm has confirmed the plants provided have been specifically chosen as low/xeric water-use efficient plants, shrubs, and trees to ensure long-term health of plants, water conservation and financial savings for owners.
12. Drainage: The applicant has provided plans indicating proposed site grading and drainage patterns with details for staff review. The Public Works engineering team has reviewed the project with review comments provided for the applicant to address. The developed site with 35.56 acres indicates an approximately 18.1% impervious area. The drainage report proposes surface flows across the property to a detention basin located in the southwest corner. The basin location in the lowest area of the property, conflicts with the required earth berm which must be relocated. An on-site drainage network conveys the storm water flow via swales and culverts to the detention pond which then flows into the North Poudre Irrigation Company ditch on the west-side of the future W 1st Street. Any required site modifications shall be addressed in a final drainage plan & report in accordance with Planning and Public Works.

13. Utilities:
    - Town Utilities: Water and sewer services are available in LCR 66 with sufficient capacity to serve the site. These services will be extended along the future W 1st Street south to the office/administration building location. The town-supplied potable water source shall be limited to administrative office operations/domestic uses only. The applicant proposes using a potable Town water tap to serve the occupied structures. Non-potable water for landscape irrigation and daily plant production operations will be brought in from off-site sources via truck delivery. A sanitary sewer line and potable water mainline will extend from the existing service lines located in LCR 66 south to the office location on the future W. 1st Street. The site plan submission did include civil engineering plans and details for connections to the public lines. The site plan approval is conditioned upon final review and approval by the Town Engineer.
    - Other Utilities: The applicant is responsible for coordinating with private companies to ensure that all utilities are installed underground.
    - Fire District Review: A six or eight-inch fire line will be routed around the site to serve fire hydrants as located by the Fire Department and the Town's Public Work Dept. The fire lines/hydrants shall be located within an easement with access granted to the Town for emergency access and fire line maintenance.
14. Architectural Design Standards: The Town's architectural design standards for industrial developments shall be adequately satisfied. The Town's Comprehensive Plan encourages an assortment of building types and sizes to support a diverse business base contributing to the Wellington economy. Predominantly large metal warehouse-type buildings, industrial facilities are encouraged to embrace a variety of architectural characters and themes. The Town's landscape regulations have also been updated to promote perimeter landscaping to screen and buffer the site and land use activity from public view. The fueling facility, maintenance building- a welders' shop, and administrative professional offices total 21,380 sq. ft. of floor area.
    - MASSING/SCALE: The admin/office building is a single-story metal building with a stone wainscot base, an earth-tone color theme, and substantial landscaping. The berm height is reduced to screen the parking lot, but yet maintain a visual connection to the public realm. Public access to the facility is limited to only normal hours of business operation by a fenced gate. The other structures closed to the public still embrace the character and color theme of the administration building to create a harmony and consistency across the site. The other buildings and structures/batch plant operation equipment will be functional utility structures housing welding and mechanical shops for equipment maintenance and repairs, all screened from public views. The architectural materials, style and color themes are matched and consistent and are typical for an industrial operation. Human and garage doors and roll-up docking station doors allow access into the structures. The lean-to structures will be open and screened by berms.
    - DESCRIPTION OF MATERIALS: The building is proposed to be finished primarily with metal panels, stone wainscot walls, tinted glazing, and architectural metal trim and accents as approved by the Town. Roofing materials proposed include raised seam metal roofing panels.
    - SCREENING OF MECHANICAL EQUIPMENT AND ROOFTOP UNITS: All ground-mounted mechanical equipment and rooftop units will be screened from public views via a screen wall and/or landscape elements to comply with Town code.
    - DUMPSTER SCREENING: Trash dumpsters will be located near shops and screened from public views behind the required earth berms. The trash dumpsters will be readily accessible for dumping and not visible from off-site public views.

- SECURITY FENCING: The office-administration building shall be open to the general public during normal office hours with the remainder of the site closed to public access. The site shall be secured with chain link fencing at the two gated points of entry. A standard 3-strand perimeter livestock fence will secure the remainder of the site from public access during non-business hours.

15. Conditions of Approval: Town Staff recommends the below conditions of approval for this site plan:
    - Satisfaction of the Conditions of Approval of the BOA Variance granted October 27, 2022;
    - Addressing all staff report comments;
    - Final engineering plans accepted by the Town Engineer;
    - Obtain and provide evidence of satisfaction of all county, state and federal permits including but not limited to:
        - Air Quality
        - Storm Water Discharge
        - Process Water Discharge
        - Fugitive Dust
        - Operations Plan
        - Noise Ordinance
        - County Odors
        - Fuel Storage
    - Satisfaction of all referral agency comments;
    - Other conditions as directed by the Planning Commission.
16. Corrected Plans: If the Planning Commission approves the site plan, the next step requires the applicant to revise the site plan documents to incorporate all corrections, comments and/or Planning Commission conditions, including Town engineering review of the civil plans, and submit revised copies to the Town.
    - Revisions to the site plan shall be clouded, and a written response listing all changes shall be provided, noting which comment each response is addressing.
    - All drawings and plans must be coordinated so there is no differing information on the civil and architectural plans.
    - Provide 2 full-sized plans, and 2 half-sized plan sets, and an electronic submission must be submitted to the Town's Planning Department prior to receiving a building permit.
    - Building plans will not be reviewed or permits issued until revised plans are accepted by the Town.

Staff Recommendation:

Staff recommends the proposed site plan, subject to staff report comments and recommended conditions of approval (paragraph 15 above), satisfies the Findings for Approval for a site plan in accordance with the Land Use Code.

Below are motion options for the Planning Commission to consider. Town staff will also be available to assist the Planning Commission in modifying a motion option if desired to achieve the Planning Commission's intent.

1. Move to approve the site plans for Connell Resources subject to conditions identified in the staff report (paragraph 15).
2. Move to approve the site plans for Connell Resources subject to conditions identified in the staff report and also including condition(s) _____, _____, [...], and _____.
3. Move to deny the site plan for Connell Resources.

Attachments:

- Staff Report
- Site Plan Procedures
- Location Map
- Site Separation Exhibit
- Town Presentation Slides
- Applicant Narrative
- Site Development Plans
- Applicant Response and Exhibits
- Refined Modeling Report – May 18, 2023
- Refined Modeling Report – Appendix A
- Refined Modeling Report – Appendix B
- Addendum to Refined Modeling Report – May 26, 2023
- Revised Traffic Impact Study
- Larimer County Health Presentation Slides
- Public Comments – Addendum to May 1, 2023 Packet
- Public Comments – May 30, 2023

2.12 Site Plan

2.12.1 Purpose and Applicability. The site plan shall be submitted to apply for a building permit for all permitted principal uses of multi-family, commercial and industrial developments. The site plan shows lot arrangement and site design so the Town can make sure the site plan complies with all Town regulations. A site plan shall also be submitted for any re-development, substantial changes to an existing site, changes that affect site circulation or access, and for any exterior modifications to an existing building within the C-2, Downtown Commercial District to show compliance with the Cleveland Avenue Architectural Standards. When a development requires approval as a conditional use, the site plan approval process shall be processed concurrently with the conditional use application.

2.12.2 Procedure. All site plan applications shall comply with the following specific procedures in addition to the general procedures in Section 2.04.2

A. *Preapplication Conference.* A pre-application conference is required for a site plan application to discuss specific application procedures, criteria, and requirements for a formal application. This requirement may be waived at the discretion of the Planning Director or designee.

B. *Land Use Application Submittal*. In addition to the requirements set forth in Section 2.04.3, a site plan application shall include:

1. Traffic study or waiver request. In accordance with the Standard Design Criteria and Standard Construction Requirements.
2. Site plan map. The site plan map shall provide information per the site plan application checklist provided by the Planning Director or designee.
3. Demonstrate, in written or graphic form, how the proposed structure is consistent with the Development Standards found in Chapter 5.
4. Final landscape plan per Section 5.04.
5. Provide complete building elevations and perspective rendering, drawn to scale, with illustrations of all colors and identifying major materials to be used in the structures. In addition, Town staff may require building floor plans, sectional drawings, additional perspective drawings, models and/or computer visualizations when the impacts of a proposal warrant such information.

C. *Review and Approval*.

1. Planning Commission Approval.
    a. The Planning Commission shall review the application at a regular meeting. Staff shall present their staff report and recommendation.
    b. The Planning Commission shall either approve, approve with conditions, or deny the application.
2. Town Board consideration of appeals.
    a. The Town Board shall consider any appeal within forty-five (45) days of the close of the appeal period, except an appeal associated with a concurrent development application requiring Town Board review or approval, which the Town Board shall consider with final action on the concurrent development application. The Town Board shall apply the site plan review criteria to either uphold, modify, or reverse the Planning Commission's decision.

D. *Post Decision Actions.* Same as referenced in Section 2.04.3, in addition to the following:

1. Any aggrieved party who wishes to appeal the action shall file a written appeal stating the reasons why the Planning Commission action is incorrect. The applicant shall file the appeal with the Town Administrator/Clerk within seven (7) days of the meeting at which such action was taken.

E. *Post Decision Actions.* Same as referenced in Section 2.04.3, in addition to the following:

1. Memorandum of Agreement for Public Improvements. Staff may require that the applicant execute a MOAPI to assure the construction of on-site and off-site improvements as a condition of approval of the site plan. Guarantees in the site plan agreement shall be secured by an irrevocable letter of credit in an amount determined appropriate by Town staff.
2. Building permit. A building permit shall be issued only when final site plan drawings have been submitted, reviewed, and approved by the Department directors.
    a. Exception. A building permit may be issued for the construction of a foundation and shell only for commercial and industrial uses to allow for the partial construction of a speculation building with unknown tenant and use.
3. Certificate of Occupancy. When building construction and site development are completed in accordance with the approved site plan and building permits, a Certificate of Occupancy may be issued.
4. Phasing and expiration of approval. The site plan shall be effective for a period of three (3) years from the date of approval, unless stated otherwise in the written site plan approval. Building permits shall not be issued based on site plans that have an approval date more than three (3) years old. For multi-phased plans, building permits shall not be issued based on an approval date more than three (3) years from the date of Phase I approval.

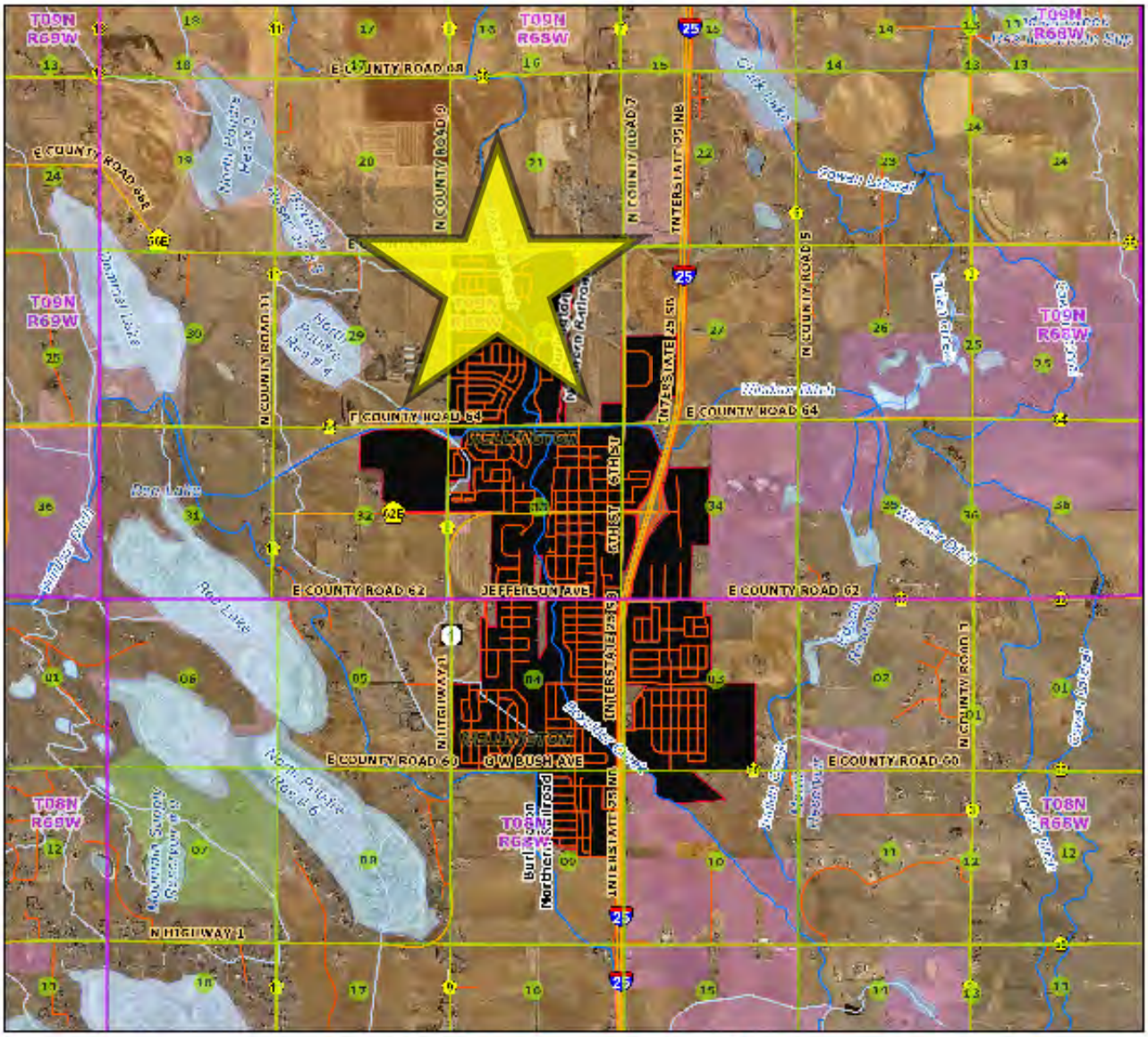
2.12.3 Findings for Approval.

A. The site plan is consistent with the Comprehensive Plan and the intent stated in this Land Use Code.
B. The lot size and lot dimensions are consistent with what is shown on the approved final plat.
C. No buildings or structures infringe on any easements.
D. The proposed site grading is consistent with the requirements of any applicable adopted storm drainage criteria or master drainage plans.
E. The density and dimensions shown conform with Article 4 of this Code or the approved PUD requirements.
F. The applicable Development Standards have been adequately addressed and the proposed improvements conform with Article 5 of this Code.

2.12.4 Amendments to Approved Site Plans.

A. Minor variations in the location of structures, improvements or open space areas caused by engineering or other unforeseen difficulties may be reviewed and approved by the Town staff. Such changes shall not exceed ten percent (10%) of any measurable standard or modify the use, character, or density of an approved site plan. All plans so modified shall be revised to show the authorized changes and shall become a part of the permanent records of the Town.
B. Changes to approved site plans that exceed the ten percent (10%) threshold, or other major modifications (such as changes in building size or footprint, relocation of access points, changes to required parking, etc.), shall be considered as a new site plan application. Such amendments shall require Planning Commission review and approval to become effective. A complete site plan application shall be prepared and submitted in compliance with the requirements set forth in this Section.

CONNELL RESOURCES
LOCATION MAP



Legend

- PLSS Township and Range
- PLSS Sections
- Railroads
- Major Road System
- Road System
- Rocky Mountain National Park
- Incorporated Areas
- City or Town
- County
- State
- Green: Band_2
- Blue: Band_3
- COLARI21-SID-AW-6INCH.sid
- Red: Band_1
- Green: Band_2

Notes

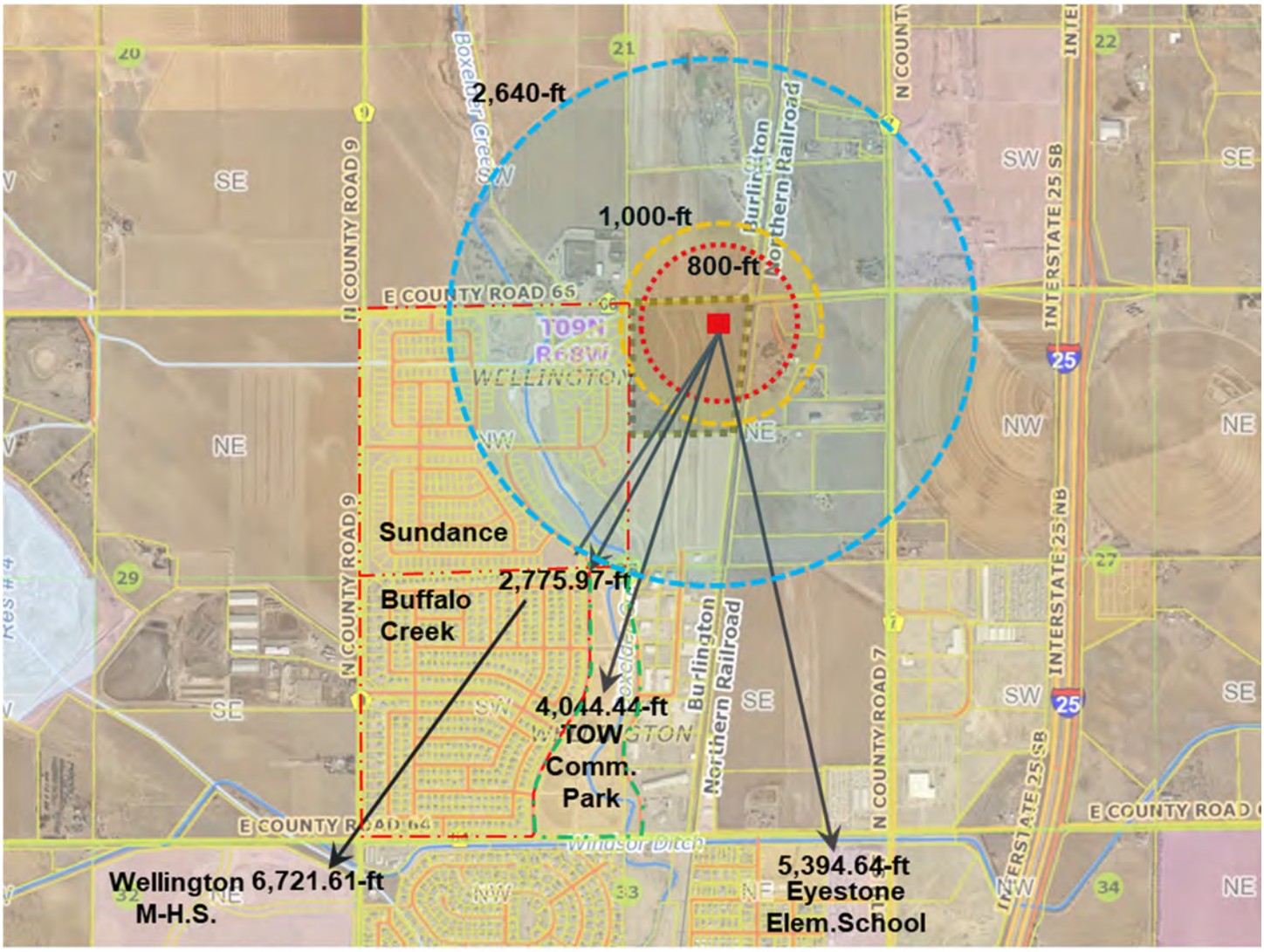
0.6 0 0.6 Miles

Scale 1:50,000

Date Prepared: 1/13/2023 3:20:35 PM

This map was created by Larimer County GIS using data from multiple sources for informal purposes only. This map may not reflect recent updates prior to the date of printing. Larimer County makes no warranty or guarantee concerning the completeness, accuracy, or reliability of the content represented.

Site Separation Exhibit



CONNELL RESOURCES SITE PLAN:

BNSF Railroad & Larimer County Road 66

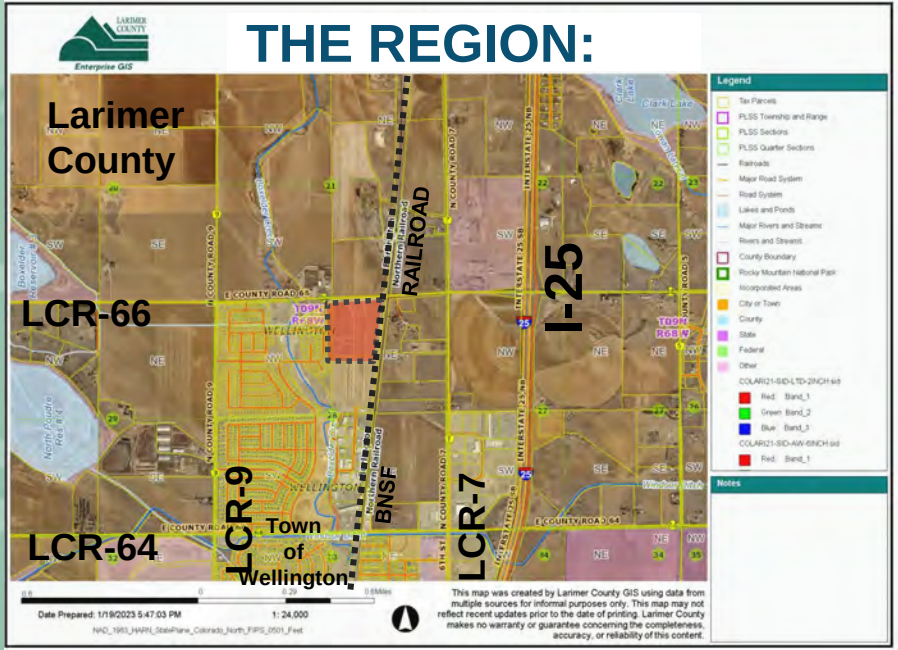
June 5, 2023 (Continued from May 1, 2023)

Applicant:
JOHN WARREN,
CONNELL RESOURCES

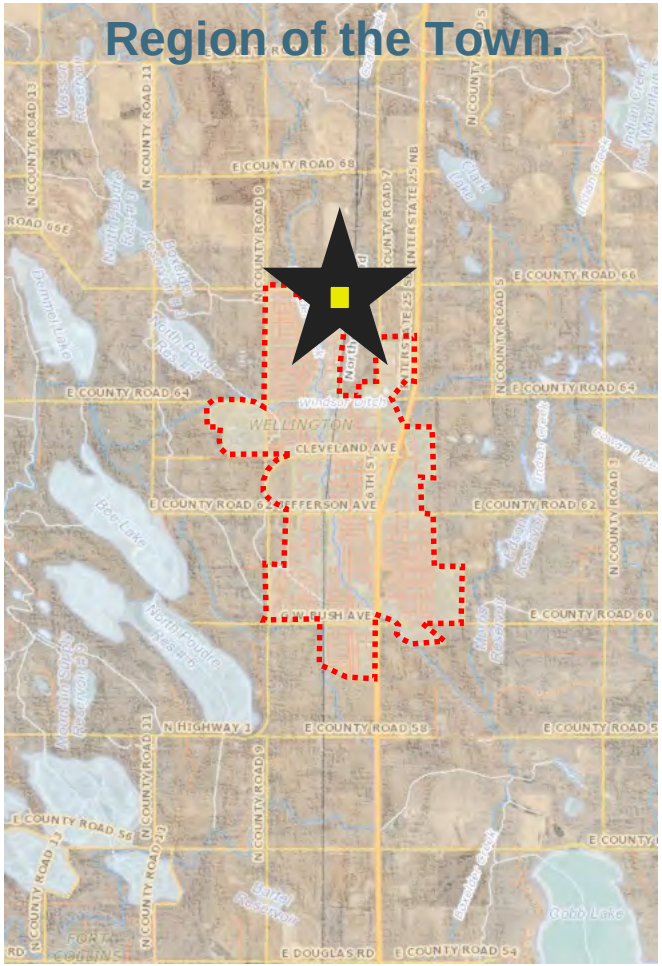
TOWN OF WELLINGTON

THE REQUEST:

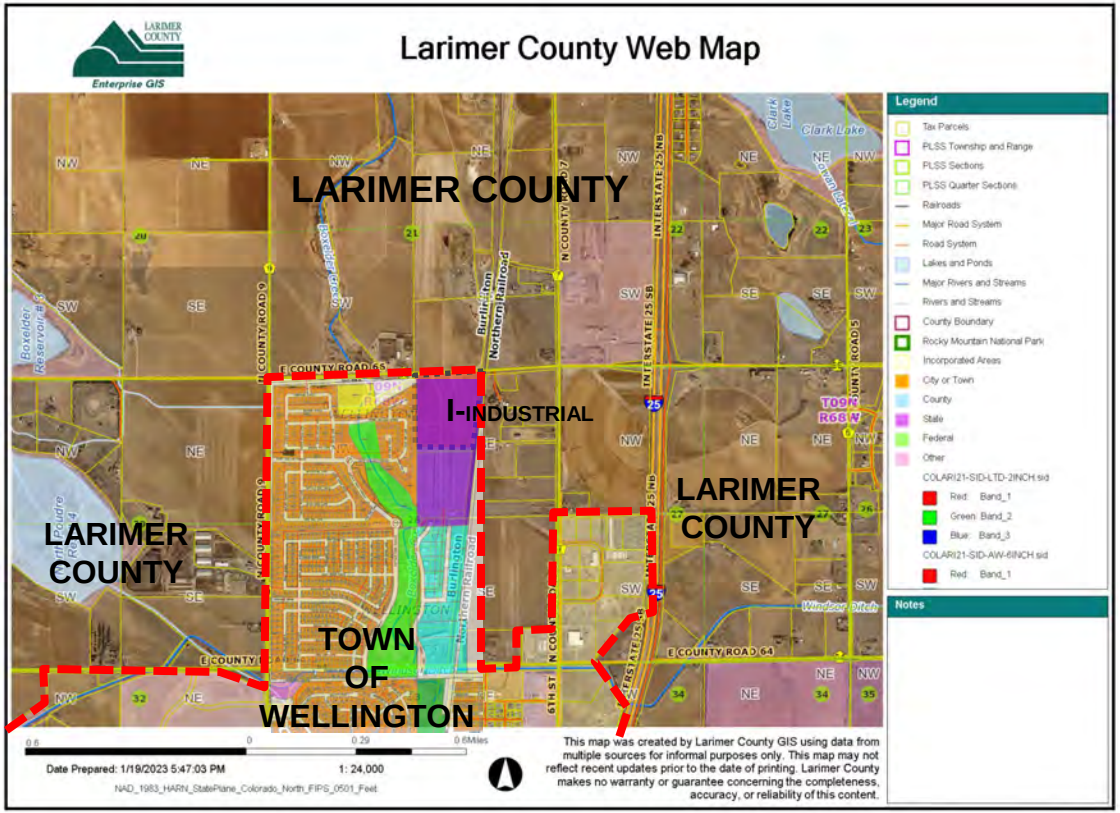
Approval for a Site Plan in the Industrial Zone District



Located in the North Central Region of the Town.



THE ZONING:



- ✓ THE 35.56-ACRE SITE IS ZONED I- INDUSTRIAL WHEN ANNEXED INTO THE TOWN IN 2000.
- ✓ AN ASPHALT BATCH PLANT IS A PERMITTED LAND USE WITH USE SPECIFIC STANDARDS, SEC. 4.03.21.
- ✓ THE BOARD OF ADJUSTMENTS GRANTED (2) VARIANCES ON 10-27-2022.
- ✓ THE BOARD OF ADJUSTMENTS REQUIRED (6) CONDITIONS OF APPROVAL.

PROJECT INFORMATION

- The Site is Zoned I- Industrial and an Asphalt Batch Plant is a Permitted Land Use with Use Specific Standards, (Table 4.02 & Sec. 4.03.21).
- The Board of Adjustment granted a variance to reduce the 1,000 ft. separation setback to 800-ft at the 10-27-2023 Board of Adjustment Hearing.
- The Board of Adjustment granted a variance for a 70-ft silo structure height (from 45-ft) at the 10-27-2023 Board of Adjustment Hearing.

The Board of Adjustment required Six Conditions of Approval for the (2) variance requests.

1. Site Plans must be reviewed and approved by the Planning Commission;
2. The height variance (up to 70-ft) is for the silo only;
3. A 15-foot earthen berm and landscaping is required on the west side;
4. There is to be no signage on the silo;
5. Require signage and operator policies to disallow engine braking (“Jake Brakes”);
6. Compliance with all applicable County and State permits for operation of an Asphalt Plant

BOA recommended Town-supplied potable water should not be used for plant process operations.

MARCH 6TH PLANNING COMMISSION

- ❑ **Site Plan Application presented to Planning Commission**
- ❑ **Planning Commission heard request and public testimony**
- ❑ **Planning Commission tabled item pending additional information**

  - ➢ Items for additional consideration:
    - Air Dispersion Model and Air Emission Characterization *(Larimer County Health)*
    - Emission Standards and Regulatory Agencies *(Larimer County Health)*
    - Consideration of Adequate Separation and Setbacks *(Town)*
    - Traffic Impact Study *(Town)*
    - Noise Level Data and Information *(Applicant)*
    - Health and Environment Impacts *(Applicant)*
    - Consideration of Groundwater Impacts and Monitoring *(Applicant)*
    - Architectural Character and Building Elevations *(Town)*

PLANNING COMMISSION REVIEW:

2.12. Site Plan

- The Planning Commission is the final review and decision-making authority for site plans.
- Consideration of Findings for Approval
- The Planning Commission may take one of the following actions:
    - Approve the site plan;
    - Approve the site plan with conditions of approval;
    - Deny the site plan application.

SITE PLAN REVIEW FINDINGS FOR APPROVAL:

2.12.3 Findings for Approval.

A. The site plan is consistent with the Comprehensive Plan and the intent stated in this Land Use Code.

B. The lot size and lot dimensions are consistent with what is shown on the approved final plat.

C. No buildings or structures infringe on any easements.

D. The proposed site grading is consistent with the requirements of any applicable adopted storm drainage criteria or master drainage plans.

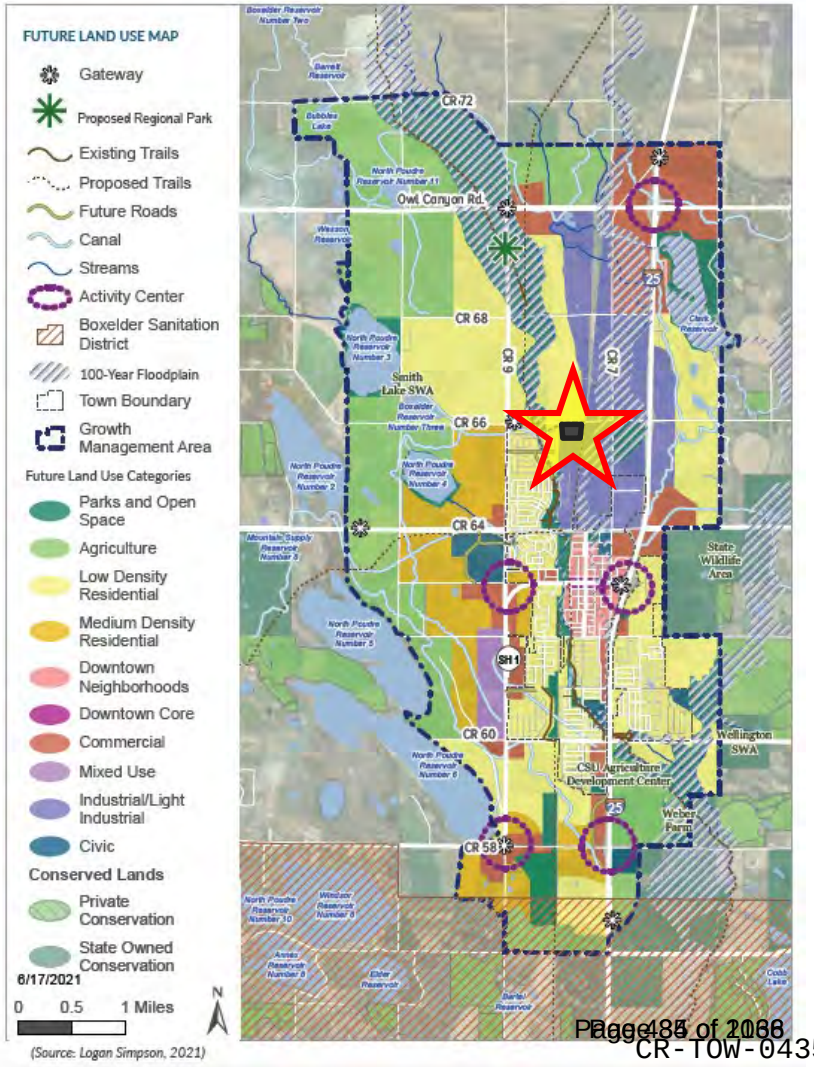
E. The density and dimensions shown conform with Article 4 of this Code or the approved PUD requirements.

F. The applicable Development Standards have been adequately addressed and the proposed improvements conform with Article 5 of the Land use Code.

COMPREHENSIVE PLAN:

TE 2.5 Ensure new industrial developments are consistent with the Town's infrastructure master plans and the Town's water efficiency plan.

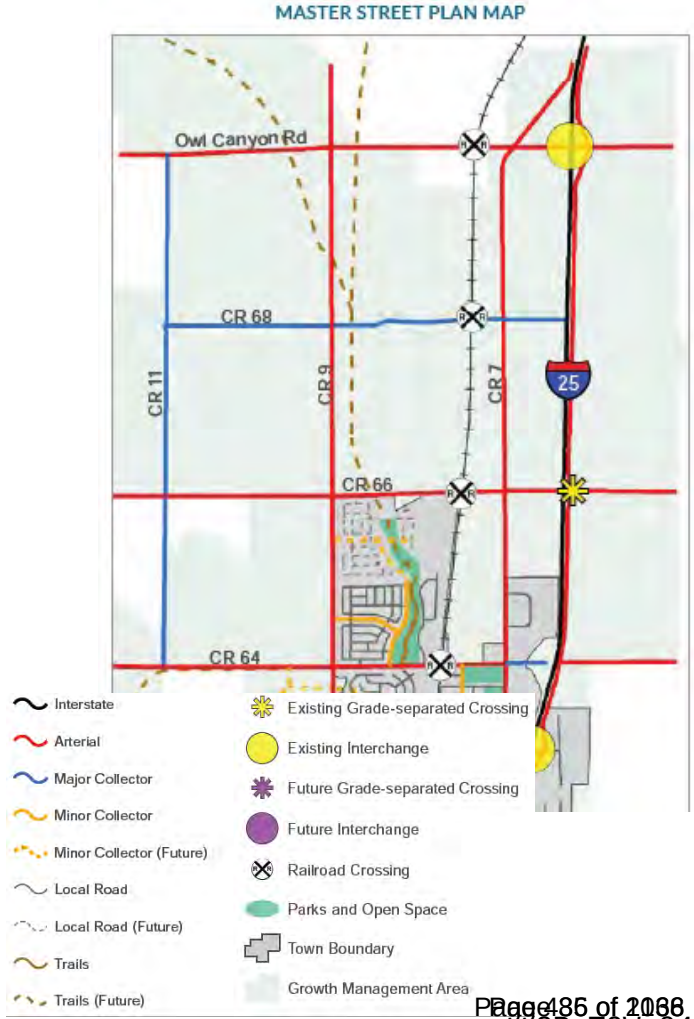
TE 4.1 Balance residential with commercial land uses to promote local job opportunities and needed services for residents.



COMPREHENSIVE PLAN:

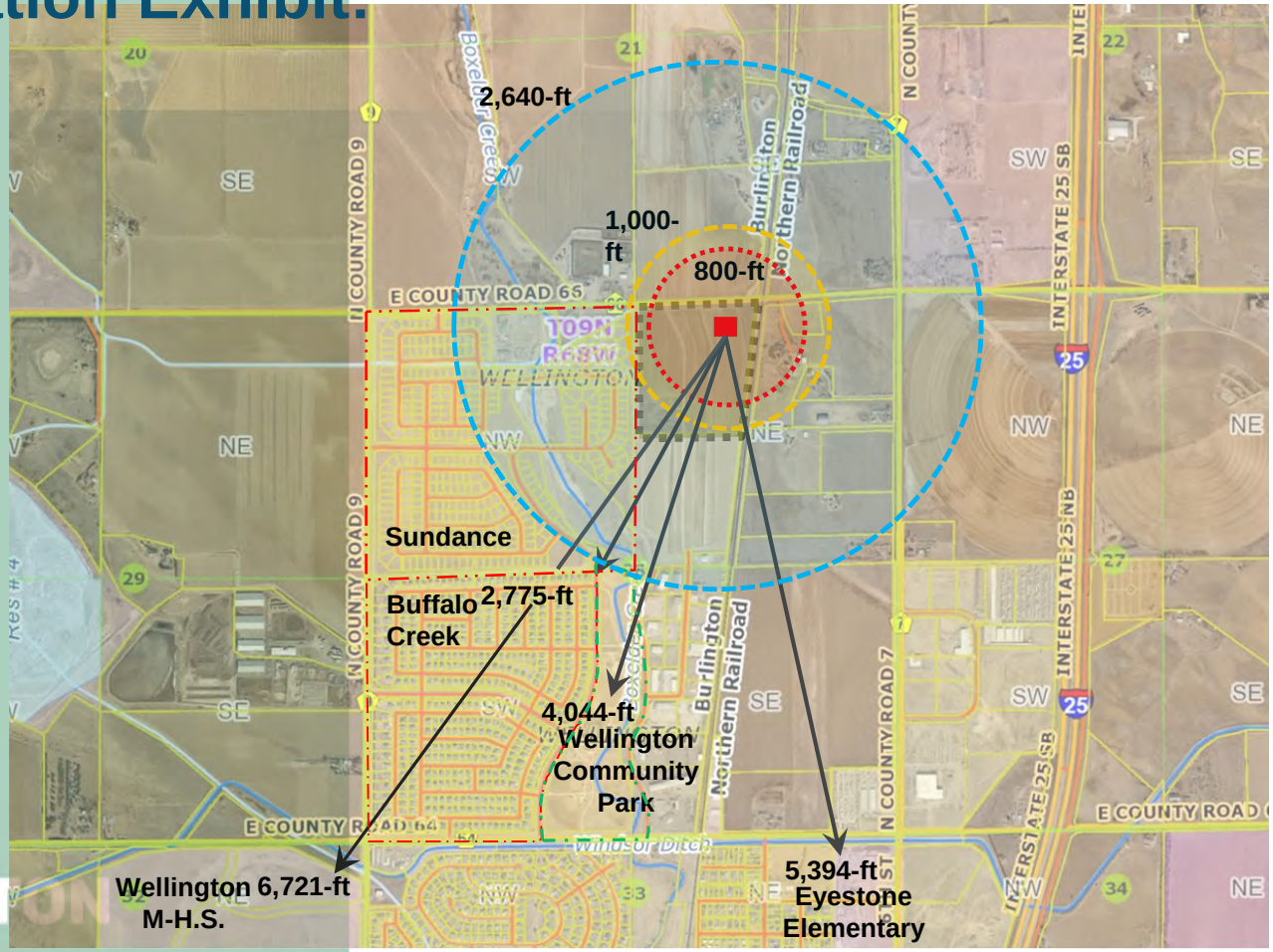
CP 2.6 Identify partners and resource to build a campaign to promote air quality in and around Wellington to ensure air quality is maintained as Wellington and the North Front Range continues to grow.

F&P. 2.3. Require new development to demonstrate how they will connect to and improve the existing networks for active transportation, vehicular traffic, open space and parks, and essential infrastructure for water, wastewater, and stormwater.



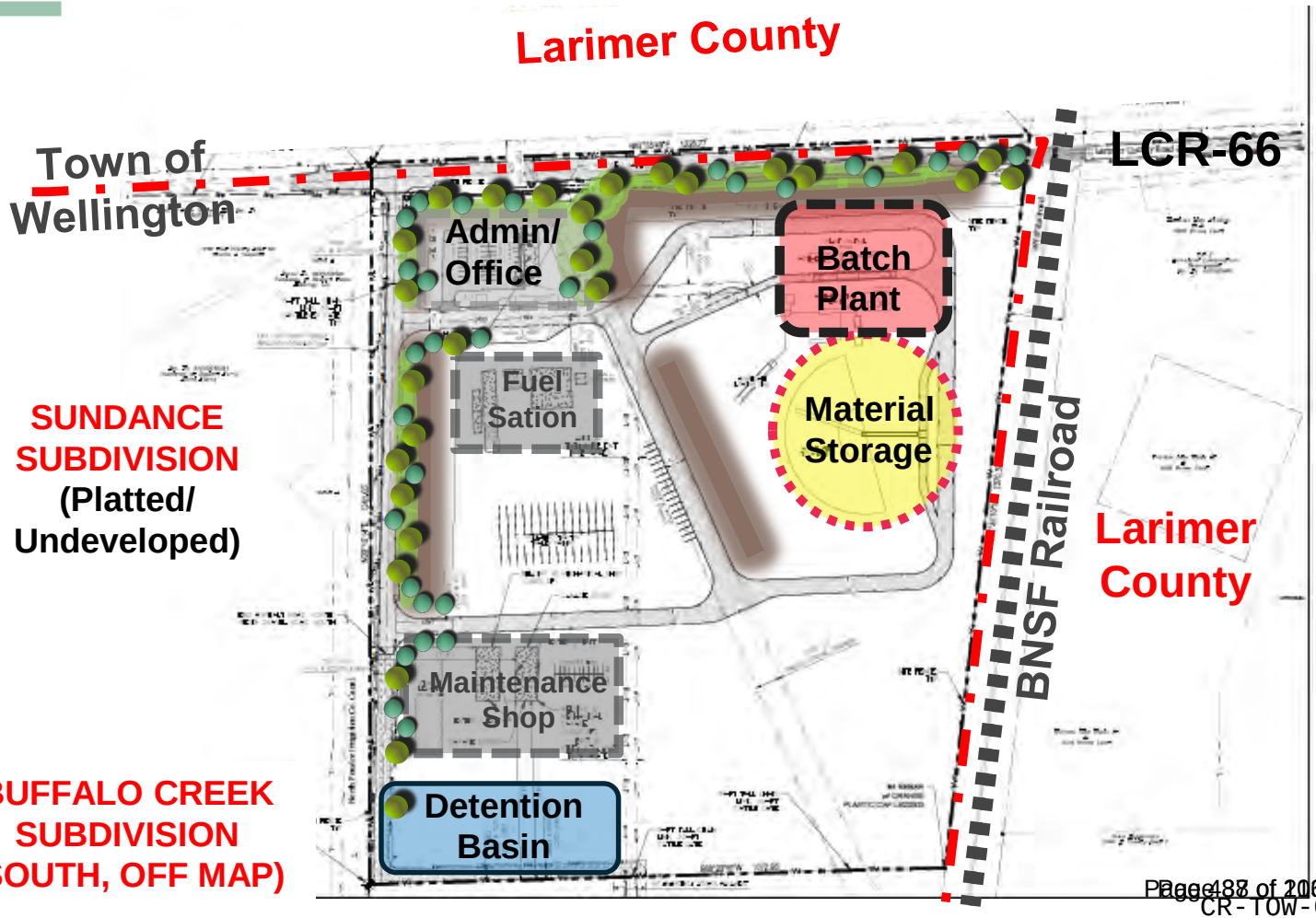
Setback Separation Exhibit:

- 5,394 ft. to Eyestone Elementary School
- 6,721 ft. to Wellington Middle-High School
- 2,775 ft. to Buffalo Creek Subdivision
- 947 ft. to Sundance Subdivision



TOWN OF WELLINGTON

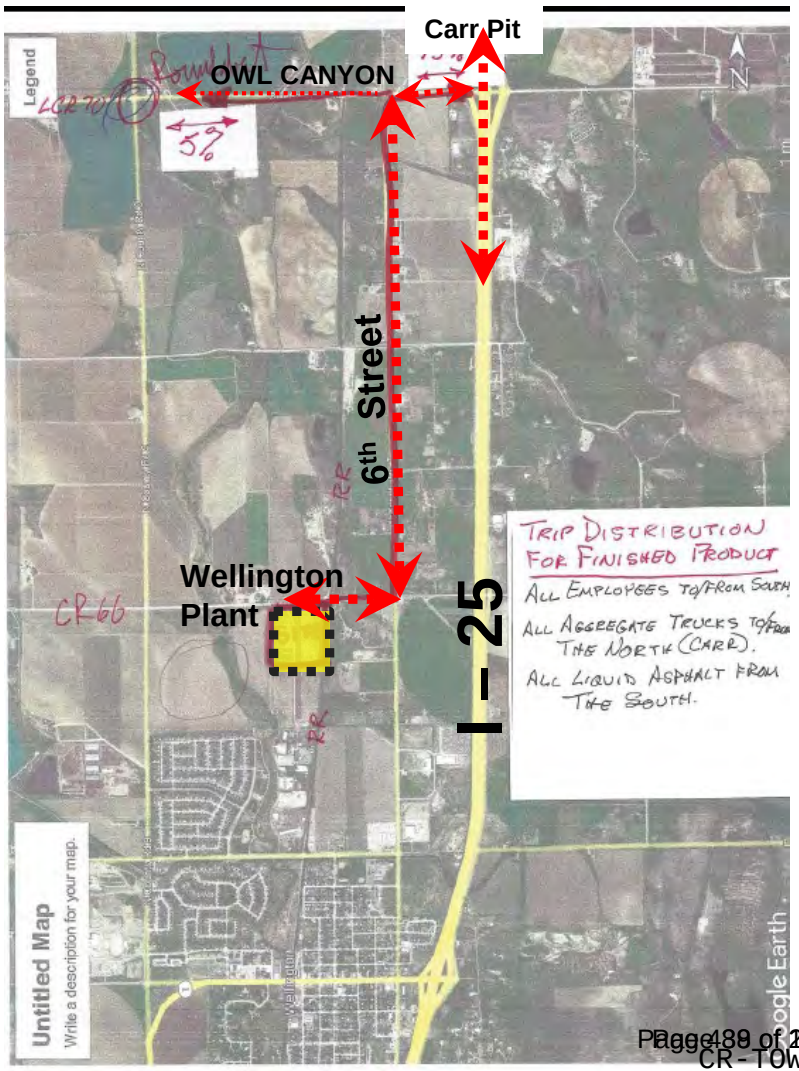
SITE PLAN:


Larimer County
Town of Wellington
LCR-66
Admin/ Office
Batch Plant
Fuel Sation
Material Storage
BNSF Railroad
Larimer County
Maintenance Shop
Detention Basin
SUNDANCE SUBDIVISION (Platted/ Undeveloped)
BUFFALO CREEK SUBDIVISION (SOUTH, OFF MAP)

TRAFFIC PATTERNS:

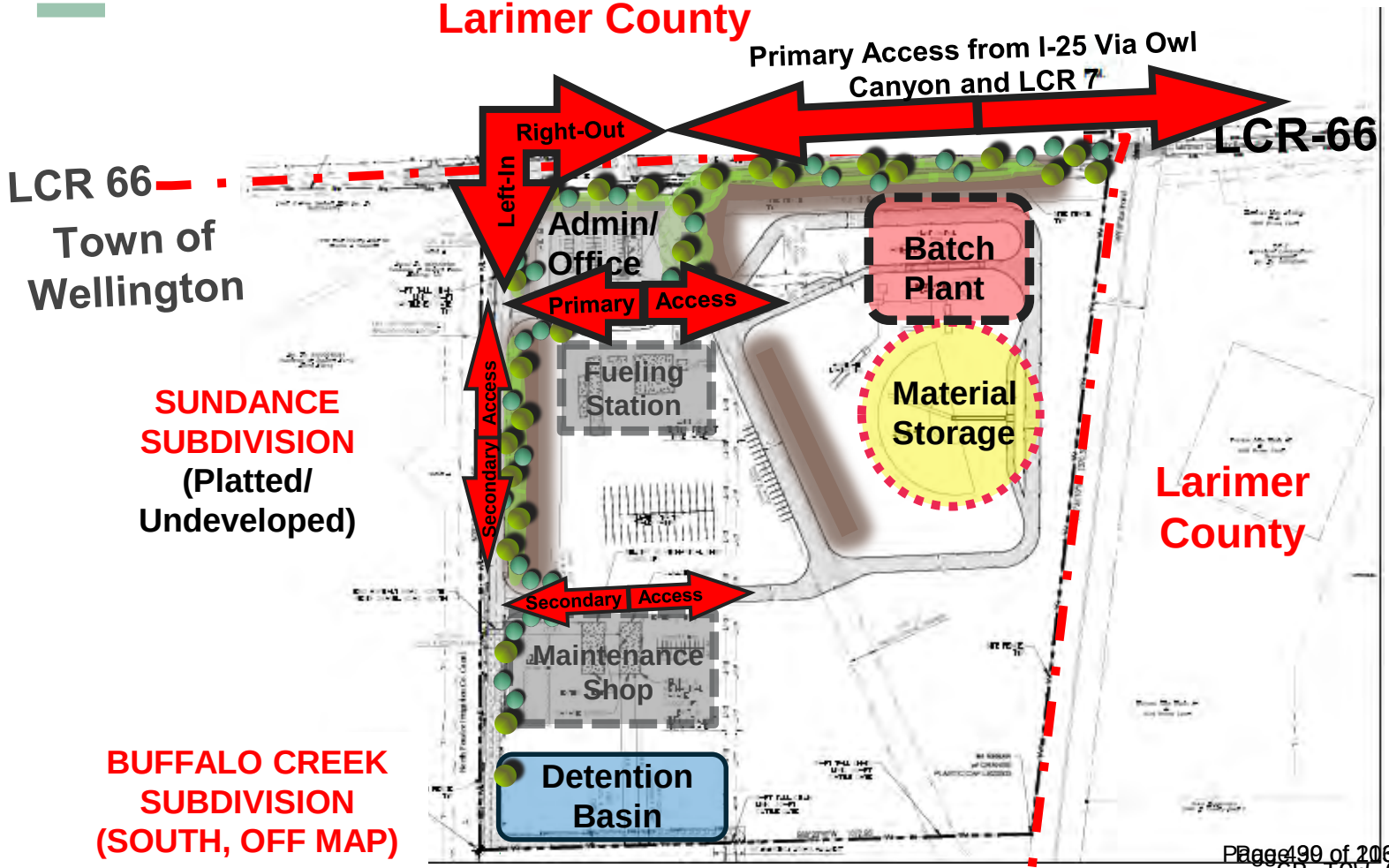
- **Aggregate Trucks: (64 Trips)**
  (32 Loads/Day To Carr & Back)
- **Liquid Asphalt Trucks: (6 Trips)**
  (3 Loads/Day)
- **Employee Trips: (112 Trips)**
  (52 Employees arriving 8:00AM & Leaving 5:00PM)
- **Product Delivery Trucks: (72 Trips)**
- **(36 Trips/Day)**

- **Total Daily Trips: 254**
- **95% (242) Trips - North/Owl Canyon Road)**
- **5%(12) Trips - west Owl Canyon Road)**

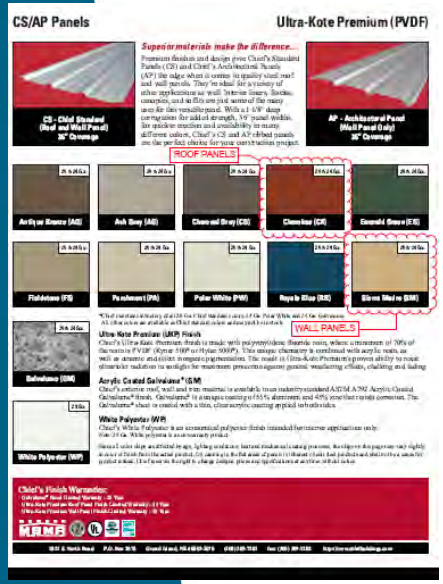


TRUCK ROUTING PLAN:

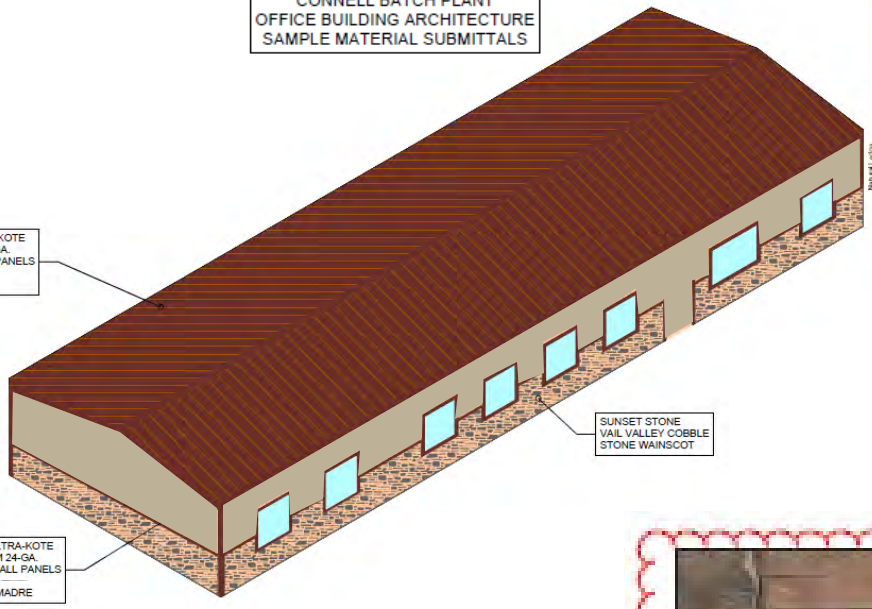
Larimer County

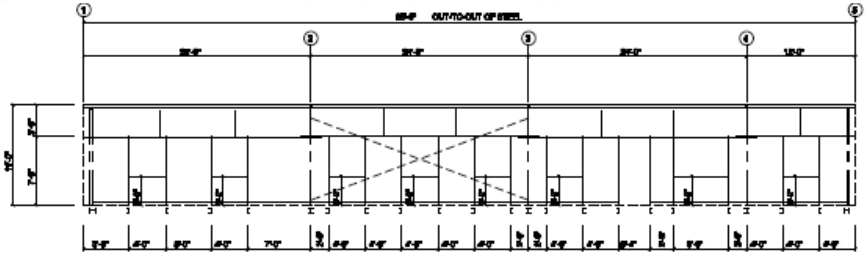


ARCHITECTURAL CHARACTER:



CONNELL BATCH PLANT
OFFICE BUILDING ARCHITECTURE
SAMPLE MATERIAL SUBMITTALS





ARCHITECTURAL CHARACTER:

STAFF ASSESSMENT:

- The Site is Zoned I- Industrial and an Asphalt Batch Plant is a Use by Right with Use Specific Standards in the I-Zone District (Table 4.02 & Sec. 4.03.21).
- The Board of Adjustment granted a variance to reduce the separation setback to 800-ft at the 10-27-2023 Board of Adjustment Hearing.
- The Board of Adjustment granted a variance allowing an up to 70-ft silo structure height at the 10-27-2023 Board of Adjustment Hearing.
- The Town's Site Plan procedures, Section 2.12 have been followed (pending final revisions if site plans are approved by Planning Commission).
- The Board of Adjustment required Six Conditions of Approval (with 1 Recommendation) – Conditions have been adequately addressed and resolved on the site plans.
- The Applicant conducted studies and assessments of the site operations in accordance with Larimer County Health Department recommendations and applicable guidelines.
- The Applicant agrees to operate the site in general compliance with all applicable Federal, State, County and Town requirements.
- The Applicant shall maintain all licenses, certificates and registrations in "Good Standing" with each pertinent agency.

2133 S. Timberline Rd, Ste. 110
Fort Collins, CO 80525
ditescoservices.com

November 14, 2022

Mr. Cody Bird, AICP
Planning Director
Town of Wellington
8225 Third Street
Wellington, CO 80549

RE: Connell Batch Plant
Site Plan Application

Dear Mr. Bird –

This letter follows recent coordination on the submittal of the Site Plan Application for the construction of Connell Resources, Inc. (Connell) Asphalt Batch Plant (Batch Plant). The Batch Plant is planned to be constructed along County Road 66, between County Road 7 and County Road 9, immediately west of the Burlington Northern Santa Fe (BNSF) Railroad Tracks. Included with this letter are full submittal documentation, as outlined on the Site Plan Application checklist.

This letter is intended to specifically address items on the Site Plan Application checklist and specific areas of concern identified by Wellington staff, as listed and described in detail below.

Utility Plans – Existing Water Main

The Town of Wellington (Town) has an existing 16-inch C900 PVC waterline routed through the proposed Connell Batch Plant site. This property contains an existing easement, recorded in 2003, for the construction and maintenance of the waterline across the property, applicable to the current Grantee, successors and assigns. In the easement document, with records number 20030053554, states the following:

> *"…permanent non-exclusive utility easement twenty (20) feet in width for the installation, construction, maintenance, inspection, operation, replacement, or removal of utilities… in, over, across, and upon the real property legally described…"*

The location of roadways, building placement, and uses of the site have been completed with the Town's interest in mind, to protect and honor the existing easement. The utility easement across the property restricts the impediment of physical structures on the waterline and allows the Town access for maintenance of the utility. The existing waterline will be protected by a paved asphalt roadway on a portion of the site, and a flowfill cap in other areas.

Additionally, Connell is proposing to install an eight-inch waterline loop that will allow for future connectivity to the future Sundance property to the west. This waterline loop will be installed at Connell's cost and will be deeded to the Town for future expansion of the system, as desired, will improve water quality for the Town, and will reduce the need for a waterline tap on the Town's transmission main.

Utility Plans – Sanitary Sewer

At a meeting on October 20, 2022, the Town requested the sanitary sewer line be relocated to the west access road for future accessibility and maintenance of the line. The sanitary sewer line has been relocated to the west, per the Town's request. The sanitary sewer line is sized at the minimum necessary for the site use by Connell. If the Town desires to increase the size of the sanitary sewer system, the Town shall provide guidance on the revised sizing and cost-sharing program for increase in sanitary sewer size.

Roadway Improvements

The Traffic Impact Study (TIS), included with this application, identifies the addition of a right turn lane on north-bound CR 7, turning onto Owl Canyon Road. These roadway improvements are planned to be completed by Larimer County Engineering in 2023. As such, this construction has not been included within these documents. A copy of the preliminary construction drawings is attached to this letter in **Exhibit A**.

Further, the TIS does not require any additional features for County Road 66. In order to improve the quality of County Road 66, between BNSF and County Road 7, roadway improvements are proposed to minimize a vertical site curve obstruction immediately east of the BNSF tracks. These improvements will be maintained outside of the floodplain. The site plan also depicts that County Road 66 will be asphalt paved, although not mandated by the TIS.

Site Buildings

Connell's proposed site plan includes the construction of an office building, vehicle maintenance shop, ancillary vehicle shop, and lean-to structure. These structures are in a preliminary phase of design and elevations of these structures are not developed. Square-footages and finish floor elevations of each building are noted on the site plan. Color palettes for site buildings are not yet defined, but are intended to match the natural colors of the site.

Connell's office building is anticipated to have 26-gauge steel walls and roof, with a stone/brick wainscot. Connell anticipates maximizing natural light and will have windows on all four elevations of the building. The primary entrance to the building will be oriented to the west, facing the employee parking area.

Connell's vehicle shop buildings and lean-to storage structure are anticipated to have 26-gauge steel walls and roof. Both structures are anticipated to have translucent panels installed on a portion of the facility to maximize natural light into the building.

Photometrics

The proposed photometrics for the site are in preliminary design and a photometrics plan has not been included with this submittal. The site will have minimal lighting in effort to reduce light pollution to surrounding residential areas. The office and shops will have small, wall mounted fixtures and the batch plant will have several mounted lights. The batch plant and site will not have night operations, and therefore all lighting will be limited to employee safety and sight security.

Site Access & Emergency Easements

The property abutting the south edge of the proposed property contains an existing emergency access easement, as identified on the attached documents and by records number 20050095592. The emergency access easement terminates at the proposed property southern property line and does not currently extend across the site.

Per the discussions at the October 20, 2022 meeting, as requested by Town staff, emergency access gates and temporary road-base roadway has been added to the southwest corner of the site. This roadway will be able to be utilized for emergency vehicles accessing the site. Connell will dedicate an emergency access easement of 20-ft in this area and install Knox boxes on access gates to allow continuous emergency access from the property to the south, north to County Road 66.

If you have any questions regarding this supplemental information, please contact me at 970-690-1889 or jill.burrell@ditescoservices.com.

Sincerely,

Jill Burrell

Jill Burrell, P.E.

Enclosed: **Exhibit A** – Larimer County Engineering CR7/Owl Canyon Road Construction Drawing

T R A N S M I T T A L (Site Plan Application)

NO. 02

TO: Paul Whalen
Senior Planner
Town of Wellington
8225 Third Street
Wellington, CO 80549

PROJECT: Connell Batch Plant – Site Plan Resubmittal

Date Submitted: February 10, 2023

TRANSMITTED: Site Plan Application and Associated Documents

☐	Shop Drawings	☐	Catalogs	☐	Price Proposal
☐	Prints	☑	Plans	☐	Product Samples
☐	Specifications	☐	Copies	☑	Other

☐	For Approval	☑	For Your Review	☐	As Requested
☐	For Your Use				
☐	Approved As Submitted	☐	Approved As Noted	☐	Resubmit
☐	Return for Correction	☐	Prints Returned		
☐	Submit Copies for Distribution				
☐	Return Corrected Prints				
☐	Other				

Paul –

We are pleased to resubmit the Site Plan Application and the associated documents for the Connell Batch Plant. The submittal contains the following documents:

- Site Plan Application - Updated
- Site Plan Drawing Package
    - Site Plan
    - Utility and Grading Plans
    - Drainage Exhibit
    - Landscape Plans
    - Irrigation Plans
    - Photometrics Plan
- Office Building Drawings and Architectural Samples
- Site Lighting Cut Sheets
- Comment Response Log

Please do not hesitate to contact me if you have any questions or concerns. I can be reached by email at dan.egger@ditescoservices.com or by phone at (719) 964-0973.

Thanks,

2/10/23

SIGNED: Dan Egger, Ditesco Services Date

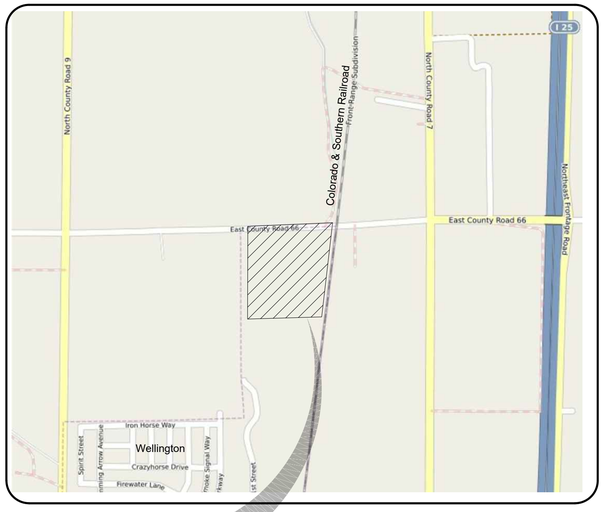
RECEIVED: Town of Wellington Date

SITE PLANS FOR

CONNELL RESOURCES
WELLINGTON BATCH PLANT

LOCATED IN THE NORTHEAST QUARTER OF SECTION 28, TOWNSHIP 9 NORTH, RANGE 68 WEST OF THE 6th P.M.
TOWN OF WELLINGTON, COUNTY OF LARIMER, STATE OF COLORADO

February, 2023



PROJECT LOCATION

VICINITY MAP

NOT TO SCALE

CONTACT INFORMATION

OWNER
Connell Resources, Inc.
John Warren, President
7785 Highland Meadows Parkway #100
Fort Collins, Colorado 80528
(970) 223-3151

CIVIL ENGINEER
Ditesco
Jill Burrell, P.E.
2133 S. Timberline Road, Suite 110
Fort Collins, Colorado 80525
(970) 632-5068

SURVEYOR
Majestic Surveying
Steven Parks, PLS
1111 Diamond Valley Drive,
Suite 104
Windsor, Colorado 80550
(970) 443-0882

GEOTECHNICAL
CTL Thompson, Inc
Chip Ledbetter, P.E.
400 North Link Lane
Fort Collins, Colorado 80524
(970) 206-9455

SHEET INDEX

INDEX NO.	SHEET NO.	DESCRIPTION
COVER AND GENERAL NOTES		
1	C001	COVER SHEET
SITE SHEETS		
2	S1	SITE PLAN
OVERALL EXHIBIT SHEETS		
3	C103	OVERALL SITE, UTILITY AND GRADING PLAN
SITE AND HORIZONTAL CONTROL SHEETS		
4	C201	SITE AND HORIZONTAL CONTROL PLAN
5	C202	SITE AND HORIZONTAL CONTROL PLAN
6	C203	SITE AND HORIZONTAL CONTROL PLAN
7	C204	SITE AND HORIZONTAL CONTROL PLAN
8	C205	LINE & CURVE DATA AND POINT TABLE
GRADING AND UTILITY SHEETS		
9	C301	UTILITY AND GRADING PLAN
10	C302	UTILITY AND GRADING PLAN
11	C303	UTILITY AND GRADING PLAN
12	C304	UTILITY AND GRADING PLAN
DRAINAGE EXHIBIT SHEETS		
13	C401	DEVELOPED DRAINAGE EXHIBIT
LANDSCAPE SHEETS		
14	L01	COVER SHEET
15	L02	LANDSCAPE PLAN NORTHEAST
16	L03	LANDSCAPE PLAN NORTHWEST
17	L04	LANDSCAPE PLAN MIDDLE EAST
18	L05	LANDSCAPE PLAN MIDDLE WEST
19	L06	LANDSCAPE PLAN SOUTH EAST
20	L07	LANDSCAPE PLAN SOUTH WEST
21	L08	LANDSCAPE PLAN SOUTH
22	L09	LANDSCAPE DETAILS
IRRIGATION SHEETS		
23	IR1.0	IRRIGATION PLAN
24	IR1.1	IRRIGATION PLAN
25	IR1.2	IRRIGATION PLAN
26	IR1.3	IRRIGATION PLAN
27	IR2.1	IRRIGATION DETAILS
PHOTOMETRICS SHEETS		
28	P101	PHOTOMETRICS PLAN
29	P102	PHOTOMETRICS SCHEDULE

BENCHMARKS

Coordinate Control

VERTICAL DATUM:
PROJECT DATUM: NAVD88

BENCHMARK: NGS R-356 Reset (2002)

ELEVATION: 5221.20 (NAVD88)

HORIZONTAL DATUM:
MODIFIED COLORADO STATE PLANE NORTH ZONE 0501 (GROUND) COORDINATES NAD 83(2011) DATUM. HORIZONTAL CONTROL BASED UPON TRIMBLE VRS NETWORK SOLUTION.

THIS DRAWING IS AT MODIFIED STATE PLANE. TO REDUCE TO STATE PLANE COORDINATES, SCALE X,Y,ONLY AT 0.999742580 (1.000257486) ABOUT THE ORIGIN 0,0.

CALL UTILITY NOTIFICATION CENTER OF COLORADO
811
Know what's below.
Call before you dig.
CALL 2 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

ditesco
Project & Construction Services
2133 S. Timberline Road, Suite 110
Fort Collins, Colorado 80525
Phone: 970.632.5068
www.ditescoservices.com

P.E. Seal

Sheet Revisions

No.	Revisions:	By	Date:

COVER SHEET

DATE: February 8, 2023
SCALE: NTS
FILE NAME: Batch Plant Cover.dwg

DESIGNED BY: D. Egger
DRAWN BY: R. Bunner
APPROVED BY: J. Burrell

WELLINGTON BATCH PLANT
CONNELL RESOURCES

PROJECT NUMBER: XXXX

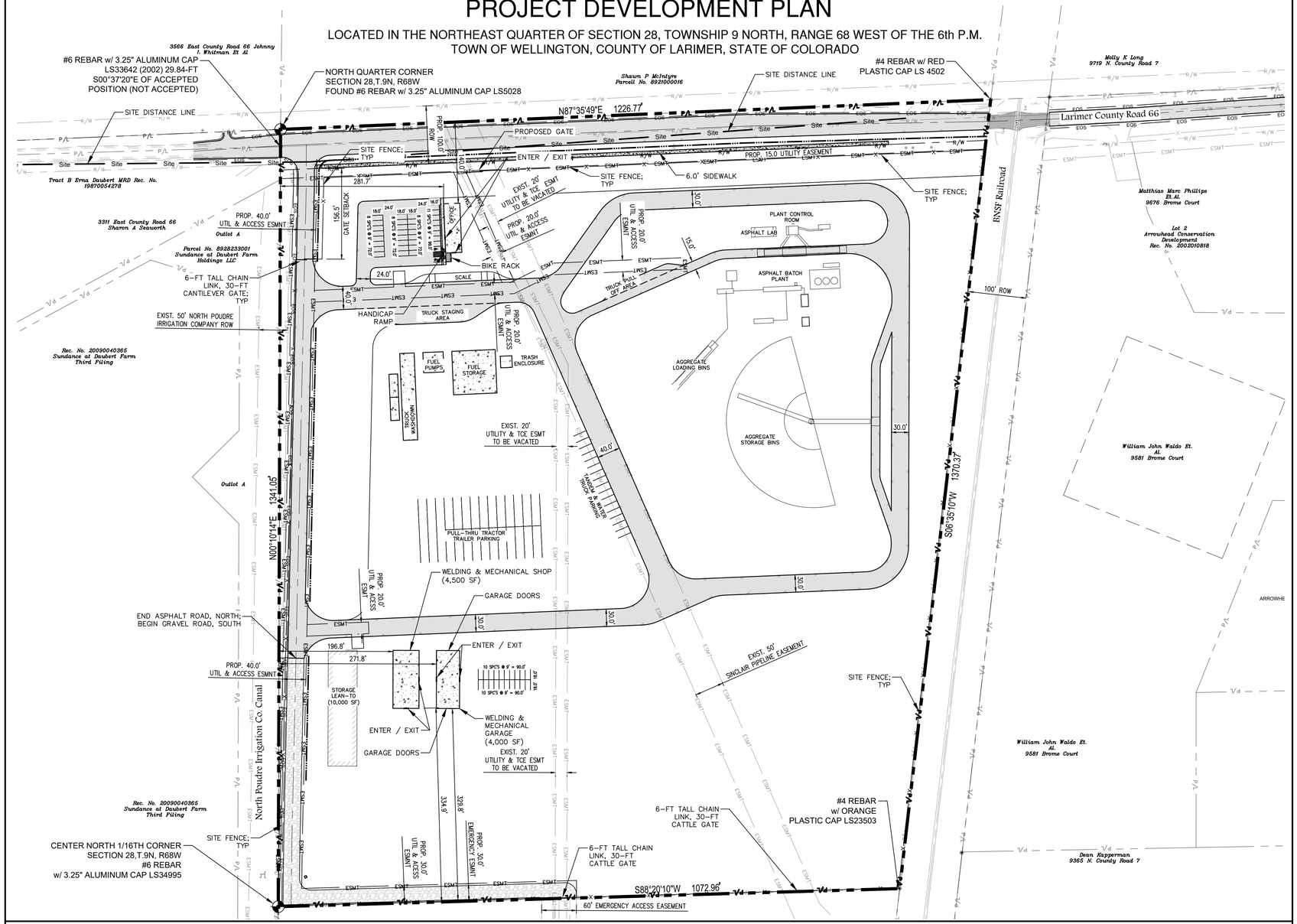
SHEET NUMBER
C001

SHEET INDEX: 1

Drawing Name: D:\Projects\Wellington Batch Plant\Dwg\Sheets\Batch Plant Cover.dwg Thursday, February 09, 2023 2:09 PM By: Rhonda Bunner

WELLINGTON BATCH PLANT
PROJECT DEVELOPMENT PLAN

LOCATED IN THE NORTHEAST QUARTER OF SECTION 28, TOWNSHIP 9 NORTH, RANGE 68 WEST OF THE 6th P.M.
TOWN OF WELLINGTON, COUNTY OF LARIMER, STATE OF COLORADO



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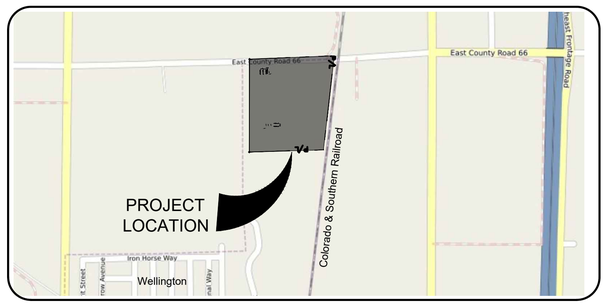
SCALE: 1" =100'
(True scale for 22x34 sheet size)



LEGEND & ABBREVIATIONS

RIGHTS-OF-WAY	ROW	EXISTING RIGHT OF WAY	R/W
TYPICAL	TYP	PROPOSED RIGHT OF WAY	R/W
SQUARE FEET	SF	PROPOSED SWALE	
EASEMENT	ESMT	PROPOSED FENCE	X
PROPERTY BOUNDARY	P/L	PROPOSED SHOULDER	EOS
EDGE OF GRAVEL ROAD		EXISTING EASEMENT LINE	ESMT
PROPOSED EDGE OF ASPHALT		PROPOSED EASEMENT	ESMT
SITE DISTANCE LINE	Site	PLANT ACCESS ROAD (ASPHALT)	
		GRAVEL ROAD	

GENERAL NOTES:

1. REFER TO UTILITY PLANS FOR LOCATIONS OF STORM DRAINAGE STRUCTURES, UTILITY MAINS AND SERVICES.
2. REFER TO CIVIL ENGINEERING PLANS FOR DETAILED INFORMATION OF PROPOSED TOPOGRAPHY, UTILITY, AND STREET IMPROVEMENTS.
3. REFER TO THE CIVIL ENGINEERING FOR EASEMENTS, LOT DIMENSIONS, UTILITY EASEMENTS, OTHER EASEMENTS, AND OTHER SURVEY INFORMATION.
4. ALL CONSTRUCTION WILL BE COMPLETED IN ONE PHASE.
5. ALL SIGNS UTILIZED SHALL COMPLY WITH THE TOWN OF WELLINGTON SIGN CODE.

LAND USE STATISTICS

Lot Coverage and Surfaces

Category	Description	Area (SF)	Area (Acres)	%
Paved		234,025	5.37	15.11
	Parking Lot	17,845	0.41	1.15
	Roads	216,180	4.96	13.96
Buildings		20,880	0.48	1.35
	Office	2,380	0.05	0.15
	Weld Shop	4,500	0.10	0.29
	Weld Garage	4,000	0.09	0.26
	Lean-To	10,000	0.23	0.65
Walk		17,743	0.41	1.15
Undeveloped		1,276,346	29.30	82.40
	Landscaped	269,084	6.18	17.37
	Detention	173,279	3.98	11.19
	Undeveloped	833,983	19.15	53.84
Total		1,548,994	35.56	100.00

Proposed Buildings

Description	Employees	Stories	Floor Area (SF)
Office	13	1	2,380
Welding and Mechanical Shop	3	1	4,500
Welding and Mechanical Garage	0	1	4,000
Storage Lean-To	0	1	10,000

Parking Requirements

	Required	Provided
Standard Spaces	2	32
ADA Spaces	2	2

LEGAL DESCRIPTION

A PARCEL OF LAND SITUATE IN THE NORTHEAST QUARTER OF SECTION TWENTY-EIGHT (28), TOWNSHIP NINE NORTH (T.9N.), RANGE SIXTY-EIGHT WEST (R.68W.) OF THE SIXTH PRINCIPAL MERIDIAN (6THP.M.) BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

ALL THAT PART OF THE NORTHEAST 1/4 OF SECTION 28, TOWNSHIP 9 NORTH, RANGE 68 WEST OF THE 6TH P.M., COUNTY OF LARIMER, STATE OF COLORADO, LYING WESTERLY OF THE C & S RAILROAD RIGHT OF WAY EXCEPT THAT PORTION CONVEYED BY DEED RECORDED NOVEMBER 22, 2004 AT RECEPTION NO. 20040111490.

SAID PARCEL CONTAINS 1,549,362 SQUARE FEET OR 35.568 ACRES MORE OR LESS BY THIS SURVEY.

NOTE

THIS IS A LAND USE PLANNING DOCUMENT, NOT A CONSTRUCTION DOCUMENT. REFER TO CIVIL ENGINEERING PLANS FOR SITE CONSTRUCTION.

OWNER

CONNELL RESOURCES, INC
JOHN WARREN, PRESIDENT
7785 HIGHLAND MEADOWS PARKWAY #100
FORT COLLINS, COLORADO 80528
(970) 223-3151

DEVELOPER/APPLICANT

CONNELL RESOURCES, INC
JOHN WARREN, PRESIDENT
7785 HIGHLAND MEADOWS PARKWAY #100
FORT COLLINS, COLORADO 80528
(970) 223-3151

OWNER'S CERTIFICATION

The undersigned does/do hereby certify that I/we are the lawful owners of real property described on this Site Plan and de hereby certify that I/we accept the conditions and restrictions set forth on said Site Plan.

Connell Resources, Inc. Date

The foregoing instrument was acknowledged before me

This _____ day of _____ A.D., 20_____ by

(Print Name)

as _____

My Commission Expires: _____

Witness my hand and official seal

Notary Public Address

PLANNING AND ZONING CERTIFICATE

Approved by the Planning and Zoning Board of the Town of Wellington, Colorado, on this _____ day of _____ , 20___.

Secretary of Planning and Zoning Board

dtesco
Project & Construction Services
2133 S. Timberline Road, Suite 110
Fort Collins, Colorado 80525
Phone: (970) 226-0860
www.dtescoservices.com

P.E. Seal

Sheet Revisions

No.	Revisions:	By	Date:

SITE PLAN

DESIGNED BY: D. Egger
DRAWN BY: R. Bunner
APPROVED BY: J. Burrell

DATE: February 8, 2023
SCALE: 1" = 100'
FILE NAME: Batch Plant Site Plan.dwg

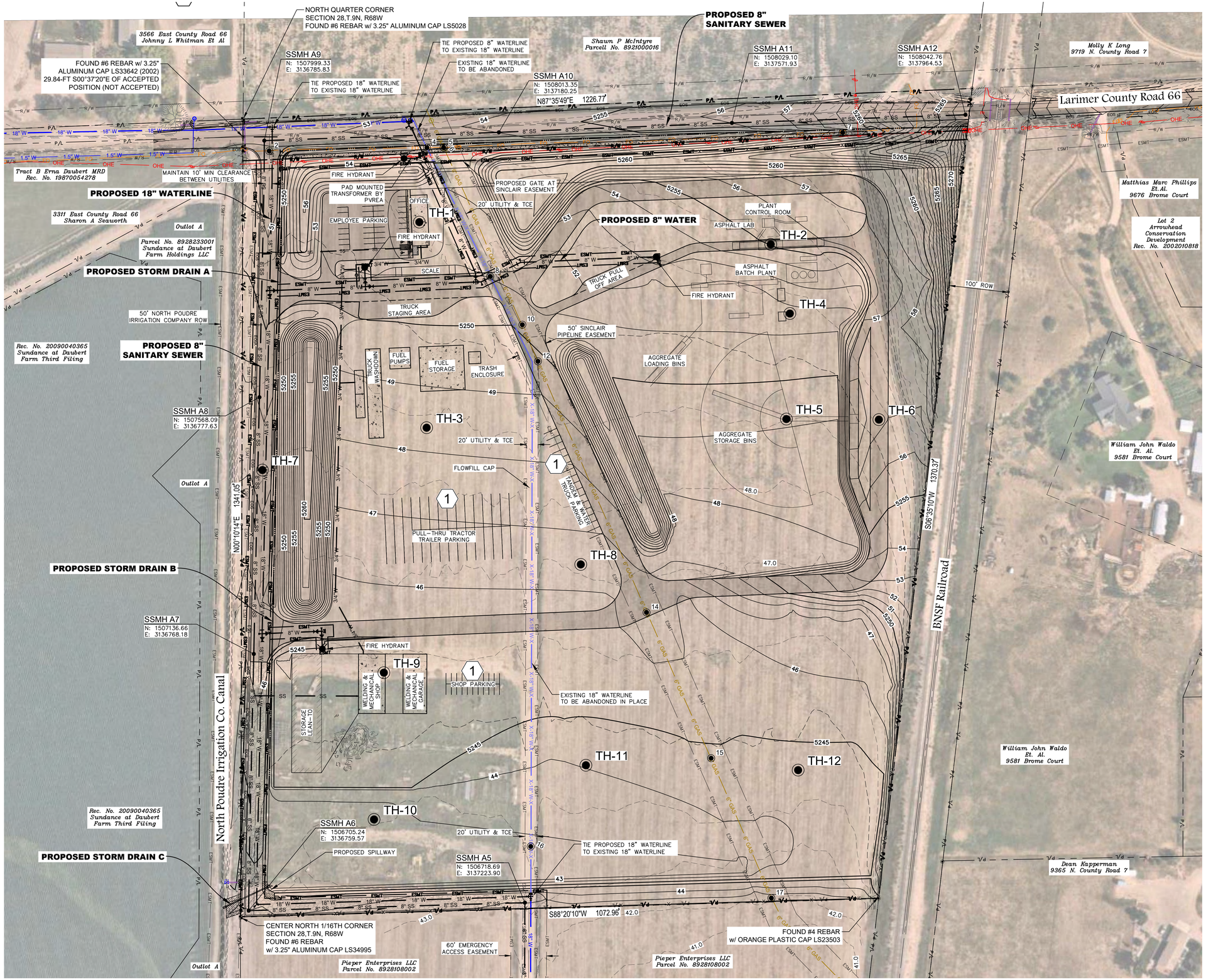
WELLINGTON BATCH PLANT
CONNELL RESOURCES

PROJECT NUMBER: XXXX

SHEET NUMBER
S1

SHEET INDEX: 2

Drawing Name: D:\Projects\Wellington Batch Plant\Dwg\Sheets\Batch Plant Site Plan.dwg Wednesday, February 08, 2023 5:04 PM By: Rhonda Bunner



80' 0 80' 160' 240'

SCALE: 1" = 80'
(True scale for 22x34 sheet size)

LEGEND:

- EXISTING CONTOURS — 4987
- PROPOSED CONTOURS — 4987
- SITE PROPERTY LINE — P/L
- EXISTING RIGHT OF WAY — R/W
- PROPOSED RIGHT OF WAY — R/W
- PROPOSED EDGE OF ASPHALT
- PROPOSED EDGE OF SHOULDER — EOS
- EDGE OF GRAVEL ROAD
- PROPOSED SWALE
- PROPOSED CHAIN LINK FENCE
- PROPOSED 2-STRAND BARB-WIRE — X
- EXISTING EASEMENT — ESMT
- PROPOSED EASEMENT — ESMT
- EXISTING WATER — 18" W
- PROPOSED WATER — 8" W
- PROPOSED 3/4" WATER SERVICE — 3/4"W
- EXISTING SANITARY SEWER — 8" SS
- PROPOSED SANITARY SEWER — 8" SS
- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN
- EXISTING OVERHEAD ELECTRIC — OHE
- EXISTING SINCLAIR GASOLINE PIPELINE — 6" GAS
- EXISTING FIBER OPTIC — FO
- EXISTING GATE VALVE
- EXISTING WATER MANHOLE
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED THRUST BLOCK
- EXISTING POWER POLE
- EXISTING ELECTRIC BOX
- EXISTING TELEPHONE PEDESTAL
- EXISTING MAILBOX
- PLANT ACCESS ROAD (ASPHALT)
- GRAVEL ROAD
- BORE HOLES — TH2
- UTILITY POTHOLE — 20

NOTES:

1. THE SIZE, TYPE AND LOCATION OF ALL KNOWN UNDERGROUND UTILITIES ARE APPROXIMATE WHEN SHOWN ON THESE DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXISTENCE OF ALL UNDERGROUND UTILITIES IN THE AREA OF THE WORK.
2. ALL SYMBOLS ARE ONLY GRAPHICALLY REPRESENTED AND ARE NOT TO SCALE.

TAG NOTES:

1. PARKING STALLS SHOWN FOR LAYOUT PURPOSES ONLY. STRIPING WILL NOT BE INSTALLED.

dtesco
Project & Construction Services
2139 S. Timberline Road, Suite 110
Fort Collins, Colorado 80525
Phone: 970.530.8080
www.dtescoservices.com

P.E. Seal

No.	Sheet Revisions / Revisions:	By	Date:

OVERALL SITE, UTILITY AND GRADING PLAN

DESIGNED BY:	D. Egger
DRAWN BY:	R. Bunner
APPROVED BY:	J. Burrell
DATE:	February 8, 2023
SCALE:	########
FILE NAME:	Batch Plant OA Site Grading.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

PROJECT NUMBER: XXXX

SHEET NUMBER
C103

SHEET INDEX: 3

Drawing Name: D:\Projects\Wellington Batch Plant\Dwg\Sheets\Batch Plant OA Site Grading.dwg Wednesday, February 08, 2023 5:12 PM By: Rhonda Bunner

40' 0 40' 80' 120'

SCALE: 1" =40'
(True scale for 22x34 sheet size)

LEGEND:

- SITE PROPERTY LINE
- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- SITE DISTANCE LINE
- PROPOSED EDGE OF ASPHALT
- PROPOSED EDGE OF SHOULDER
- EDGE OF GRAVEL ROAD
- PROPOSED SWALE
- PROPOSED CHAIN LINK FENCE
- PROPOSED 2-STRAND BARB-WIRE
- EXISTING EASEMENT
- PROPOSED EASEMENT
- EXISTING GATE VALVE
- EXISTING WATER MANHOLE
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED FIRE HYDRANT
- EXISTING POWER POLE
- EXISTING ELECTRIC BOX
- EXISTING TELEPHONE PEDESTAL
- EXISTING MAILBOX
- PLANT ACCESS ROAD (ASPHALT)
- GRAVEL ROAD
- BORE HOLES
- UTILITY POTHOLE

NOTES:

1. THE SIZE, TYPE AND LOCATION OF ALL KNOWN UNDERGROUND UTILITIES ARE APPROXIMATE WHEN SHOWN ON THESE DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXISTENCE OF ALL UNDERGROUND UTILITIES IN THE AREA OF THE WORK.
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TAG NOTES:

(A) PARKING STALLS SHOWN FOR LAYOUT PURPOSES ONLY. STRIPING WILL NOT BE INSTALLED.

dltesco
Project & Construction Services
2133 S. Timberline Road, Suite 110
Fort Collins, Colorado 80525
Phone: 970.530.8660
www.dltescoservices.com

P.E. Seal

Sheet Revisions	No.	Revisions:	By	Date:

SITE AND HORIZONTAL CONTROL PLAN

DESIGNED BY:	D. Egger
DRAWN BY:	R. Bunner
APPROVED BY:	J. Burrell
DATE:	February 8, 2023
SCALE:	1" = 40'
FILE NAME:	Batch Plant Site.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

PROJECT NUMBER:
XXXX

SHEET NUMBER
C201

SHEET INDEX: 4

Drawing Name: D:\Projects\Wellington Batch Plant\Dwg\Sheets\Batch Plant Site.dwg Wednesday, February 08, 2023 5:11 PM By: Rhonda Bunner

40' 0 40' 80' 120'

SCALE: 1" =40'
(True scale for 22x34 sheet size)

LEGEND:

- SITE PROPERTY LINE — P/L
- EXISTING RIGHT OF WAY — R/W
- PROPOSED RIGHT OF WAY — R/W
- SITE DISTANCE LINE — Site
- PROPOSED EDGE OF ASPHALT
- PROPOSED EDGE OF SHOULDER — EOS
- EDGE OF GRAVEL ROAD
- PROPOSED SWALE
- PROPOSED CHAIN LINK FENCE
- PROPOSED 2-STRAND BARB-WIRE — X
- EXISTING EASEMENT — ESMT
- PROPOSED EASEMENT — ESMT
- EXISTING GATE VALVE — W.V.
- EXISTING WATER MANHOLE — W.M.
- EXISTING SANITARY SEWER MANHOLE — S
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED FIRE HYDRANT
- EXISTING POWER POLE
- EXISTING ELECTRIC BOX
- EXISTING TELEPHONE PEDESTAL — T
- EXISTING MAILBOX — M
- PLANT ACCESS ROAD (ASPHALT)
- GRAVEL ROAD
- BORE HOLES — TH2
- UTILITY POTHOLE — 20

NOTES:

1. THE SIZE, TYPE AND LOCATION OF ALL KNOWN UNDERGROUND UTILITIES ARE APPROXIMATE WHEN SHOWN ON THESE DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXISTENCE OF ALL UNDERGROUND UTILITIES IN THE AREA OF THE WORK.
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TAG NOTES:

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ditesco
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2133 S. Timberline Road, Suite 110
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Phone: 970.530.8863
www.ditescoservices.com

P.E. Seal

Sheet Revisions

No.	Revisions:	By	Date:

SITE AND HORIZONTAL CONTROL PLAN

DESIGNED BY: D. Egger
DRAWN BY: R. Bunner
APPROVED BY: J. Burrell
DATE: February 8, 2023
SCALE: 1" = 40'
FILE NAME: Batch Plant Site.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

PROJECT NUMBER: XXXX
SHEET NUMBER C202
SHEET INDEX: 5

Drawing Name: D:\Projects\Wellington Batch Plant\Dwg\Sheets\Batch Plant Site.dwg Wednesday, February 08, 2023 5:11 PM By: Rhonda Bunner

40' 0 40' 80' 120'

SCALE: 1" =40'
(True scale for 22x34 sheet size)

LEGEND:

- SITE PROPERTY LINE — P/L
- EXISTING RIGHT OF WAY — R/W
- PROPOSED RIGHT OF WAY — R/W
- SITE DISTANCE LINE — Site
- PROPOSED EDGE OF ASPHALT
- PROPOSED EDGE OF SHOULDER — EOS
- EDGE OF GRAVEL ROAD
- PROPOSED SWALE
- PROPOSED CHAIN LINK FENCE
- PROPOSED 2-STRAND BARB-WIRE — X
- EXISTING EASEMENT — ESMT
- PROPOSED EASEMENT — ESMT
- EXISTING GATE VALVE — WV
- EXISTING WATER MANHOLE — FDS
- EXISTING SANITARY SEWER MANHOLE — S
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED FIRE HYDRANT
- EXISTING POWER POLE
- EXISTING ELECTRIC BOX
- EXISTING TELEPHONE PEDESTAL — T
- EXISTING MAILBOX — M
- PLANT ACCESS ROAD (ASPHALT)
- GRAVEL ROAD
- BORE HOLES — TH2
- UTILITY POTHOLE — 20

NOTES:

1. THE SIZE, TYPE AND LOCATION OF ALL KNOWN UNDERGROUND UTILITIES ARE APPROXIMATE WHEN SHOWN ON THESE DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXISTENCE OF ALL UNDERGROUND UTILITIES IN THE AREA OF THE WORK.
2. ALL SYMBOLS ARE ONLY GRAPHICALLY REPRESENTED AND ARE NOT TO SCALE.

TAG NOTES:

(A) PARKING STALLS SHOWN FOR LAYOUT PURPOSES ONLY. STRIPING WILL NOT BE INSTALLED.

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P.E. Seal

Sheet Revisions

No.	Revisions:	By	Date:

SITE AND HORIZONTAL CONTROL PLAN

DESIGNED BY:	D. Egger
DRAWN BY:	R. Bunner
APPROVED BY:	J. Burrell
DATE:	February 8, 2023
SCALE:	1" = 40'
FILE NAME:	Batch Plant Site.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

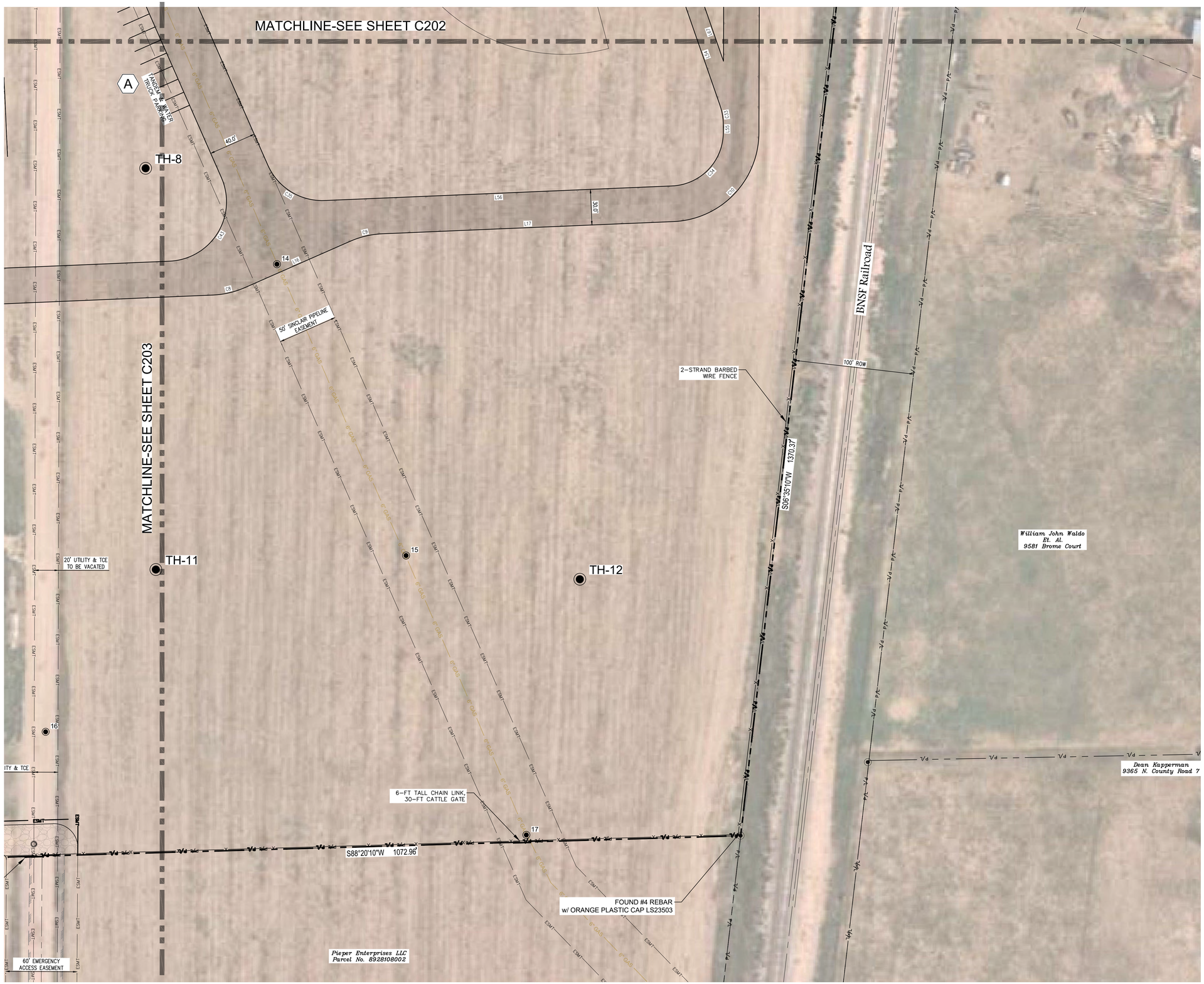
CONNELL

PROJECT NUMBER: XXXX

SHEET NUMBER
C203

SHEET INDEX: 6

Drawing Name: D:\Projects\Wellington Batch Plant\Dwg\Sheets\Batch Plant Site.dwg Wednesday, February 08, 2023 5:11 PM By: Rhonda Bunner



40' 0 40' 80' 120'

SCALE: 1" =40'
(True scale for 22x34 sheet size)

LEGEND:

- SITE PROPERTY LINE
- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- SITE DISTANCE LINE
- PROPOSED EDGE OF ASPHALT
- PROPOSED EDGE OF SHOULDER
- EDGE OF GRAVEL ROAD
- PROPOSED SWALE
- PROPOSED CHAIN LINK FENCE
- PROPOSED 2-STRAND BARB-WIRE
- EXISTING EASEMENT
- PROPOSED EASEMENT
- EXISTING GATE VALVE
- EXISTING WATER MANHOLE
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED FIRE HYDRANT
- EXISTING POWER POLE
- EXISTING ELECTRIC BOX
- EXISTING TELEPHONE PEDESTAL
- EXISTING MAILBOX
- PLANT ACCESS ROAD (ASPHALT)
- GRAVEL ROAD
- BORE HOLES (TH2, 20)
- UTILITY POTHOLE

NOTES:

1. THE SIZE, TYPE AND LOCATION OF ALL KNOWN UNDERGROUND UTILITIES ARE APPROXIMATE WHEN SHOWN ON THESE DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXISTENCE OF ALL UNDERGROUND UTILITIES IN THE AREA OF THE WORK.
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P.E. Seal

Sheet Revisions

No.	Revisions:	By	Date:

SITE AND HORIZONTAL CONTROL PLAN

DESIGNED BY:	D. Egger
DRAWN BY:	R. Bunner
APPROVED BY:	J. Burrell
DATE:	February 8, 2023
SCALE:	1" = 40'
FILE NAME:	Batch Plant Site.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

PROJECT NUMBER: XXXX

SHEET NUMBER
C204

SHEET INDEX: 7

Drawing Name: D:\Projects\Wellington Batch Plant\Dwg\Sheets\Batch Plant Site.dwg Wednesday, February 08, 2023 5:11 PM By: Rhonda Bunner

Line Table				
LINE	LENGTH	BEARING	BEGIN LINE	END LINE
L1	2.00'	S05°47'56.83"E	N: 1508029.20 E: 3136652.29	N: 1508027.21 E: 3136652.50
L2	43.98'	S84°12'03.17"W	N: 1508016.26 E: 3136643.56	N: 1508011.81 E: 3136599.81
L3	389.34'	S89°50'07.42"W	N: 1508063.25 E: 3137973.04	N: 1508062.13 E: 3137583.69
L4	745.53'	S87°35'49.47"W	N: 1508061.05 E: 3137547.86	N: 1508029.80 E: 3136802.99
L5	42.01'	S84°12'03.17"W	N: 1508023.43 E: 3136714.20	N: 1508019.19 E: 3136672.41
L6	2.00'	N05°47'56.83"W	N: 1508028.12 E: 3136661.45	N: 1508030.11 E: 3136661.25
L7	153.12'	N89°04'35.56"E	N: 1507985.01 E: 3136599.97	N: 1507987.48 E: 3136753.08
L8	26.64'	S00°10'13.68"W	N: 1507959.41 E: 3136780.38	N: 1507932.77 E: 3136780.30
L9	1128.02'	S01°15'21.43"W	N: 1507932.77 E: 3136780.30	N: 1506805.02 E: 3136755.57
L10	107.44'	S00°45'54.23"W	N: 1506805.02 E: 3136755.57	N: 1506697.59 E: 3136754.14
L11	49.91'	N88°19'35.55"E	N: 1506697.59 E: 3136754.14	N: 1506699.04 E: 3136804.02
L12	24.00'	N01°40'24.45"W	N: 1506699.04 E: 3136804.02	N: 1506723.03 E: 3136803.32
L13	61.23'	N00°45'54.23"E	N: 1506743.29 E: 3136782.75	N: 1506804.52 E: 3136783.57
L14	318.56'	N01°15'21.16"E	N: 1506804.52 E: 3136783.57	N: 1507123.01 E: 3136790.55
L15	538.76'	N87°35'49.47"E	N: 1507157.92 E: 3136836.13	N: 1507180.50 E: 3137374.42
L16	96.77'	N66°15'20.74"E	N: 1507186.79 E: 3137401.47	N: 1507225.75 E: 3137490.05
L17	245.25'	N87°35'49.47"E	N: 1507232.04 E: 3137517.11	N: 1507242.32 E: 3137762.15
L18	550.56'	N00°10'13.68"E	N: 1507317.03 E: 3137834.00	N: 1507867.58 E: 3137835.64
L19	398.08'	S87°35'49.47"W	N: 1507942.74 E: 3137757.50	N: 1507926.05 E: 3137359.77
L20	116.15'	S35°27'03.92"W	N: 1507894.62 E: 3137301.82	N: 1507800.00 E: 3137234.45
L21	38.51'	S87°35'49.47"W	N: 1507779.05 E: 3137195.82	N: 1507777.43 E: 3137157.34
L22	200.68'	S87°35'49.47"W	N: 1507777.43 E: 3137157.34	N: 1507769.02 E: 3136956.84
L23	41.54'	S87°35'49.47"W	N: 1507769.02 E: 3136956.84	N: 1507767.28 E: 3136915.34
L24	10.02'	N01°15'21.16"E	N: 1507777.49 E: 3136904.92	N: 1507787.50 E: 3136905.14
L25	115.74'	N87°35'49.47"E	N: 1507797.28 E: 3136914.72	N: 1507802.13 E: 3137030.36
L26	115.00'	N02°24'10.53"W	N: 1507802.13 E: 3137030.36	N: 1507917.03 E: 3137025.53
L27	132.43'	S87°35'49.47"W	N: 1507917.03 E: 3137025.53	N: 1507911.47 E: 3136893.22
L28	126.53'	S01°15'21.16"W	N: 1507901.70 E: 3136883.64	N: 1507775.20 E: 3136880.87
L29	13.47'	S87°35'49.47"W	N: 1507765.43 E: 3136871.29	N: 1507764.86 E: 3136857.82
L30	116.26'	N01°15'32.46"E	N: 1507815.92 E: 3136805.74	N: 1507932.15 E: 3136808.29

Line Table				
LINE	LENGTH	BEARING	BEGIN LINE	END LINE
L31	31.07'	N00°10'13.68"E	N: 1507932.15 E: 3136808.29	N: 1507963.22 E: 3136808.39
L32	714.96'	N87°35'49.47"E	N: 1507991.11 E: 3136835.21	N: 1508021.09 E: 3137549.54
L33	385.59'	N88°03'40.90"E	N: 1508022.14 E: 3137584.43	N: 1508035.18 E: 3137969.80
L34	380.89'	S88°26'04.91"W	N: 1508023.51 E: 3137968.45	N: 1508013.10 E: 3137587.70
L35	712.61'	S87°35'49.47"W	N: 1508011.96 E: 3137546.58	N: 1507982.08 E: 3136834.59
L36	30.76'	S00°10'13.68"W	N: 1507963.15 E: 3136816.39	N: 1507932.40 E: 3136816.30
L37	124.34'	S01°15'21.16"W	N: 1507932.40 E: 3136816.30	N: 1507808.08 E: 3136813.57
L38	530.61'	S85°36'43.11"W	N: 1508153.71 E: 3139305.36	N: 1508113.11 E: 3138776.31
L39	302.34'	S85°41'09.11"W	N: 1508113.11 E: 3138776.31	N: 1508090.37 E: 3138474.83
L40	248.17'	S86°02'38.48"W	N: 1508090.37 E: 3138474.83	N: 1508073.25 E: 3138227.25
L41	150.41'	S86°55'15.83"W	N: 1508073.25 E: 3138227.25	N: 1508065.17 E: 3138077.06
L42	150.92'	N86°55'15.83"E	N: 1508041.19 E: 3138078.02	N: 1508049.29 E: 3138228.72
L43	248.43'	N86°02'38.48"E	N: 1508049.29 E: 3138228.72	N: 1508066.43 E: 3138476.56
L44	302.43'	N85°41'09.11"E	N: 1508066.43 E: 3138476.56	N: 1508089.18 E: 3138778.13
L45	532.26'	N85°36'43.11"E	N: 1508089.18 E: 3138778.13	N: 1508129.91 E: 3139308.83
L46	43.87'	S66°15'20.74"W	N: 1507821.36 E: 3137491.97	N: 1507803.69 E: 3137451.81
L47	15.31'	N82°46'49.74"W	N: 1507801.77 E: 3137438.60	N: 1507803.70 E: 3137423.42
L48	86.15'	S66°15'20.74"W	N: 1507801.78 E: 3137410.21	N: 1507767.09 E: 3137331.35
L49	15.31'	S35°17'31.22"W	N: 1507758.65 E: 3137321.01	N: 1507746.16 E: 3137312.17
L50	43.87'	S66°15'20.74"W	N: 1507737.72 E: 3137301.83	N: 1507720.05 E: 3137261.68
L51	146.27'	N35°27'03.92"E	N: 1507758.06 E: 3137241.41	N: 1507877.21 E: 3137326.25
L52	398.08'	N87°35'49.47"E	N: 1507896.08 E: 3137361.03	N: 1507912.77 E: 3137758.75
L53	243.09'	S87°35'49.47"W	N: 1507837.83 E: 3137761.90	N: 1507827.64 E: 3137519.02
L54	88.62'	S19°10'22.34"E	N: 1507423.72 E: 3137772.14	N: 1507340.01 E: 3137801.25
L55	6.32'	S00°10'13.68"W	N: 1507323.44 E: 3137804.02	N: 1507317.12 E: 3137804.00
L56	292.56'	S87°35'49.47"W	N: 1507272.29 E: 3137760.89	N: 1507260.03 E: 3137468.59
L57	392.83'	N23°44'39.26"W	N: 1507289.85 E: 3137420.73	N: 1507649.43 E: 3137262.55
L58	229.22'	N66°15'20.74"E	N: 1507715.33 E: 3137288.18	N: 1507807.63 E: 3137498.01
L59	207.67'	N87°35'49.47"E	N: 1507812.65 E: 3137519.65	N: 1507821.36 E: 3137727.13
L60	6.32'	S00°10'13.68"W	N: 1507746.20 E: 3137805.28	N: 1507739.88 E: 3137805.26

Line Table				
LINE	LENGTH	BEARING	BEGIN LINE	END LINE
L61	88.62'	S19°30'49.70"W	N: 1507723.33 E: 3137802.39	N: 1507639.80 E: 3137772.78
L62	182.96'	S00°10'13.68"W	N: 1507623.24 E: 3137769.91	N: 1507440.29 E: 3137769.37
L63	0.00'	N00°10'12.41"E	N: 1507440.29 E: 3137769.37	N: 1507440.29 E: 3137769.37
L64	182.96'	N00°10'13.68"E	N: 1507440.24 E: 3137784.37	N: 1507623.20 E: 3137784.91
L65	54.42'	N19°30'49.70"E	N: 1507634.78 E: 3137786.92	N: 1507686.08 E: 3137805.10
L66	308.83'	S00°10'13.68"W	N: 1507686.08 E: 3137805.10	N: 1507377.24 E: 3137804.18
L67	54.42'	N19°10'22.34"W	N: 1507377.24 E: 3137804.18	N: 1507428.64 E: 3137786.31
L68	0.00'	S00°10'12.23"W	N: 1507440.24 E: 3137784.37	N: 1507440.24 E: 3137784.37
L69	481.22'	S23°44'39.26"E	N: 1507719.58 E: 3137187.99	N: 1507279.10 E: 3137381.76
L70	495.34'	S87°35'49.47"W	N: 1507209.01 E: 3137338.09	N: 1507188.24 E: 3136843.18
L71	464.39'	N01°15'21.16"E	N: 1507225.25 E: 3136792.79	N: 1507689.53 E: 3136802.97
L72	32.76'	N87°35'49.47"E	N: 1507724.44 E: 3136848.55	N: 1507725.81 E: 3136881.28
L73	30.61'	S61°26'21.00"E	N: 1507719.77 E: 3136907.29	N: 1507705.14 E: 3136934.17
L74	100.00'	N87°35'49.47"E	N: 1507699.10 E: 3136960.17	N: 1507703.29 E: 3137060.08
L75	30.61'	N56°37'59.95"E	N: 1507711.49 E: 3137085.49	N: 1507728.32 E: 3137111.05
L76	22.84'	N87°35'49.47"E	N: 1507736.52 E: 3137136.46	N: 1507737.48 E: 3137159.27
L77	34.64'	S01°15'21.16"W	N: 1507692.90 E: 3136811.04	N: 1507658.27 E: 3136810.29
L78	418.28'	S01°15'21.16"W	N: 1507656.27 E: 3136810.29	N: 1507240.09 E: 3136801.12
L79	18.57'	S01°15'21.16"W	N: 1507240.09 E: 3136801.12	N: 1507221.53 E: 3136800.71

Point Table			
POINT #	DESCRIPTION	NORTHING	EASTING
101	OFFICE	1507907.2668	3137031.4486
102	OFFICE	1507908.4407	3137059.4239
103	OFFICE	1507823.5155	3137062.9877
104	OFFICE	1507822.3415	3137035.0123
105	EOC	1507613.0541	3136937.1399
106	EOC	1507613.6830	3136952.1267
107	EOC	1507533.7533	3136955.4809
108	EOC	1507533.1244	3136940.4941
109	EOC	1507648.8618	3136955.6549
110	EOC	1507649.9100	3136980.6329
111	EOC	1507498.9937	3136961.9439
112	EOC	1507500.0419	3136986.9219
113	EOC	1507650.5389	3136995.6197
114	EOC	1507652.0063	3137030.5890
115	EOC	1507615.5697	3136997.0872
116	EOC	1507617.0371	3137032.0564

Point Table			
POINT #	DESCRIPTION	NORTHING	EASTING
117	EOC	1507652.6352	3137045.5758
118	EOC	1507655.7797	3137120.5098
119	EOC	1507577.7012	3137048.7203
120	EOC	1507580.8457	3137123.6543
121	SHOP	1507136.7356	3136944.2560
122	SHOP	1507136.6017	3136989.2558
123	SHOP	1507036.7360	3136943.9584
124	SHOP	1507036.6021	3136988.9582
125	LEAN-TO	1507137.1130	3136832.4122
126	LEAN-TO	1507136.9642	3136882.4120
127	LEAN-TO	1506937.1139	3136831.8171
128	LEAN-TO	1506936.9651	3136881.8169
129	GARAGE	1507136.5124	3137019.2556
130	GARAGE	1507136.3934	3137059.2555
131	GARAGE	1507036.5129	3137018.9581
132	GARAGE	1507036.3939	3137058.9579

Curve Table							
CURVE	DELTA	RADIUS	LENGTH	BEARING	CHORD	BEGIN CURVE	END CURVE
C1	90°00'02"	10.00'	15.71'	S39°12'02"W	14.14'	N: 1508027.21 E: 3136652.50	N: 1508016.26 E: 3136643.56
C2	1°21'05"	1520.00'	35.85'	S88°16'22"W	35.85'	N: 1508062.13 E: 3137583.69	N: 1508061.05 E: 3137547.86
C3	3°23'46"	1502.00'	89.03'	S85°53'56"W	89.02'	N: 1508029.80 E: 3136802.99	N: 1508023.43 E: 3136714.20
C4	90°00'00"	10.00'	15.71'	N50°47'57"W	14.14'	N: 1508019.19 E: 3136672.41	N: 1508028.12 E: 3136661.45
C5	88°44'00"	28.00'	43.36'	S44°11'47"E	39.16'	N: 1507987.48 E: 3136753.08	N: 1507959.41 E: 3136780.38
C6	92°24'41"	20.00'	32.26'	N45°26'26"W	28.87'	N: 1506723.03 E: 3136803.32	N: 1506743.29 E: 3136782.75
C7	70°04'52"	50.00'	61.16'	N52°33'24"E	57.42'	N: 1507123.01 E: 3136790.55	N: 1507157.92 E: 3136836.13
C8	21°20'29"	75.00'	27.94'	N76°55'35"E	27.77'	N: 1507180.50 E: 3137374.42	N: 1507186.79 E: 3137401.47
C9	21°20'29"	75.00'	27.94'	N76°55'35"E	27.77'	N: 1507225.75 E: 3137490.05	N: 1507232.04 E: 3137517.11
C10	87°25'36"	75.00'	114.44'	N43°53'02"E	103.66'	N: 1507242.32 E: 3137762.15	N: 1507317.03 E: 3137834.00
C11	92°34'24"	75.00'	121.18'	N46°06'58"W	108.42'	N: 1507867.58 E: 3137835.64	N: 1507942.74 E: 3137757.50
C12	52°08'46"	75.00'	68.26'	S61°31'27"W	65.93'	N: 1507926.05 E: 3137359.77	N: 1507894.62 E: 3137301.82
C13	52°08'46"	50.00'	45.51'	S61°31'27"W	43.95'	N: 1507800.00 E: 3137234.45	N: 1507779.05 E: 3137195.82
C14	93°39'32"	10.00'	16.35'	N45°34'25"W	14.59'	N: 1507767.28 E: 3136915.34	N: 1507777.49 E: 3136904.92
C15	86°20'28"	10.00'	15.07'	N44°25'35"E	13.68'	N: 1507787.50 E: 3136905.14	N: 1507797.28 E: 3136914.72
C16	86°20'28"	10.00'	15.07'	S44°25'35"W	13.68'	N: 1507911.47 E: 3136883.22	N: 1507901.70 E: 3136883.64
C17	86°20'28"	10.00'	15.07'	S44°25'35"W	13.68'	N: 1507775.20 E: 3136880.87	N: 1507765.43 E: 3136871.29
C18	93°39'43"	50.00'	81.74'	N45°34'19"W	72.93'	N: 1507764.86 E: 3136857.82	N: 1507815.92 E: 3136805.74

Curve Table							
CURVE	DELTA	RADIUS	LENGTH	BEARING	CHORD	BEGIN CURVE	END CURVE
C19	87°25'36"	28.00'	42.72'	N43°53'02"E	38.70'	N: 1507963.22 E: 3136808.39	N: 1507991.11 E: 3136835.21
C20	1°21'05"	1480.00'	34.91'	N88°16'22"E	34.90'	N: 1508021.09 E: 3137549.54	N: 1508022.14 E: 3137584.43
C21	1°36'41"	1463.00'	41.14'	S88°24'10"W	41.14'	N: 1508013.10 E: 3137587.70	N: 1508011.96 E: 3137546.58
C22	87°25'36"	19.00'	28.99'	S43°53'02"W	26.26'	N: 1507982.08 E: 3136834.59	N: 1507963.15 E: 3136816.39
C23	30°57'50"	25.00'	13.51'	S81°44'16"W	13.35'	N: 1507803.69 E: 3137451.81	N: 1507801.77 E: 3137438.60
C24	30°57'50"	25.00'	13.51'	S81°44'16"W	13.35'	N: 1507803.70 E: 3137423.42	N: 1507801.78 E: 3137410.21
C25	30°57'50"	25.00'	13.51'	S50°46'26"W	13.35'	N: 1507767.09 E: 3137331.35	N: 1507758.65 E: 3137321.01
C26	30°57'50"	25.00'	13.51'	S50°46'26"W	13.35'	N: 1507746.16 E: 3137312.17	N: 1507737.72 E: 3137301.83
C27	131°48'37"	20.00'	46.01'	N47°50'21"W	36.51'	N: 1507720.05 E: 3137261.68	N: 1507744.56 E: 3137234.61
C28	17°23'06"	50.00'	15.17'	N26°45'31"E	15.11'	N: 1507744.56 E: 3137234.61	N: 1507758.06 E: 3137241.41
C29	52°08'46"	45.00'	40.96'	N61°31'27"E	39.56'	N: 1507877.21 E: 3137326.25	N: 1507896.08 E: 3137361.03
C30	180°00'00"	37.50'	117.81'	S02°24'11"E	75.00'	N: 1507912.77 E: 3137758.75	N: 1507837.83 E: 3137761.90
C31	21°20'29"	75.00'	27.94'	S76°55'35"W	27.77'	N: 1507827.64 E: 3137519.02	N: 1507821.36 E: 3137491.97
C32	19°20'36"	50.00'	16.88'	S09°30'04"E	16.80'	N: 1507440.29 E: 3137769.37	N: 1507423.72 E: 3137772.14
C33	19°20'36"	50.00'	16.88'	S09°30'04"E	16.80'	N: 1507340.01 E: 3137801.25	N: 1507323.44 E: 3137804.02
C34	87°25'36"	45.00'	68.66'	S43°53'02"W	62.19'	N: 1507317.12 E: 3137760.89	N: 1507272.29 E: 3137760.89
C35	68°39'31"	50.00'	59.92'	N58°04'25"W	56.39'	N: 1507260.03 E: 3137468.59	N: 1507289.85 E: 3137420.73
C36	90°00'00"	50.00'	78.54'	N21°15'21"E	70.71'	N: 1507649.43 E: 3137262.55	N: 1507715.33 E: 3137288.18

Curve Table							
CURVE	DELTA	RADIUS	LENGTH	BEARING	CHORD	BEGIN CURVE	END CURVE
C37	21°20'29"	60.00'	22.35'	N76°55'35"E	22.22'	N: 1507807.63 E: 3137498.01	N: 1507812.65 E: 3137519.65
C38	92°34'24"	75.00'	121.18'	S46°06'58"E	108.42'	N: 1507821.36 E: 3137727.13	N: 1507746.20 E: 3137805.28
C39	19°20'36"	50.00'	16.88'	S09°50'32"W	16.80'	N: 1507739.88 E: 3137805.26	N: 1507723.33 E: 3137802.39
C40	19°20'36"	50.00'	16.88'	S09°50'32"W	16.80'	N: 1507639.80 E: 3137772.78	N: 1507623.24 E: 3137769.91
C41	19°20'36"	35.00'	11.82'	N09°50'32"E	11.76'	N: 1507623.20 E: 3137784.91	N: 1507634.78 E: 3137786.92
C42	19°20'36"	35.00'	11.82'	N09°30'04"W	11.76'	N: 1507428.64 E: 3137786.31	N: 1507440.24 E: 3137784.37
C43	111°20'29"	50.00'	97.16'	S31°55'35"W	82.58'	N: 1507279.10 E: 3137381.76	N: 1507209.01 E: 3137338.09
C44	77°23'55"	50.00'	67.54'	N53°42'13"W	62.52'	N: 1507188.24 E: 3136843.18	N: 1507225.25 E: 3136792.79
C45	70°04'52"	50.00'	61.16'	N52°33'24"E	57.42'	N: 1507689.53 E: 3136802.97	N: 1507724.44 E: 3136848.55
C46	30°57'50"	50.00'	27.02'	S76°55'16"E	26.69'	N: 1507725.81 E: 3136881.28	N: 1507719.77 E: 3136907.29
C47	30°57'50"	50.00'	27.02'	S76°55'16"E	26.69'	N: 1507705.14 E: 3136934.17	N: 1507699.10 E: 3136960.17
C48	30°57'50"	50.00'	27.02'	N72°06'55"E	26.69'	N: 1507703.29 E: 3137060.08	N: 1507711.49 E: 3137085.49
C49	30°57'50"	50.00'	27.02'	N72°06'55"E	26.69'	N: 1507728.32 E: 3137111.05	N: 1507736.52 E: 3137136.46
C50	68°39'31"	30.00'	35.95'	S58°04'25"E	33.84'	N: 1507737.48 E: 3137159.27	N: 1507719.58 E: 3137187.99

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P.E. Seal

Sheet Revisions

No.	Revisions:	By:	Date:

LINE & CURVE DATA AND POINT TABLE

DESIGNED BY:	D. Egger	DATE:	February 8, 2023
DRAWN BY:	R. Bunner	SCALE:	NTS
APPROVED BY:	J. Burnell	FILE NAME:	Batch Plant Site.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

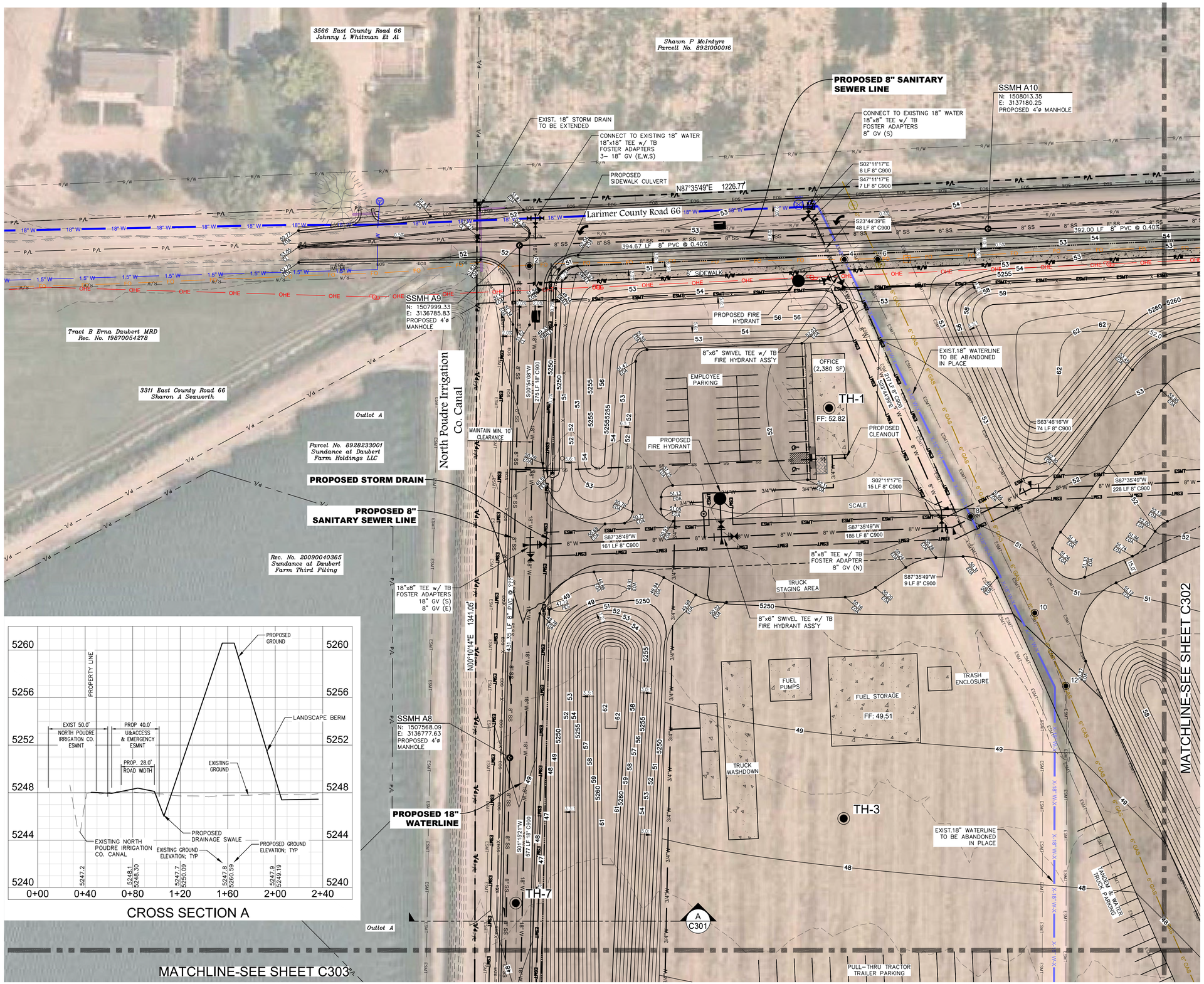
CONNELL

PROJECT NUMBER:
XXXX

SHEET NUMBER
C205

SHEET INDEX: 8

Drawing Name: D:\Projects\Wellington Batch Plant\Dwg\Sheets\Batch Plant Site.dwg Wednesday, February 08, 2023 5:11 PM By: Rhonda Bunner



40' 0 40' 80' 120'

SCALE: 1" =40'
(True scale for 22x34 sheet size)

LEGEND:

- EXISTING CONTOURS — 4987
- PROPOSED CONTOURS — 4987
- SITE PROPERTY LINE — P/L
- EXISTING RIGHT OF WAY — R/W
- PROPOSED RIGHT OF WAY — R/W
- PROPOSED EDGE OF ASPHALT
- PROPOSED EDGE OF SHOULDER — EOS
- EDGE OF GRAVEL ROAD
- PROPOSED SWALE
- PROPOSED CHAIN LINK FENCE
- PROPOSED 2-STRAND BARB-WIRE — X
- EXISTING EASEMENT — ESMT
- PROPOSED EASEMENT — ESMT
- EXISTING WATER — 18" W
- PROPOSED WATER — 8" W
- PROPOSED 3/4" WATER SERVICE — 3/4"W
- EXISTING SANITARY SEWER — 8" SS
- PROPOSED SANITARY SEWER — 8" SS
- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN
- EXISTING OVERHEAD ELECTRIC — OHE
- EXISTING SINCLAIR GASOLINE PIPELINE — 6" GAS
- EXISTING FIBER OPTIC — FO
- EXISTING GATE VALVE
- EXISTING WATER MANHOLE — W
- EXISTING SANITARY SEWER MANHOLE — S
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED THRUST BLOCK
- EXISTING POWER POLE
- EXISTING ELECTRIC BOX
- EXISTING TELEPHONE PEDESTAL — T
- EXISTING MAILBOX — M
- PLANT ACCESS ROAD (ASPHALT)
- GRAVEL ROAD
- BORE HOLES — TH2
- UTILITY POTHOLE — 20

NOTES:

1. THE SIZE, TYPE AND LOCATION OF ALL KNOWN UNDERGROUND UTILITIES ARE APPROXIMATE WHEN SHOWN ON THESE DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXISTENCE OF ALL UNDERGROUND UTILITIES IN THE AREA OF THE WORK.
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Sheet Revisions

No.	Revisions:	By	Date:

UTILITY AND GRADING PLAN

DESIGNED BY: D. Egger
DRAWN BY: R. Bunner
APPROVED BY: J. Burrell
DATE: February 8, 2023
SCALE: 1" = 40'
FILE NAME: Batch Plant Site Grading.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

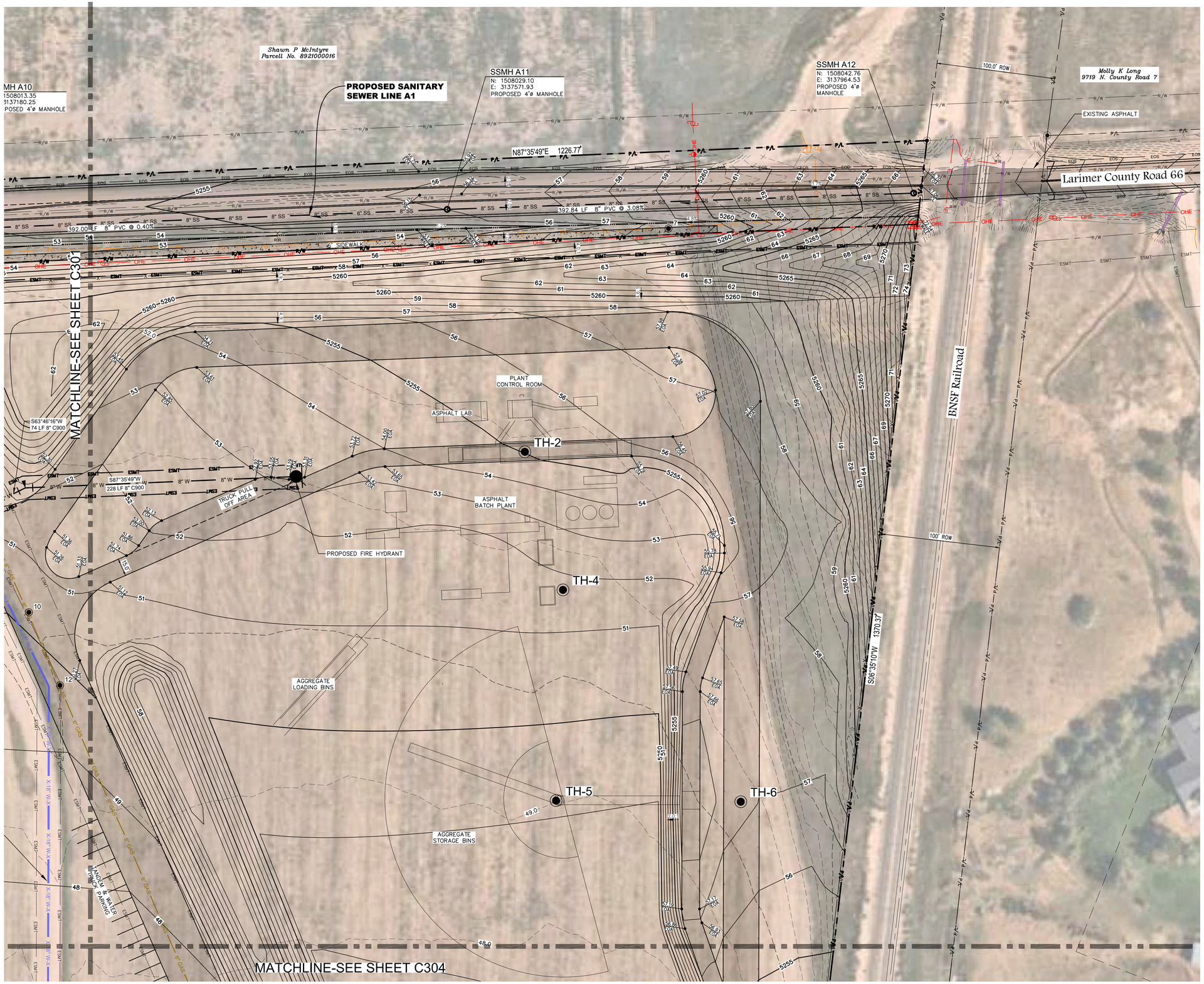
CONNELL

PROJECT NUMBER: XXXX

SHEET NUMBER
C301

SHEET INDEX: 9

Drawing Name: D:\Projects\Wellington Batch Plant\Dwg\Sheets\Batch Plant Site Grading.dwg Wednesday, February 08, 2023 5:08 PM By: Rhonda Bunner



40' 0 40' 80' 120'

SCALE: 1" =40'
(True scale for 22x34 sheet size)

LEGEND:

EXISTING CONTOURS	4987
PROPOSED CONTOURS	4987
SITE PROPERTY LINE	P/L
EXISTING RIGHT OF WAY	R/W
PROPOSED RIGHT OF WAY	R/W
PROPOSED EDGE OF ASPHALT	
PROPOSED EDGE OF SHOULDER	EOS
EDGE OF GRAVEL ROAD	
PROPOSED SWALE	
PROPOSED CHAIN LINK FENCE	
PROPOSED 2-STRAND BARB-WIRE	X
EXISTING EASEMENT	ESMT
PROPOSED EASEMENT	ESMT
EXISTING WATER	18" W
PROPOSED WATER	8" W
PROPOSED 3/4" WATER SERVICE	3/4"W 3/4"W
EXISTING SANITARY SEWER	8" SS
PROPOSED SANITARY SEWER	8" SS
EXISTING STORM DRAIN	
PROPOSED STORM DRAIN	
EXISTING OVERHEAD ELECTRIC	OHE
EXISTING SINCLAIR GASOLINE PIPELINE	6" GAS
EXISTING FIBER OPTIC	FO
EXISTING GATE VALVE	
EXISTING WATER MANHOLE	
EXISTING SANITARY SEWER MANHOLE	
PROPOSED SANITARY SEWER MANHOLE	
PROPOSED FIRE HYDRANT	
PROPOSED GATE VALVE	
PROPOSED THRUST BLOCK	
EXISTING POWER POLE	
EXISTING ELECTRIC BOX	
EXISTING TELEPHONE PEDESTAL	
EXISTING MAILBOX	
PLANT ACCESS ROAD (ASPHALT)	
GRAVEL ROAD	
BORE HOLES	TH2
UTILITY POTHOLE	20

NOTES:

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TAG NOTES:

(A) PARKING STALLS SHOWN FOR LAYOUT PURPOSES ONLY. STRIPING WILL NOT BE INSTALLED.

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P.E. Seal

Sheet Revisions

No.	Revisions:	By	Date:

UTILITY AND GRADING PLAN

DESIGNED BY:	D. Egger	DATE:	February 8, 2023
DRAWN BY:	R. Bunner	SCALE:	1" = 40'
APPROVED BY:	J. Burrell	FILE NAME:	Batch Plant Site Grading.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

PROJECT NUMBER: XXXX

SHEET NUMBER
C302

SHEET INDEX: 10

Drawing Name: D:\Projects\Wellington Batch Plant\Dwg\Sheets\Batch Plant Site Grading.dwg Wednesday, February 08, 2023 5:08 PM By: Rhonda Bunner

40' 0 40' 80' 120'

SCALE: 1" =40'
(True scale for 22x34 sheet size)

LEGEND:

EXISTING CONTOURS	4987
PROPOSED CONTOURS	4987
SITE PROPERTY LINE	P/L
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PROPOSED EDGE OF ASPHALT	
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EDGE OF GRAVEL ROAD	
PROPOSED SWALE	
PROPOSED CHAIN LINK FENCE	
PROPOSED 2-STRAND BARB-WIRE	X
EXISTING EASEMENT	ESMT
PROPOSED EASEMENT	ESMT
EXISTING WATER	18" W
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PROPOSED GATE VALVE	
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EXISTING TELEPHONE PEDESTAL	T
EXISTING MAILBOX	M
PLANT ACCESS ROAD (ASPHALT)	
GRAVEL ROAD	
BORE HOLES	TH2
UTILITY POTHOLE	20

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P.E. Seal

Sheet Revisions

No.	Revisions:	By	Date:

UTILITY AND GRADING PLAN

DESIGNED BY:	D. Egger	DATE:	February 8, 2023
DRAWN BY:	R. Bunner	SCALE:	1" = 40'
APPROVED BY:	J. Burrell	FILE NAME:	Batch Plant Site Grading.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

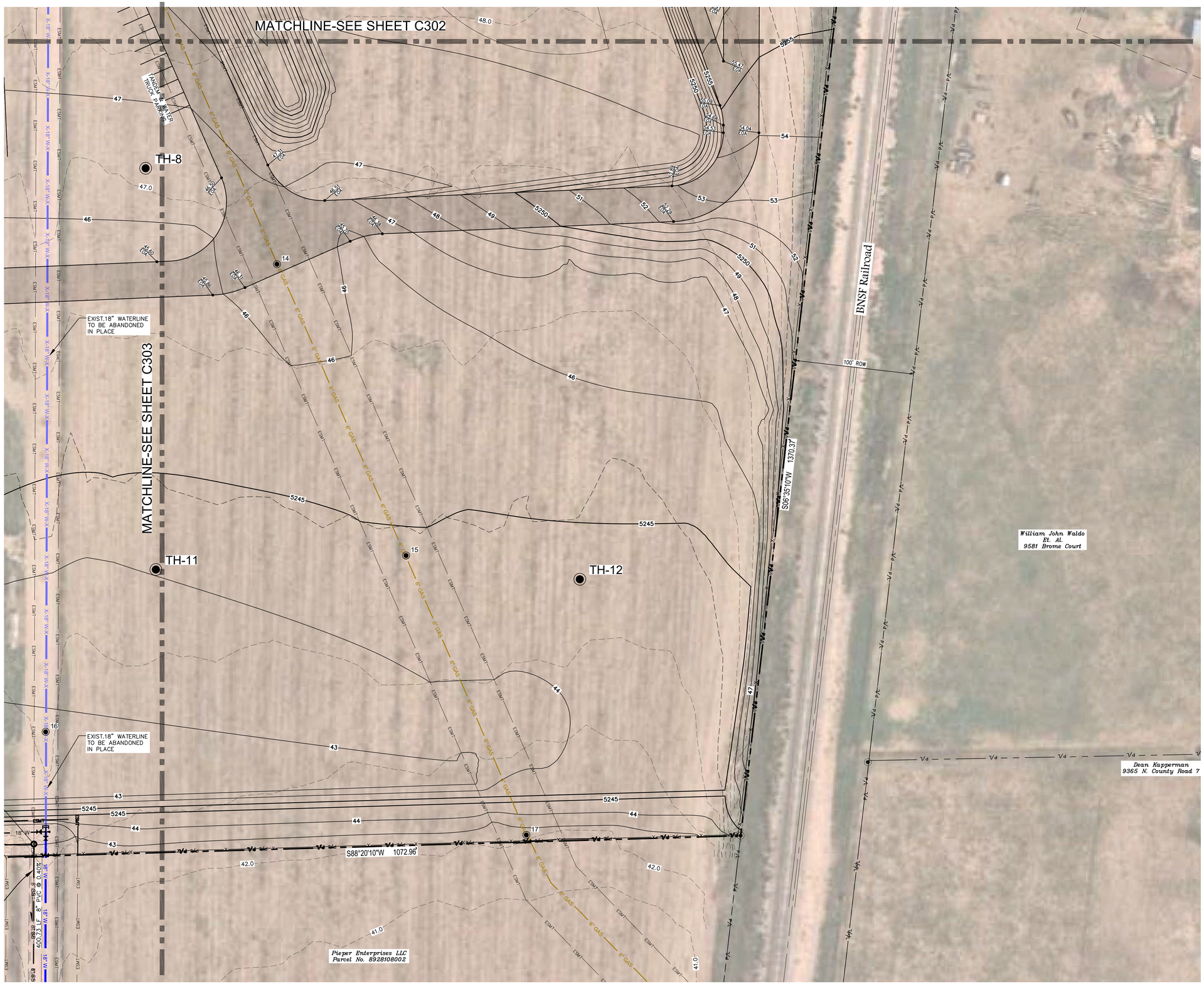
CONNELL

PROJECT NUMBER: XXXX

SHEET NUMBER
C303

SHEET INDEX: 11

Drawing Name: D:\Projects\Wellington Batch Plant\Dwg\Sheets\Batch Plant Site Grading.dwg Wednesday, February 08, 2023 5:08 PM By: Rhonda Bunner



40' 0 40' 80' 120'

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- EXISTING MAILBOX — M
- PLANT ACCESS ROAD (ASPHALT)
- GRAVEL ROAD
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NOTES:

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Sheet Revisions	No.	Revisions:	By	Date:

UTILITY AND GRADING PLAN

DESIGNED BY:	D. Egger
DRAWN BY:	R. Bunner
APPROVED BY:	J. Burrell
DATE:	February 8, 2023
SCALE:	1" = 40'
FILE NAME:	Batch Plant Site Grading.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

PROJECT NUMBER: XXXX

SHEET NUMBER
C304

SHEET INDEX: 12

Drawing Name: D:\Projects\Wellington Batch Plant\Dwg\Sheets\Batch Plant Site Grading.dwg Wednesday, February 08, 2023 5:08 PM By: Rhonda Bunner

EXISTING 12" CMP STORM DRAIN

PROPOSED 18" RCP @ 0.66% STORM DRAIN

PROPOSED 18" RCP @ 0.66% STORM DRAIN

PROPOSED 18" RCP @ 0.65% STORM DRAIN

PROPOSED SPILLWAY

POND OUTLET STRUCTURE

100-YR HIGH WATER MARK

Larimer County Road 66

North Poudre Irrigation Co. Canal

BNSF Railroad

A 0.93 AC

B 1.07 AC

C 3.16 AC

D 10.25 AC

E 19.45 AC

F 0.86 AC

D1 D2 D3 D4 D5 D6

80' 0 80' 160' 240'

SCALE: 1" = 80'
(True scale for 22x34 sheet size)

LEGEND:

- PROPOSED CONTOUR — 28
- EXISTING CONTOUR — 5028
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- DRAINAGE BASIN LABEL — BASIN DESIGNATION: A; BASIN AREA (AC): 1.23 ac
- DRAINAGE DESIGN POINT — 9B
- DRAINAGE BASIN BOUNDARY
- FLOW PATH

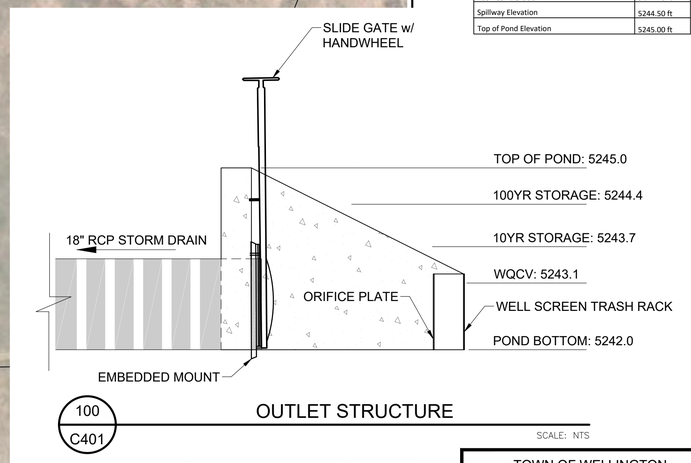
NOTES:

FOR DRAINAGE REVIEW ONLY NOT FOR CONSTRUCTION

1. REFER TO THE "CONNELL BATCH PLANT DRAINAGE REPORT" BY DITESCO, DATED NOVEMEBER 11, 2022 FOR ADDITIONAL INFORMATION.
2. REFER TO SITE PLAN AND GRADING AND UTILITY PLANS FOR ADDITIONAL INFORMATION.

Pond Summary Table

Pond Bottom Elevation	5244.00 ft
Water Quality Capture Volume (WQCV)	0.34 ac-ft
WQCV Elevation	5243.10 ft
100-Year Storage Volume	2.23 ac-ft
100-Year Elevation	5244.40 ft
Spillway Elevation	5244.50 ft
Top of Pond Elevation	5245.00 ft



100 / C401 OUTLET STRUCTURE

SCALE: NTS

Design Point	Sub-basin	Area (acres)	tc (min)	2-yr Peak Runoff				10-yr Peak Runoff				100-yr Peak Runoff			
				Runoff Coefficient	C (acres)	Intensity (in/hr)	Q (cfs)	Runoff Coefficient	C (acres)	Intensity (in/hr)	Q (cfs)	Runoff Coefficient	C (acres)	Intensity (in/hr)	Q (cfs)
D	OVERALL	35.564	58.74	0.12	4.09	1.17	**4.78**	0.21	7.58	1.44	**10.88**	0.52	18.44	2.93	**54.05**
D1	A	0.933	13.98	0.50	0.47	2.67	**1.26**	0.58	0.54	3.28	**1.78**	0.73	0.68	6.71	**4.57**
D2	B	1.073	27.22	0.28	0.31	1.89	**0.58**	0.38	0.41	2.32	**0.94**	0.61	0.66	4.75	**3.12**
D3	C	3.158	34.01	0.22	0.68	1.66	**1.13**	0.31	0.98	2.04	**1.99**	0.57	1.81	4.16	**7.53**
D4	D	10.253	47.33	0.19	1.98	1.35	**2.67**	0.29	2.95	1.66	**4.88**	0.56	5.74	3.38	**19.41**
D5	E	19.451	60.11	0.05	1.07	1.15	**1.23**	0.15	2.83	1.41	**3.99**	0.48	9.32	2.89	**26.91**
D6	F	0.863	5.00	0.08	0.07	3.87	**0.27**	0.17	0.15	4.75	**0.69**	0.49	0.42	9.70	**4.11**

TOWN OF WELLINGTON
DRAWING APPROVAL
REVIEW IS FOR GENERAL COMPLIANCE WITH TOWN STANDARDS. NO RESPONSIBILITY IS ASSUMED FOR CORRECTNESS OF DESIGN.

DATE_____ BY _____
TOWN ENGINEER

DATE_____ BY _____
PUBLIC WORKS DIRECTOR

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Sheet Revisions

No.	Revisions:	By	Date:

DEVELOPED DRAINAGE EXHIBIT

DESIGNED BY: D. Egger
DRAWN BY: R. Bunner
APPROVED BY: J. Burrell
DATE: February 8, 2023
SCALE: 1" = 80'
FILE NAME: Batch Plant Drainage Site.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

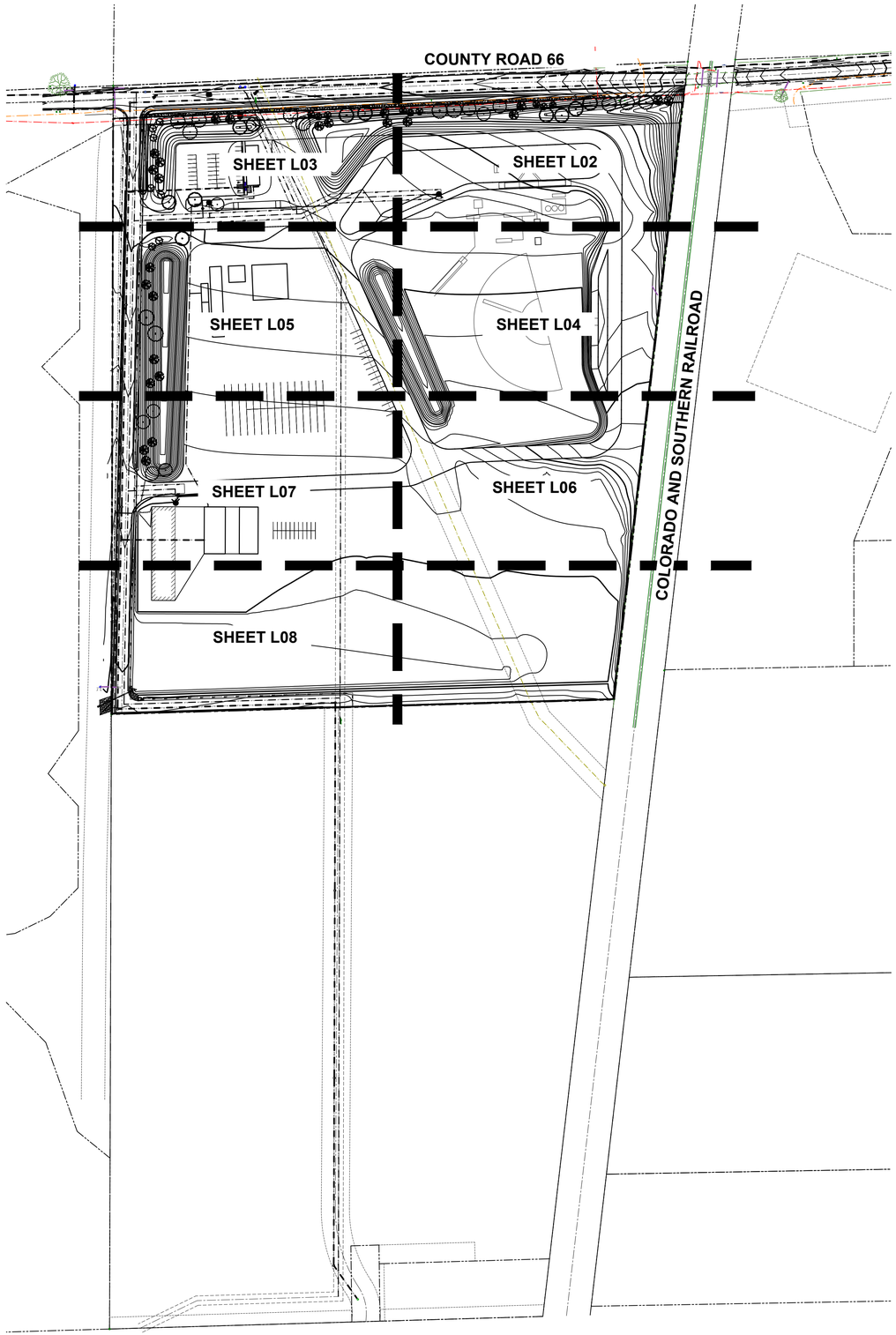
CONNELL

PROJECT NUMBER: XXXX

SHEET NUMBER
C401

SHEET INDEX: 13

Drawing Name: D:\Projects\Wellington Batch Plant\Dwg\Sheets\Batch Plant Drainage Site.dwg Wednesday, February 08, 2023 5:07 PM By: Rhonda Bunner



GENERAL LANDSCAPE NOTES

1. PLANT QUALITY: ALL PLANT MATERIAL SHALL BE A-GRADE OR NO. 1 GRADE - FREE OF ANY DEFECTS, OF NORMAL HEALTH, HEIGHT, LEAF DENSITY AND SPREAD APPROPRIATE TO THE SPECIES AS DEFINED BY THE AMERICAN ASSOCIATION OF NURSERYMEN (AAN) STANDARDS. ALL TREES SHALL BE BALL AND BURLAP OR EQUIVALENT.

2. IRRIGATION: ALL LANDSCAPE AREAS WITHIN THE SITE INCLUDING TURF, SHRUB BEDS AND TREE AREAS SHALL BE IRRIGATED WITH AN AUTOMATIC IRRIGATION SYSTEM. THE IRRIGATION PLAN MUST BE REVIEWED AND APPROVED BY THE TOWN OF WELLINGTON WATER UTILITIES DEPARTMENT PRIOR TO THE ISSUANCE OF A BUILDING PERMIT. ALL TURF AREAS SHALL BE IRRIGATED WITH AN AUTOMATIC POP-UP IRRIGATION SYSTEM. ALL SHRUB BEDS AND TREES, INCLUDING IN NATIVE SEED AREAS, SHALL BE IRRIGATED WITH AN AUTOMATIC DRIP (TRICKLE) IRRIGATION SYSTEM, OR WITH AN ACCEPTABLE ALTERNATIVE APPROVED BY THE CITY WITH THE IRRIGATION PLANS. THE IRRIGATION SYSTEM SHALL BE ADJUSTED TO MEET THE WATER REQUIREMENTS OF THE INDIVIDUAL PLANT MATERIAL.

3. TOPSOIL: TO THE MAXIMUM EXTENT FEASIBLE, TOPSOIL THAT IS REMOVED DURING CONSTRUCTION ACTIVITY SHALL BE CONSERVED FOR LATER USE ON AREAS REQUIRING REVEGETATION AND LANDSCAPING.

4. SOIL AMENDMENTS: THE SOIL IN ALL LANDSCAPE AREAS, INCLUDING PARKWAYS AND MEDIANS, SHALL BE THOROUGHLY LOOSENED TO A DEPTH OF NOT LESS THAN EIGHT(8) INCHES AND SOIL AMENDMENT SHALL BE THOROUGHLY INCORPORATED INTO THE SOIL OF ALL LANDSCAPE AREAS TO A DEPTH OF AT LEAST SIX(6) INCHES BY TILLING, DISCING OR OTHER SUITABLE METHOD, AT A RATE OF AT LEAST FOUR (4) CUBIC YARDS OF SOIL AMENDMENT PER ONE THOUSAND (1,000) SQUARE FEET OF LANDSCAPE AREA. NATIVE GRASS SEED MIXES CAN REDUCE THE COMPOST RATE TO TWO (2) CUBIC YARDS OF SOIL AMENDMENT PER ONE THOUSAND (1,000) SQUARE FEET.

5. INSTALLATION AND GUARANTEE: ALL LANDSCAPING SHALL BE INSTALLED ACCORDING TO SOUND HORTICULTURAL PRACTICES IN A MANNER DESIGNED TO ENCOURAGE QUICK ESTABLISHMENT AND HEALTHY GROWTH. ALL LANDSCAPING FOR EACH PHASE MUST BE EITHER INSTALLED OR THE INSTALLATION MUST BE SECURED WITH AN IRREVOCABLE LETTER OF CREDIT, PERFORMANCE BOND, OR ESCROW ACCOUNT FOR 125% OF THE VALUATION OF THE MATERIALS AND LABOR PRIOR TO ISSUANCE OF A CERTIFICATE OF OCCUPANCY FOR ANY BUILDING IN SUCH PHASE.

6. MAINTENANCE: TREES AND VEGETATION, IRRIGATION SYSTEMS, FENCES, WALLS AND OTHER LANDSCAPE ELEMENTS WITH THESE FINAL PLANS SHALL BE CONSIDERED AS ELEMENTS OF THE PROJECT IN THE SAME MANNER AS PARKING, BUILDING MATERIALS AND OTHER SITE DETAILS. THE APPLICANT, LANDOWNER OR SUCCESSORS IN INTEREST SHALL BE JOINTLY AND SEVERALLY RESPONSIBLE FOR THE REGULAR MAINTENANCE OF ALL LANDSCAPING ELEMENTS IN GOOD CONDITION. ALL LANDSCAPING SHALL BE MAINTAINED FREE FROM DISEASE, PESTS, WEEDS AND LITTER, AND ALL LANDSCAPE STRUCTURES SUCH AS FENCES AND WALLS SHALL BE REPAIRED AND REPLACED PERIODICALLY TO MAINTAIN A STRUCTURALLY SOUND CONDITION.

7. REPLACEMENT: ANY LANDSCAPE ELEMENT THAT DIES, OR IS OTHERWISE REMOVED, SHALL BE PROMPTLY REPLACED IN ACCORDANCE WITH THE REQUIREMENTS OF THESE PLANS.

8. THE FOLLOWING SEPARATIONS SHALL BE PROVIDED BETWEEN TREES/SHRUBS AND UTILITIES:

   40 FEET BETWEEN CANOPY TREES AND STREET LIGHTS
   15 FEET BETWEEN ORNAMENTAL TREES AND STREETLIGHTS
   10 FEET BETWEEN TREES AND PUBLIC WATER, SANITARY AND STORM SEWER MAIN LINES
   10 FEET BETWEEN SHRUBS AND PUBLIC WATER AND SANITARY AND STORM SEWER LINES
   6 FEET BETWEEN TREES AND GAS LINES

9. ALL STREET TREES SHALL BE PLACED A MINIMUM EIGHT (8) FEET AWAY FROM THE EDGES OF DRIVEWAYS AND ALLEYS

10. PLACEMENT OF ALL LANDSCAPING SHALL BE IN ACCORDANCE WITH THE SIGHT DISTANCE CRITERIA AS SPECIFIED BY THE TOWN OF WELLINGTON. NO STRUCTURES OR LANDSCAPE ELEMENTS GREATER THAN 24" SHALL BE ALLOWED WITHIN THE SIGHT DISTANCE TRIANGLE OR EASEMENTS WITH THE EXCEPTION OF DECIDUOUS TREES PROVIDED THAT THE LOWEST BRANCH IS AT LEAST 8' FROM GRADE. ANY FENCES WITHIN THE SIGHT DISTANCE TRIANGLE OR EASEMENT MUST BE NOT MORE THAN 42" IN HEIGHT AND OF AN OPEN DESIGN.

11. THE FINAL LANDSCAPE PLAN SHALL BE COORDINATED WITH ALL OTHER FINAL PLAN ELEMENTS SO THAT THE PROPOSED GRADING, STORM DRAINAGE, AND OTHER DEVELOPMENT IMPROVEMENTS DO NOT CONFLICT WITH NOR PRECLUDE INSTALLATION AND MAINTENANCE OF LANDSCAPE ELEMENTS ON THIS PLAN.

12. MINOR CHANGES IN SPECIES AND PLANT LOCATIONS MAY BE MADE DURING CONSTRUCTION -- AS REQUIRED BY SITE CONDITIONS OR PLANT AVAILABILITY. OVERALL QUANTITY, QUALITY, AND DESIGN CONCEPT MUST BE CONSISTENT WITH THE APPROVED PLANS. IN THE EVENT OF CONFLICT WITH THE QUANTITIES INCLUDED IN THE PLANT LIST, SPECIES AND QUANTITIES ILLUSTRATED SHALL BE PROVIDED. ALL CHANGES OF PLANT SPECIES AND LOCATION MUST HAVE WRITTEN APPROVAL BY THE CITY PRIOR TO INSTALLATION.

13. ALL PLANTING BEDS SHALL BE MULCHED TO A MINIMUM DEPTH OF THREE INCHES.

14. EDGING BETWEEN GRASS AND SHRUB BEDS SHALL BE 18" X 4" STEEL SET LEVEL WITH TOP OF SOD OR APPROVED EQUAL.

15. ONE YEAR WARRANTY TO BE PROVIDED ON ALL PLANT MATERIAL BY THE LANDSCAPE CONTRACTOR.

16. MULCH SHALL BE COMPRISED OF A ROCK MULCH MIX:
   40% WASHED PEA GRAVEL
   60% 3/4-1.5" DIA. WASHED WESTERN RIVER ROCK

17. DRIP IRRIGATION OF PLANT MATERIAL SHALL BE INCLUDED IN THE DRYLAND SEEDED AREAS PER THE APPROVED IRRIGATION PLANS.

NATIVE SEED MIX NOTES

1. PREPARE SOIL AS NECESSARY AND APPROPRIATE FOR NATIVE SEED MIX SPECIES THROUGH AERATION AND ADDITION OF AMENDMENTS, THEN SEED IN TWO DIRECTIONS TO DISTRIBUTE SEED EVENLY OVER ENTIRE AREA.

2. IF CHANGES ARE TO BE MADE TO SEED MIX BASED ON SITE CONDITIONS THEN APPROVAL MUST BE PROVIDED BY CITY ENVIRONMENTAL PLANNER.

3. APPROPRIATE NATIVE SEEDING EQUIPMENT WILL BE USED (STANDARD TURF SEEDING EQUIPMENT OR AGRICULTURE EQUIPMENT SHALL NOT BE USED).

4. DRILL SEED APPLICATION RECOMMENDED PER SPECIFIED APPLICATION RATE TO NO MORE THAN ½ INCH DEPTH. FOR BROADCAST SEEDING INSTEAD OF DRILL SEEDING METHOD DOUBLE SPECIFIED APPLICATION RATE. REFER TO NATIVE SEED MIX TABLE FOR SPECIES, PERCENTAGES AND APPLICATION RATES.

5. TREAT NATIVE SEED MIX AREA PRIOR TO INSTALLATION OF SEED WITH APPROPRIATE HERBICIDE TO PROACTIVELY MITIGATE HERBACEOUS WEED SPECIES GROWTH DURING ESTABLISHMENT PERIOD THEN AFTER APPROPRIATE TIME PERIOD APPLY NATIVE SEED AS CALLED FOR ON APPROVED PLANS.

6. AFTER SEEDING THE AREA SHALL BE COVERED WITH CRIMPED STRAW OR OTHER APPROPRIATE METHODS AND PROVIDED TEMPORARY IRRIGATION UNTIL SEED IS ESTABLISHED.

7. CONTRACTOR SHALL MONITOR SEEDED AREA FOR PROPER IRRIGATION, EROSION CONTROL, GERMINATION AND RESEEDING AS NEEDED TO ESTABLISH COVER.

8. THE APPROVED SEED MIX AREA IS INTENDED TO BE MAINTAINED IN A NATURAL LIKE LANDSCAPE AESTHETIC. IF AND WHEN MOWING OCCURS IN NATIVE GRASS SEED MIX AREAS DO NOT MOW LOWER THAN 6-8 INCHES IN HEIGHT TO AVOID INHIBITING NATIVE PLANT GROWTH.

9. NATIVE SEED AREA WILL BE CONSIDERED ESTABLISHED WHEN SEVENTY PERCENT TOTAL COVER IS REACHED WITH NO LARGER THAN ONE FOOT SQUARE BARE SPOTS AND/OR UNTIL DEEMED ESTABLISHED BY CITY PLANNING SERVICES.

10. THE DRYLAND GRASSES SHALL BE IRRIGATED WITH A WATER TRUCK ONCE EVERY THREE DAYS DURING THE FIRST MONTH TO AID IN ESTABLISHMENT, AND ONCE A WEEK THEREAFTER FOR THE FIRST GROWING SEASON. DURING THE SECOND GROWING SEASON, THE DRYLAND GRASSES SHALL BE WATERED WITH THE SAME METHOD EVERY OTHER WEEK DURING THE GROWING SEASON. AFTER THE FIRST TWO GROWING SEASONS, WATERING WILL BE ON AN AS NEEDED BASIS.

PLANT LIST

Code	Scientific Name	Common Name	Qty.	Size	Diversity	Water Use	Comments
DECIDUOUS SHADE TREES			**29**				
CASP	Catalpa speciosa	Western Catalpa	8	2" cal	13.1%	Low	
CEOC	Celtis occidentalis	Western Hackberry	8	2" cal	13.1%	Xeric	
GLTS	Gleditsia triacanthos interims 'Skyline'	Skyline Honeylocust	9	2" cal	14.8%	Low	
GYDI	Gymnocladus diocia 'Espresso'	Espresso Kentucky Coffetree	4	2" cal	6.6%	Low	Seedless Clone
ORNAMENTAL TREES			**7**				
CVWG	Crataegus viridis 'Winter King'	Wintergreen Hawthorne Hawthorne	7	1.5" cal	11.5%	Low	
EVERGREEN TREES			**25**				
PIPG	Picea pungens glauca	Colorado Blue Spruce	12	6' B&B	19.7%	Med	
PINI	Pinus nigra	Austrian Pine	13	6' B&B	21.3%	Low	
TOTAL TREES			**61**				
DECIDUOUS SHRUBS			**31**				
ERNN	Ericameria nauseosa ssp. nauseosa var. speciosa	Tall Blue Rabbitbrush	26	#5		Xeric	
RHTR	Rhus trilobata	Three Leaf Sumac	5	#5		Low	
EVERGREEN SHRUBS			**40**				
JUCH	Juniperus chinensis 'Holbert'	Holbert Juniper	21	#5		Xeric	
JUHH	Juniperus horizontalis 'Hughes'	Hughes Juniper	14	#5		Xeric	
JUTT	Juniperus scopulorum 'Table Top'	Table Top Blue Juniper	5	#5		Xeric	
ORNAMENTAL GRASSES			**37**				
PAVS	Panicum virgatum 'Shenandoah'	Shenandoah Switchgrass	37	#1		Low	

SEED MIXES

DRYLAND NATIVE GRASS SEED MIX

Scientific Name	Common Name	Percent of Mix	Seeded Rate Lbs/ Acre (drilled)
Schizachyrium scoparium 'Cimarron'	**Little Bluestem**	**5.0%**	**0.50**
Pasopyrum smithii 'Arriba'	**Western Wheatgrass**	**23.0%**	**5.46**
Bouteloua gracilis 'Hachita'	**Blue Grama**	**25.0%**	**0.79**
Sporobolus airoides	**Alkali sacaton**	**9.0%**	**0.13**
Achnatherum hymenoides	**Indian Ricegrass**	**5.0%**	**0.93**
Elymus Trachycaulus 'Prior'	**Slender Wheatgrass**	**15.0%**	**2.47**
Artemisia millefolium	**Prairie Sage***	**1.0%**	**0.01**
Nassila Viridula 'Lodorm'	**Green Needle Grass**	**15.0%**	**2.17**
Achillea millefolium	**White Yarrow***	**0.1%**	**0.001**
Sphaeralcea coccinea	**Scarlet Globemallow**	**0.9%**	**0.05**
Ratibida columnifera	**Prairie Coneflower**	**1.0%**	**0.04**
		100%	**12.54**

***Package seed separately**
Seeding rate: 60 seeds per square foot, drilled

WATER USE

Water Usage Category	Total Area Per Category	Gallons per sf	Total Gallons of Water per Square foot of Category
High Water Use	0	12	0
Medium Water Use	0	9	0
Low Water Use (shrub beds)	5,997	3	17,991
Xeric (very low) Water Use (dryland turf)	263,087	1	263,087
Totals	269,084		281,078

LANDSCAPE USE CATEGORIES

Category	Area/ length			
Total Site Area	1,463,725			
Landscape Area	269,084			
Percent of Site	18.38%			
			Trees Required	Trees Provided
County Road 66	1,160	1 tree/ 40 Linear Foot	29	29
Site Perimeter	1,235	1 tree/ 40 Linear Foot	30.875	38
On Site Landscaping	3,100	1 tree/ 1000 sf	3.1	4
Total Trees Provided			59.875	71
Notes				
1) Due to the drainage swale along CR 66, street trees were placed behind the walk, but in front of the fence.				

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NORTH

SCALE-1 SCALE-2 SCALE-3 SCALE-4
SCALE

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SHEET STATUS

90% PLAN SET
NOT FOR CONSTRUCTION

COVER SHEET

DESIGNED BY: TCH
DRAWN BY: TCH
APPROVED BY: TCH
DATE: FEBRUARY 7, 2023
SCALE: NTS
FILE NAME: 25034-L.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

PROJECT NUMBER: 25034
SHEET NUMBER
L01
SHEET INDEX: 14

Drawing Name: \\Mac\Dropbox\Vignette 2\25034 Connell\Drawings\PDF\25034L1.dwg Tuesday, February 07, 2023 12:40 PM By: Terenceahoglund Bunner

COUNTY ROAD 66

ROADSIDE DITCH
OVERHEAD POWER LINE

6' WALK

(1) PINI
(3) PICE
(2) GYDI
(3) CEOC
(2) PINI
(3) PICE
(2) GLTS
(2) QUMA
(3) CASP
(2) PINI

COLORADO AND SOUTHERN RAILROAD

MATCHLINE SHEET L03

MATCHLINE SHEET L04

LANDSCAPE PLAN LEGEND

- PRAIRIE SEED MIX
- ROCK MULCH
- SHADE TREES
- ORNAMENTAL TREES
- EVERGREEN TREES
- DECIDUOUS SHRUBS
- ORNAMENTAL GRASSES
- EVERGREEN SHRUBS

NORTH

0 10 20 40
SCALE 1"=20'

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LANDSCAPE PLAN NORTHEAST

DESIGNED BY: TCH
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APPROVED BY: TCH
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SCALE: NTS
FILE NAME: 25034L1.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

PROJECT NUMBER: 25034

SHEET NUMBER
L02

SHEET INDEX: 15

Drawing Name: \\Mac\Dropbox\Vignette 2\25034 Connell\Drawings\PDP1\25034L1.dwg Tuesday, February 07, 2023 12:40 PM By: Terenceehoglund Bunner

COUNTY ROAD 66

NORTH POUDRE IRRIGATION COMPANY CANAL

ACCESS ROAD

OFFICE

ROADSIDE DITCH
OVERHEAD POWER LINE
6' WALK
50' SINCLAIR EASEMENT
20' UTILITY EASEMENT

(3) CVWG
(3) CASP
(2) PINI
(2) GLTS
(2) PIPG
(2) QUMA
(3) PICE
(2) CASP
(2) PINI
(4) PIPG
(2) CVWG
(1) GLTS
(3) JUHH
(6) ERNN
(7) JUCH
(21) PAVS
(6) ERNN
(1) GLTS
(5) RHTR
(3) ERNN
(3) JUCH
(1) CEOC
(11) JUHH
(16) PAVS

MATCHLINE SHEET L05

MATCHLINE SHEET L02

SCALE

LANDSCAPE PLAN LEGEND

- PRAIRIE SEED MIX
- ROCK MULCH
- SHADE TREES
- ORNAMENTAL TREES
- EVERGREEN TREES
- DECIDUOUS SHRUBS
- ORNAMENTAL GRASSES
- EVERGREEN SHRUBS

NORTH

0 10 20 40
SCALE 1"=20'

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LANDSCAPE PLAN NORTHWEST

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DRAWN BY:	TCH	SCALE: NTS
APPROVED BY:	TCH	FILE NAME: 25034L.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

PROJECT NUMBER: 25034

SHEET NUMBER
L03

SHEET INDEX: 16

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MATCHLINE SHEET L02

MATCHLINE SHEET L05

MATCHLINE SHEET L06

COLORADO AND SOUTHERN RAILROAD

LANDSCAPE PLAN LEGEND

- PRAIRIE SEED MIX
- ROCK MULCH
- SHADE TREES
- ORNAMENTAL TREES
- EVERGREEN TREES
- DECIDUOUS SHRUBS
- ORNAMENTAL GRASSES
- EVERGREEN SHRUBS

NORTH

0 10 20 40
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LANDSCAPE PLAN MIDDLE EAST

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APPROVED BY:	TCH	FILE NAME: 25034LI.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

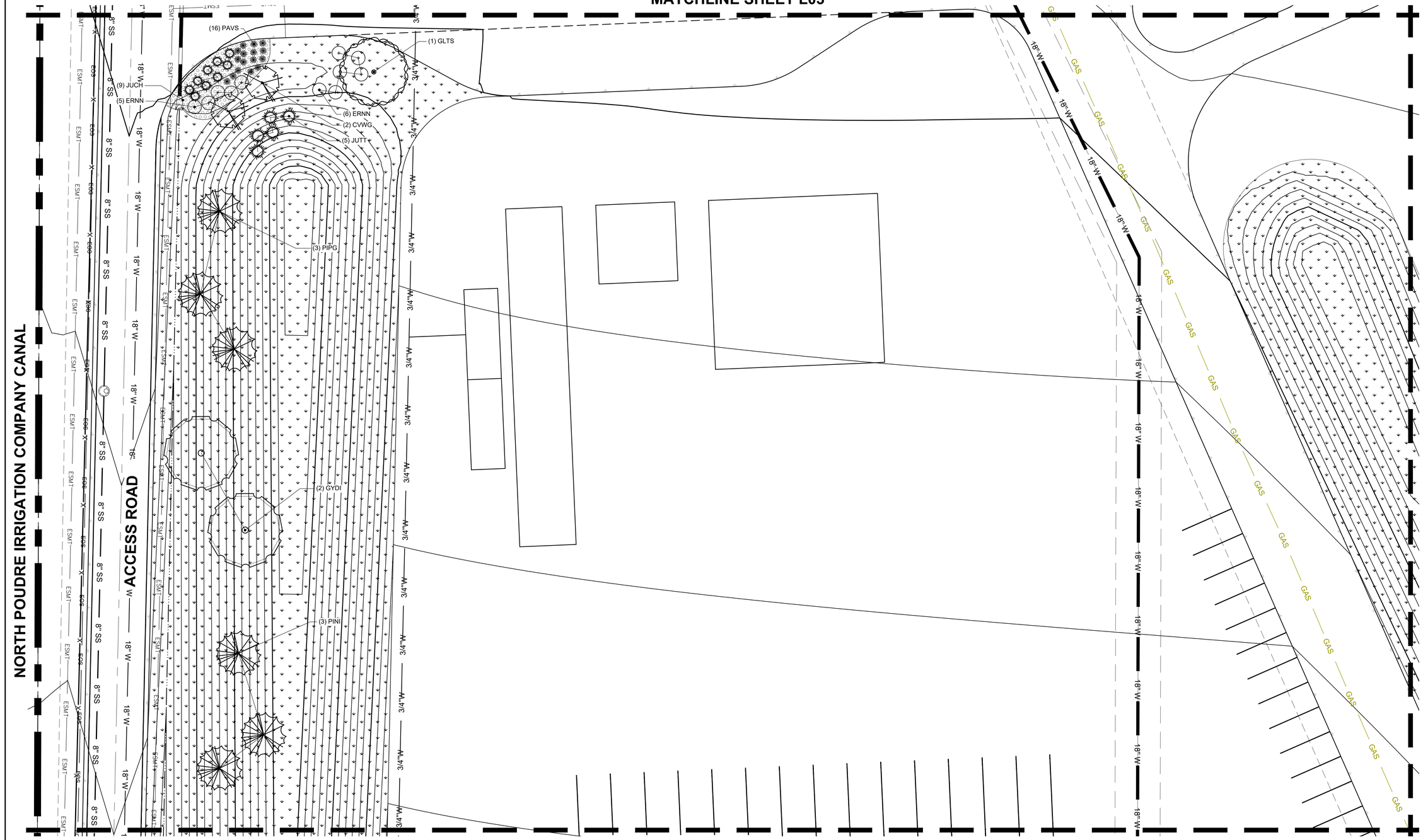
CONNELL

PROJECT NUMBER:
25034

SHEET NUMBER
L04

SHEET INDEX: 17

Drawing Name: \\Mac\Dropbox\Vignette 2\25034 Connell\Drawings\PDP1\25034LI.dwg Tuesday, February 07, 2023 12:40 PM By: Terenceheaglund Bunner



LANDSCAPE PLAN LEGEND

- PRAIRIE SEED MIX
- ROCK MULCH
- SHADE TREES
- ORNAMENTAL TREES
- EVERGREEN TREES
- DECIDUOUS SHRUBS
- ORNAMENTAL GRASSES
- EVERGREEN SHRUBS

NORTH

0 10 20 40
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LANDSCAPE PLAN MIDDLE WEST

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APPROVED BY:	TCH	FILE NAME: 25034L.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

PROJECT NUMBER: 25034

SHEET NUMBER
L05

SHEET INDEX: 18

Drawing Name: \\Mac\Dropbox\VIgnette 2\25034 Connell\Drawings\PDP1\25034L1.dwg Tuesday, February 07, 2023 12:40 PM By: Terrencehoaglund Bunner

MATCHLINE SHEET L04

MATCHLINE SHEET L07

GAS

COLORADO AND SOUTHERN RAILROAD

LANDSCAPE PLAN LEGEND

- PRAIRIE SEED MIX
- ROCK MULCH
- SHADE TREES
- ORNAMENTAL TREES
- EVERGREEN TREES
- DECIDUOUS SHRUBS
- ORNAMENTAL GRASSES
- EVERGREEN SHRUBS

NORTH

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LANDSCAPE PLAN SOUTH EAST

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WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

PROJECT NUMBER: 25034

SHEET NUMBER
L06

SHEET INDEX: 19

Drawing Name: \\Mac\Dropbox\Vignette 2\25034 Connell\Drawings\PDP\125034L1.dwg Tuesday, February 07, 2023 12:40 PM By: Terencehoaglund Bunner

MATCHLINE SHEET L07

NORTH POUDRE IRRIGATION COMPANY CANAL

ACCESS ROAD

(2) CEOC

(3) PINI

(2) CEOC

MATCHLINE SHEET L06

MATCHLINE SHEET L08

LANDSCAPE PLAN LEGEND

- PRAIRIE SEED MIX
- ROCK MULCH
- SHADE TREES
- ORNAMENTAL TREES
- EVERGREEN TREES
- DECIDUOUS SHRUBS
- ORNAMENTAL GRASSES
- EVERGREEN SHRUBS

NORTH

0 10 20 40

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LANDSCAPE PLAN SOUTHWEST

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APPROVED BY:	TCH
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SCALE:	NTS
FILE NAME:	25034_L.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

PROJECT NUMBER: 25034

SHEET NUMBER
L07

SHEET INDEX: 20

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MATCHLINE SHEET L07

LEAN 2

NORTH POUDRE IRRIGATION COMPANY CANAL

LANDSCAPE PLAN LEGEND

- PRAIRIE SEED MIX
- ROCK MULCH
- SHADE TREES
- ORNAMENTAL TREES
- EVERGREEN TREES
- DECIDUOUS SHRUBS
- ORNAMENTAL GRASSES
- EVERGREEN SHRUBS

NORTH

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LANDSCAPE PLAN SOUTH

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DRAWN BY:	TCH	SCALE:	NTS
APPROVED BY:	TCH	FILE NAME:	L08-SOUTH.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

PROJECT NUMBER: 25034

SHEET NUMBER
L08

SHEET INDEX: 21

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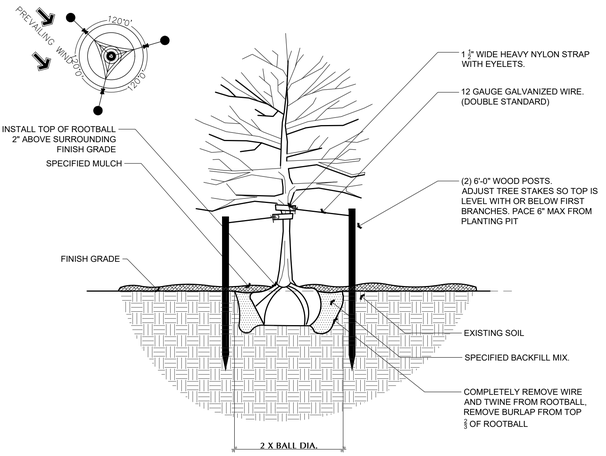
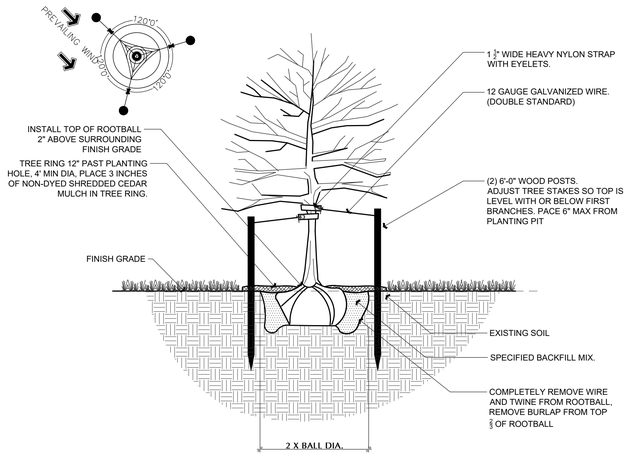
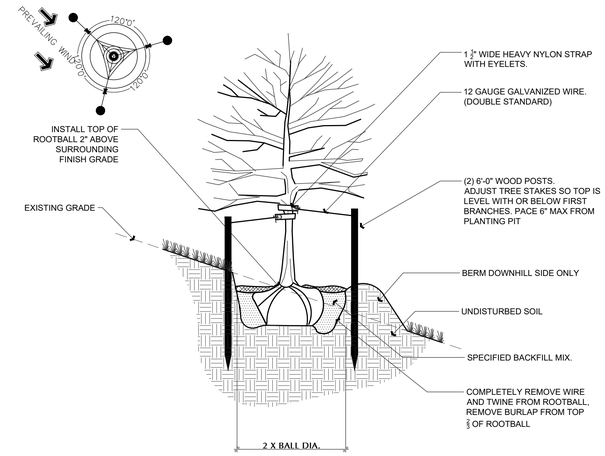


1 DECIDUOUS TREE PLANTING DETAIL/ SHRUB BED
NOT TO SCALE



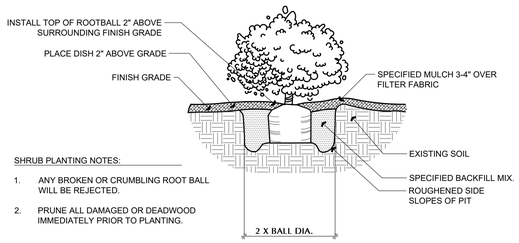
2 DECIDUOUS TREE PLANTING DETAIL/ TURF
NOT TO SCALE



DECIDUOUS TREE PLANTING NOTES

1. DO NOT CUT OR DAMAGE LEADER. PRUNE DAMAGED OR DEAD WOOD IMMEDIATELY PRIOR TO PLANTING. NEVER LEAVE "V" CROTCHES OR DOUBLE LEADER UNLESS TYPICAL OF SPECIES.
2. CUT TWINE AND BURLAP FROM AROUND TRUNK, PULL BACK. REMOVE ALL BURLAP AND WIRE BASKETS BEFORE PLACING IN TREE PIT.
3. ANY BROKEN OR CRUMBLING ROOT BALL WILL BE REJECTED. REMOVING THE WIRE WILL NOT BE AN EXCUSE FROM DAMAGED ROOT BALLS.
4. STAKE TREE LEAVING ENOUGH SLACK SO TREE CAN SWAY IN WIND.
5. USE 2 STAKES FOR TREES 2 1/2" CAL. AND SMALLER. USE 3 STAKES FOR TREES LAGER THAN 2 1/2" CAL. REMOVE ALL STAKES 1 YEAR AFTER PLANTING.
6. FOR WINTERIZATION WRAP ENTIRE SURFACE OF TRUNK TO SECOND BRANCH WITH TREE WRAPPING. SECURE AT 2' INTERVALS WITH VINYL ELECTRICAL TAPE. (REMOVE IN SUMMER)

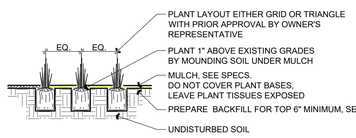
3 TREE PLANTING DETAIL/ SLOPE
NOT TO SCALE



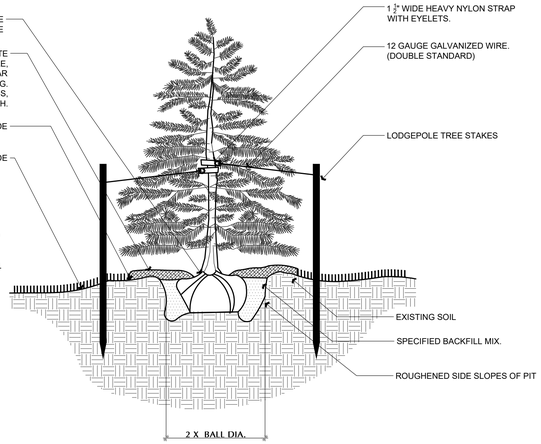
SHRUB PLANTING NOTES:

1. ANY BROKEN OR CRUMBLING ROOT BALL WILL BE REJECTED.
2. PRUNE ALL DAMAGED OR DEADWOOD IMMEDIATELY PRIOR TO PLANTING.

4 SHRUB PLANTING DETAIL
NOT TO SCALE



5 PERENNIAL/ ORN GRASS PLANTING DETAIL
NOT TO SCALE



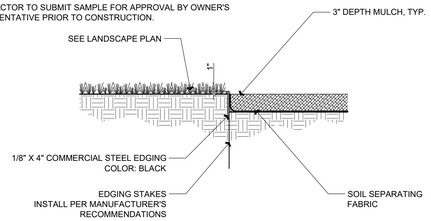
CONIFEROUS TREE PLANTING NOTES

1. DO NOT CUT OR DAMAGE LEADER. PRUNE DAMAGED OR DEAD WOOD IMMEDIATELY PRIOR TO PLANTING.
2. CUT TWINE AND BURLAP FROM AROUND TRUNK, PULL BACK. REMOVE ALL BURLAP AND WIRE BASKETS BEFORE PLACING IN TREE PIT.
3. ANY BROKEN OR CRUMBLING ROOT BALL WILL BE REJECTED. REMOVING THE WIRE WILL NOT BE AN EXCUSE FROM DAMAGED ROOT BALLS.
4. STAKE TREE LEAVING ENOUGH SLACK SO TREE CAN DANCE.
5. USE 2 STAKES FOR TREES 8' AND SMALLER. USE 3 OR MORE STAKES FOR TREES LARGER THAN 8'.
6. REMOVE ALL STAKES 1 YEAR AFTER PLANTING.

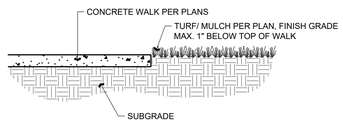
6 CONIFEROUS TREE PLANTING DETAIL
NOT TO SCALE

STEEL EDGING NOTES

1. FINISHED GRADE FOR SOD TO BE 1/2" BELOW TOP OF EDGING.
2. TAMPER MULCH AT EDGING SO THAT IT DOES NOT SPILL INTO TURF.
3. CONTRACTOR TO SUBMIT SAMPLE FOR APPROVAL BY OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.



7 EDGING DETAIL
NOT TO SCALE

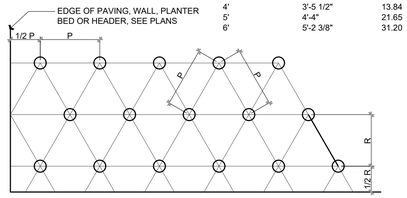


8 WALK/ PLANTING DETAIL
NOT TO SCALE

NOTE:

THIS DETAIL ILLUSTRATES TRIANGULAR SPACING FOR PERENNIALS, SHRUBS AND ORNAMENTAL GRASSES, WHERE APPLICABLE.

P TRIANGULAR	R ROW	AREA PER PLANT SQUARE FEET
6"	5 1/4"	.22
8"	7"	.385
10"	8 3/4"	.60
12"	10 3/8"	.87
18"	1'-3 5/8"	1.95
24"	1'-8 3/4"	3.46
3'	2'-7"	7.80
4'	3'-5 1/2"	13.84
5'	4'-4"	21.65
6'	5'-2 3/8"	31.20



9 SPACING PLANTING DETAIL
NOT TO SCALE

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SHEET STATUS

90% PLAN SET NOT FOR CONSTRUCTION

LANDSCAPE DETAILS

DESIGNED BY: TCH
DRAWN BY: TCH
APPROVED BY: TCH
DATE: February 07, 2023
SCALE: NTS
FILE NAME: 25034L.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

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Planning • Landscape Architecture • Graphics
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PROJECT NUMBER: 25034

SHEET NUMBER
L09

SHEET INDEX: 22

IRRIGATION_SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
	RAIN BIRD XCZ-100-PRB-COM WIDE FLOW DRIP CONTROL KIT FOR COMMERCIAL APPLICATIONS. 1" BALL VALVE WITH 1" PESB VALVE AND 1" PRESSURE REGULATING 40PSI QUICK-CHECK BASKET FILTER. 0.3 GPM-20 GPM
	DRIP FLUSH VALVE 3/4" PVC BALL VALVE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
	QUICK COUPLER VALVE ASSEMBLY HUNTER HQ-5RC; VALVE WITH YELLOW RUBBER COVER, RED BRASS AND STAINLESS STEEL, WITH 1" NPT INLET, 1-PIECE BODY.
	ISOLATION GATE VALVE ASSEMBLY MATCO-NORCA 514TX. 1/2"-4" BRASS GATE VALVE, FULL PORT, WITH SOLID WEDGE. IPS. CROSS HANDLE. SAME SIZE AS MAINLINE PIPE.
	MASTER VALVE ASSEMBLY BUCKNER-SUPERIOR 3100, NORMALLY OPEN BRASS MASTER VALVE THAT PROVIDES DIRTY WATER PROTECTION. SIZE TO MATCH POC
	REDUCED PRESSURE BACKFLOW PREVENTER WILKINS 375B; BACKFLOW PREVENTER WITH BLOW OUT/FLUSH FITTING. REINFORCED NYLON HOUSING AND CAST BRONZE BALL VALVES. SIZED TO MATCH TAP & METER (RE: POC NOTE).
A	PEDESTAL MOUNT CONTROLLER HUNTER A2C-1200-PP: 12-STATION CONTROLLER IN AN OUTDOOR PLASTIC PEDESTAL. INSTALL WITH WIRELESS RAIN SENSOR AND SOLAR SYNC UNIT.
F	CREATIVE SENSOR TECHNOLOGY FSI-T 1" PVC TEE TYPE FLOW SENSOR W/SOCKET ENDS, CUSTOM MOUNTING TEE AND ULTRA-LIGHTWEIGHT IMPELLER ENHANCES LOW FLOW MEASUREMENT. 2 WIRE DIGITAL OUTPUT. FLOW RANGE: .86-52 GPM.
	PLANTING BED DRIP IRRIGATION LATERAL LINE: 3/4-INCH BLANK UV RADIATION RESISTANT POLYETHYLENE PIPE TO SINGLE OUTLET EMITTERS PER ADJACENT EMITTER CHART.
	NATIVE PLANTING DRIP IRRIGATION LATERAL LINE: 3/4-INCH BLANK UV RADIATION RESISTANT POLYETHYLENE PIPE TO TREE RINGS, NETAFIM INLINE DRIP TUBING MODEL TLCV6-18, AND SINGLE OUTLET EMITTERS FOR SHRUBS PER ADJACENT EMITTER CHART
	IRRIGATION MAINLINE: PVC CLASS 200 SDR 21 1.25-INCH UNLESS OTHERWISE NOTED.
	PIPE SLEEVE: PVC SCHEDULE 40 TYPICAL PIPE SLEEVE FOR IRRIGATION PIPE. REFER TO SPECIFCATIONS.

Valve Callout

INSTALLATION GENERAL NOTES

1. DESIGN ASSUMES A MINIMUM DYNAMIC PRESSURE AVAILABLE FOR THE IRRIGATION SYSTEM (PROVIDED BY ENGINEER) OF 40 PSI- 50 PSI, AT A MAXIMUM PEAK FLOW OF 10 GPM AT THE 3/4-INCH POINT-OF-CONNECTION (POC). VERIFY PRESSURE AND FLOW ON SITE PRIOR TO CONSTRUCTION. CONTACT GENERAL CONTRACTOR OR OWNER'S REPRESENTATIVE IMMEDIATELY IF FLOW OR PRESSURE ARE LOWER THAN LISTED ABOVE.
   1.1. IRRIGATION IS CONNECTED DOWNSTREAM OF THE 3/4-INCH DOMESTIC METER AS INDICATED. IRRIGATION IS DESIGNED TO UTILIZE ONLY 10 GPM.
   1.2. LOWEST PRESSURE AVAILABLE AT THE TAP IS 40 PSI. IF PRESSURE TESTED AT BACKFLOW IS LOWER THAN THIS, IRRIGATION SYSTEM MAY NOT OPERATE.
   1.3. CONTRACTOR SHALL PROGRAM CONTROLLER TO ENSURE ADEQUATE PRESSURES AND FLOWS ARE MAINTAINED THROUGHOUT SYSTEM FOR EQUIPMENT MANUFACTURER'S RECOMMEND OPTIMUM OPERATION (PER TOWN OF WELLINGTON).

2. ALL MAINLINES SHALL BE INSTALLED AT LEAST 5' FROM CENTER OF TREES, WHERE POSSIBLE. DESIGN IS SHOWN FOR CLARITY, THUS MAINLINE ROUTING IN FIELD MAY LOOK SLIGHTLY DIFFERENT THAN DEPICTED IN DRAWINGS.

3. CONTRACTOR SHALL CREATE A LAMINATED CONTROLLER CHART ADHERED TO THE INSIDE OF THE CONTROLLER COVER OR A LAMINATED COLORED CONTROLLER MAP.

4. CONTRACTOR SHALL BECOME FAMILIAR WITH THE SPECIFICATIONS AND INSTALLATION DETAILS FOR THIS AND RELATED WORK PRIOR TO CONSTRUCTION. FOR CLARIFICATION, CONTACT IRRIGATION DESIGNER PRIOR TO CONSTRUCTION.

   4.1. UPON FINAL ACCEPTANCE, CONTRACTOR SHALL TURN OVER REQUIRED ADJUSTMENT KEYS INCLUDING BUT NOT LIMITED TO CONTROLLER ENCLOSURE AND BACKFLOW ENCLOSURE KEY, LOCKING VALVE BOX KEYS, QUICK COUPLER KEYS, GATE VALVE KEY, SPRINKLER HEAD AND NOZZLE ADJUSTMENT KEYS.

   4.2. UPON FINAL ACCEPTANCE, CONTRACTOR SHALL TURN OVER SPARE PARTS PERTAINING TO INSTALLED SYSTEM: BACKFLOW WINTERIZATION INSERT, TWO OF EVERY HEAD AND NOZZLE (ROTOR NOZZLE TREE INCLUDED), ONE RCV DIAPHRAGM, ETC.

5. COORDINATE UTILITY LOCATES OF UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION ("811-CALL BEFORE YOU DIG") .

6. IF DISCREPANCIES ARE NOTED IN THE FIELD BETWEEN SITE CONDITIONS AND PROVIDED DESIGNS, CONTRACTOR SHALL NOTIFY OWNER'S REPRESENTATIVE OR GENERAL CONTRACTOR IMMEDIATELY. DO NOT PROCEED WITH THE INSTALLATION OF THE IRRIGATION SYSTEM IF SUCH DISCREPANCIES IN THE FIELD AFFECT THE PROVIDED DESIGN, DETAILS, OR SPECIFICATIONS.

7. ALL IRRIGATION COMPONENTS (MAINLINE, WIRES, LATERAL LINES, ETC.) SHALL BE INSTALLED IN LANDSCAPED AREAS WHENEVER POSSIBLE, EVEN THOUGH SAID IRRIGATION COMPONENTS MAY BE SHOWN OUTSIDE PLANTING AREAS FOR CLARITY.

8. AVOID CONFLICTS BETWEEN THE IRRIGATION SYSTEM, PLANTING MATERIALS, AND ARCHITECTURAL FEATURES WHENEVER POSSIBLE. COORDINATE POTENTIAL RELOCATION OF BOULDERS AND TREES IN TURF AREAS WITH LANDSCAPE ARCHITECT PRIOR TO SPRINKLER LAYOUT. IF LANDSCAPE MATERIAL CANNOT BE RELOCATED,ADDITIONAL SPRINKLERS MAY BE REQUIRED.
   8.1. WHERE POSSIBLE, MAINTAIN 3'-5' DISTANCE FROM CENTER OF TREE TO MAINLINE AND WIRES. VALVE BOXES SHALL BE AT LEAST 3' FROM TREE CENTER. MAINLINE ROUTING AND VALVE LOCATIONS ARE SHOWN FOR CLARITY AND MAY BE SHOWN WITHIN THE 3'-5' RANGE NOTED ABOVE.

9. CROSS FITTINGS ARE NOT ALLOWED, ONLY STANDARD TEES AND ELBOWS.

10. CONTRACTOR SHALL FIELD LOCATE ANY EXISTING SLEEVES ON SITE PRIOR TO CONSTRUCTION WITH THE AID OF THE GENERAL CONTRACTOR. MISSING SLEEVES SHALL BE REPORTED IMMEDIATELY. NEW SLEEVES SHOWN ON PLANS ARE REQUIRED FOR BOTH PIPING AND ELECTRICAL WIRING AT EACH HARDSCAPE CROSSING. COORDINATE INSTALLATION OF SLEEVING WITH OTHER TRADES. ANY PIPE OR WIRE WHICH PASSES BENEATH EXISTING HARDSCAPE WHERE SLEEVING WAS NOT INSTALLED WILL REQUIRE HORIZONTAL BORING BY THE IRRIGATION CONTRACTOR.

11. INSTALL ALL ELECTRICAL POWER TO THE IRRIGATION CONTROL SYSTEM IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AND ALL APPLICABLE LOCAL ELECTRIC UTILITY CODES.

12. THE FOLLOWING SHOULD BE NOTED REGARDING PIPE SIZING: IF A SECTION OF UNSIZED PIPE IS LOCATED BETWEEN THE IDENTICALLY SIZED SECTIONS, THE UNSIZED PIPE IS THE SAME NOMINAL SIZE AS THE TWO SIZED SECTIONS. THE UNSIZED PIPE SHOULD NOT BE CONFUSED WITH THE DEFAULT PIPE SIZE NOTED IN THE LEGEND.
   12.1. MAINLINE PIPE SIZES MAY VARY THROUGHOUT PROJECT. EACH MAINLINE LEG IS SIZED TO ACCOMMODATE LARGEST VALVE ON THAT LEG. STATED SIZE IN LEGEND MAY NOT BE THE LARGEST SIZE ON PLANS.

13. INSTALL THREE (3) COLOR-CODED#14 AWG CONTROL WIRES FROM CONTROLLER LOCATION TO EACH DEAD-END OF MAINLINE FOR USE AS SPARES INCASE OF CONTROL WIRE FAILURE. COIL 3 FEET OF WIRE IN VALVE BOX.

14. TREES AND SHRUBS PLANTED IN NATIVE SEED WILL RECEIVE DRIP IRRIGATION PER PLAN, NOTES, DETAILS.
   14.1. TREES WILL UTILIZE INLINE DRIP TREE RINGS PER DETAILS AND LEGEND. BLANK DRIP TUBING IN BETWEEN PLANTS WILL BE UTILIZED. NO DRIP TUBING SHALL BE UTILIZED IN BETWEEN PLANTINGS.

15. NO IRRIGATION EQUIPMENT, INCLUDING BUT NOT LIMITED TO, MAINLINE, VALVES, AND SPRINKLERS, SHALL BE INSTALLED WITHIN 3' OF NEW BUILDING FOUNDATION.

16. CONTRACTOR IS RESPONSIBLE TO ESTABLISH ALL NATIVE GRASSES ON THE SITE USING NON-POTABLE WATER BY UTILIZING TEMPORARY IRRIGATION METHODS. ALL AREAS THAT FAIL TO ESTABLISH SHALL BE RE-SEEDED BY THE CONTRACTOR (PER TOWN OF WELLINGTON).

17. IRRIGATION SPRING STARTUP AND WINTERIZATION SHALL BE COMPLETED PER INDUSTRY STANDARDS.

REFERENCE NOTES SCHEDULE

SYMBOL	DESCRIPTION
1	THE IRRIGATION SYSTEM POINT-OF-CONNECTION (POC) SHALL BE DOWNSTREAM OF THE DOMESTIC WATER TAP AND METER AT THE APPROXIMATE LOCATION SHOWN (REFER TO CIVIL PLANS FOR EXACT LOCATION). INSTALL BACKFLOW PREVENTION UNIT, MASTER VALVE ASSEMBLY, AND FLOW SENSOR AS INDICATED. VERIFY EXACT LOCATION OF POC WITH OWNER`S REPRESENTATIVE. VERIFY PRESSURE AND FLOW ON SITE PRIOR TO CONSTRUCTION. CONTRACTOR TO INSTALL BACKFLOW PER NATIONAL PLUMBERS CODE AND PER LOCAL CODE. BACKFLOW SHALL BE TESTED UPON INSTALLATION AND ANNUALLY THEREAFTER.
2	PEDESTAL MOUNT THE IRRIGATION CONTROLLER AT THE APPROXIMATE LOCATION SHOWN. COORDINATE ELECTRICAL POWER TO THE CONTROLLER WITH THE OWNER`S REPRESENTATIVE. CARE SHOULD BE TAKEN TO INSTALL THE IRRIGATION CONTROLLER IN A LOCATION THAT IS ACCESSIBLE FOR MAINTENANCE, AND SCREENED FROM VIEW EITHER BEHIND ENTRY WALLS, NEXT TO BUILDINGS, OR BEHIND PLANT MATERIAL. FINAL LOCATION TO BE APPROVED BY OWNER`S REPRESENTATIVE. CONTROLLER TO BE INSTALLED PER NATIONAL ELECTRIC CODE.

EMITTER SCHEDULE

PLANT TYPE	EMITTER TYPE	GPH/OUTLET	N0. OF EMITTERS	TOTAL FLOW
GROUNDCOVER	SINGLE OUTLET	1 GPH	1	1 GPH
PERENNIALS	SINGLE OUTLET	1 GPH	1	1 GPH
1 GAL. SHRUB	SINGLE OUTLET	1 GPH	1	1 GPH
5 GAL. SHRUB	SINGLE OUTLET	1 GPH	2	2 GPH
TREE IN SHRUB BED	SINGLE OUTLET	1 GPH	4-8	4-8 GPH
TREE IN NATIVE SEED	INLINE DRIP	0.6 GPH	N/A	N/A

NOTES:
1. MULTIPLE OUTLET EMITTERS CAN BE UTILIZED IN DENSELY PLANTED AREAS AND FOR TREES IN SHRUB BEDS.
2. NETAFIM TECHLINE CV DRIP TUBING MODEL TLCV6-18 FOR NATIVE TREE RINGS.
3. UTILIZE RAINBIRD PRESSURE COMPENSATING SINGLE OUTLET EMITTERS (XB-10PC), OR EQUAL AT 20PSI-30PSI OPERATING PRESSURE.

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0 10 20 40

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SHEET STATUS

90% PLAN SET
NOT FOR
CONSTRUCTION

IRRIGATION PLAN

DESIGNED BY:	MLP
DRAWN BY:	MLP
APPROVED BY:	TEAM
DATE:	FEBRUARY 8, 2023
SCALE:	
FILE NAME:	

WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

PROJECT NUMBER: 25034

SHEET NUMBER
IR1.0

SHEET INDEX: **23**

MATCHLINE - SEE SHEET IR1.2

NATIVE SEED TO BE IRRIGATED BY CONTRACTOR FOR ESTABLISHMENT (TYP).

A4
1" Drip

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SHEET STATUS

90% PLAN SET
NOT FOR CONSTRUCTION

IRRIGATION PLAN

DESIGNED BY:	MLP
DRAWN BY:	MLP
APPROVED BY:	TEAM
DATE:	FEBRUARY 8, 2023
SCALE:	
FILE NAME:	

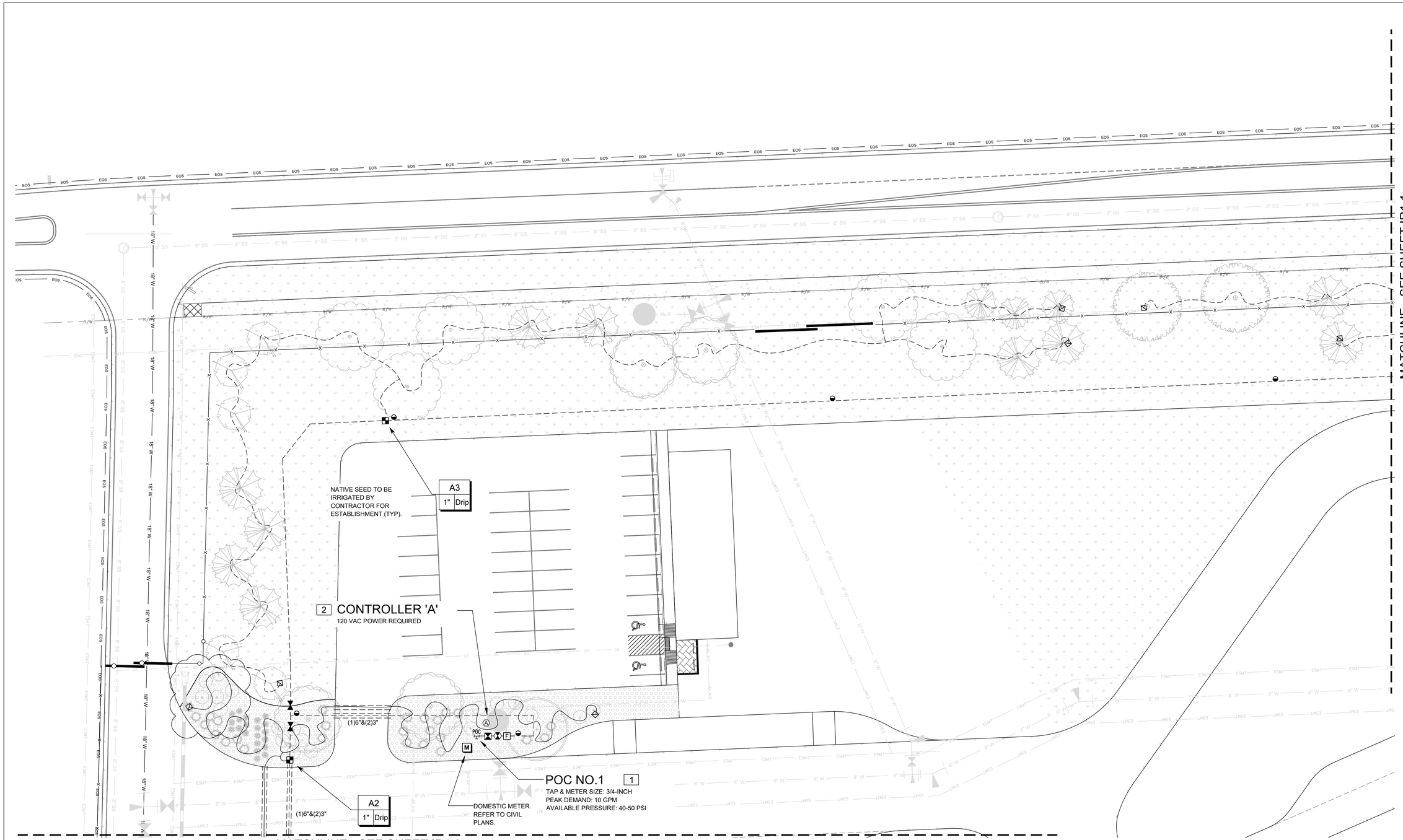
WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

PROJECT NUMBER: 25034

SHEET NUMBER
IR1.1

SHEET INDEX: 24



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90% PLAN SET
NOT FOR CONSTRUCTION

IRRIGATION PLAN

DESIGNED BY:	MLP	DATE: FEBRUARY 8, 2023
DRAWN BY:	MLP	SCALE:
APPROVED BY:	TEAM	FILE NAME:

WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

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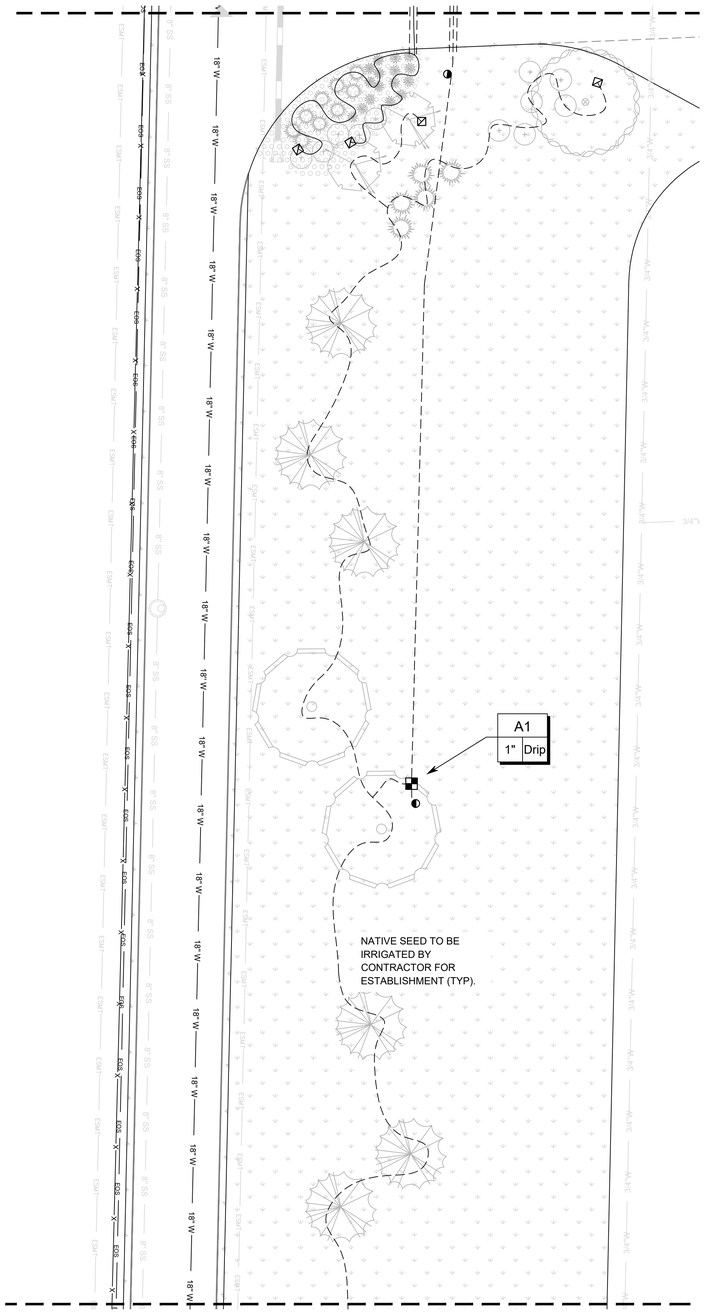
PROJECT NUMBER: 25034

SHEET NUMBER
IR1.2

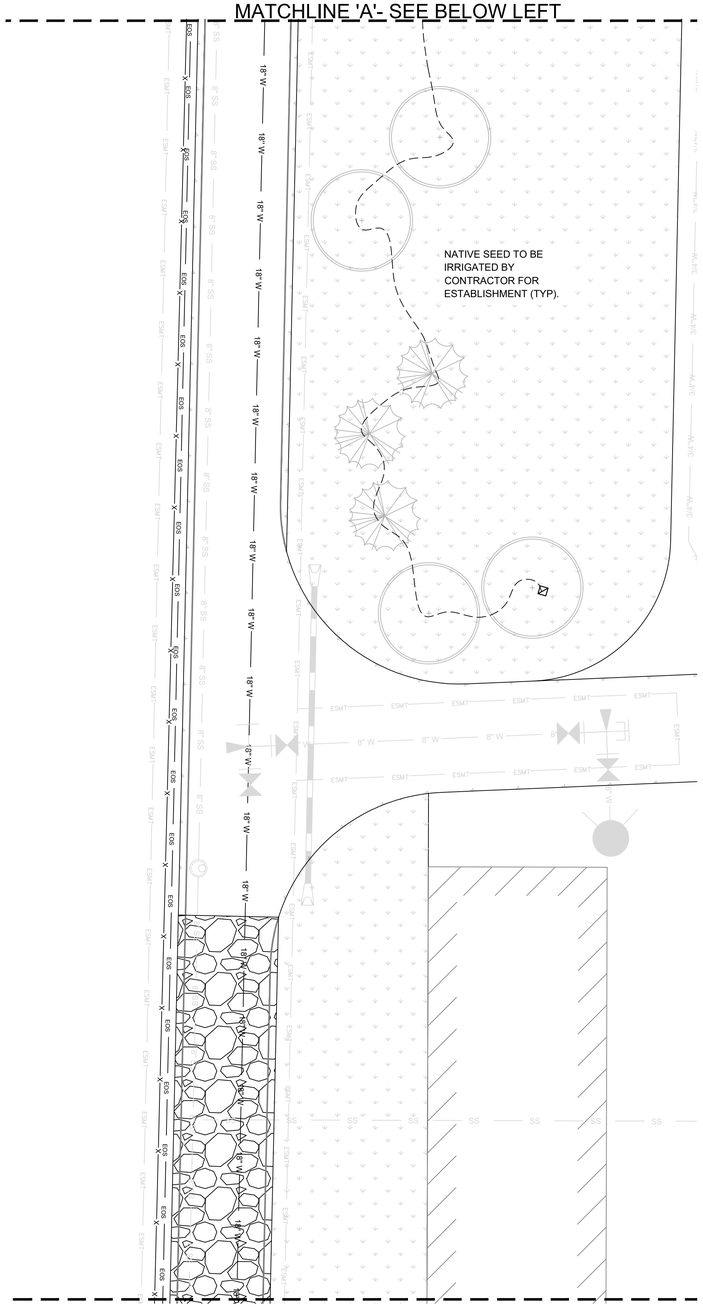
SHEET INDEX: **25**

MATCHLINE - SEE SHEET IR1.2



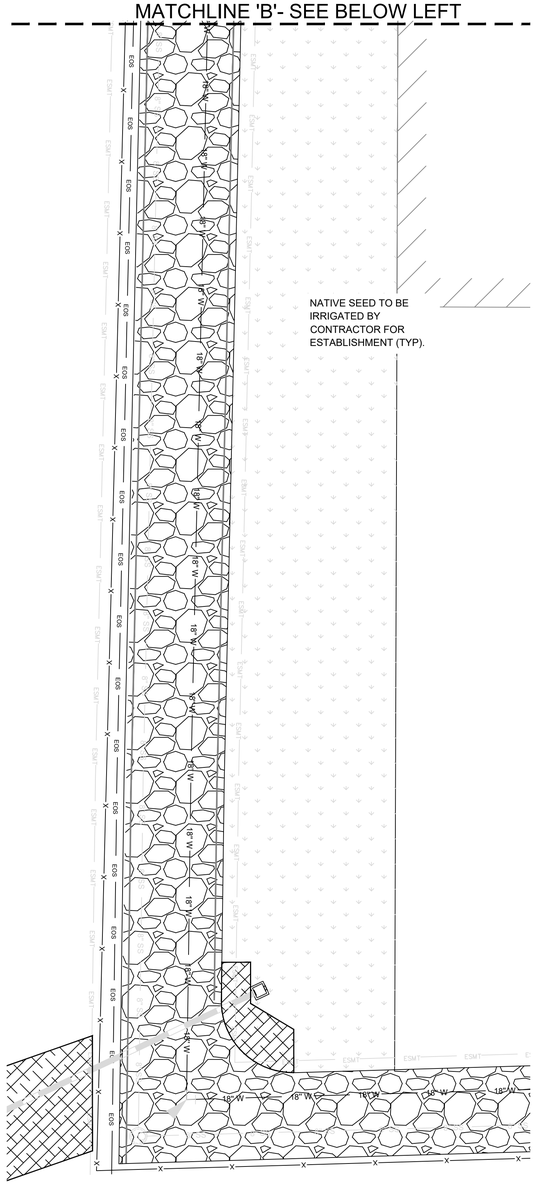
MATCHLINE 'A'- SEE ABOVE RIGHT

MATCHLINE 'A'- SEE BELOW LEFT



MATCHLINE 'B'- SEE ABOVE RIGHT

MATCHLINE 'B'- SEE BELOW LEFT



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SHEET STATUS

90% PLAN SET
NOT FOR CONSTRUCTION

IRRIGATION PLAN

DESIGNED BY:	MLP
DRAWN BY:	MLP
APPROVED BY:	TEAM
DATE:	FEBRUARY 8, 2023
SCALE:	
FILE NAME:	

WELLINGTON BATCH PLANT
CONNELL RESOURCES

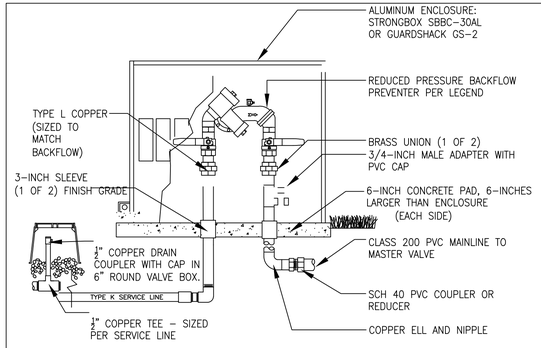
CONNELL

PROJECT NUMBER: 25034

SHEET NUMBER

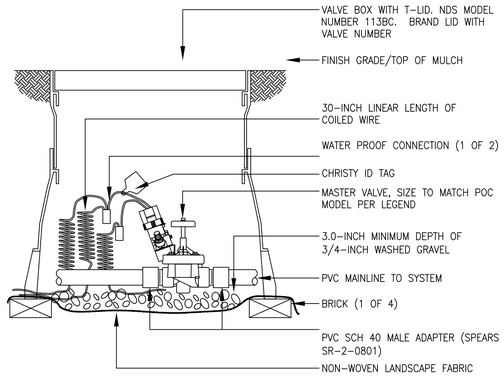
IR1.3

SHEET INDEX: **26**



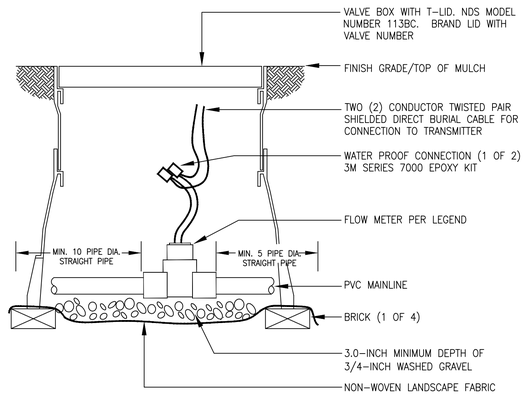
NOTES:
1. INSTALL BACKFLOW DEVICE IN ACCORDANCE WITH ALL STATE AND LOCAL CODE REQUIREMENTS.
2. SLOPE TOP SURFACE OF PAD AT 0.5 % WITH BROOM FINISH. MAKE PIPE SLEEVES WITH 1-1/2 INCH LARGER DIAMETER PIPE THAN PENETRATING PIPE SIZE.
3. ALL HINGED CONNECTION LOCATIONS AND HARDWARE TO BE TAMPER PROOF.
4. ALL WELD JOINTS SHALL BE CONTINUOUS AND GROUND SMOOTH.

1 BACKFLOW PREVENTION UNIT

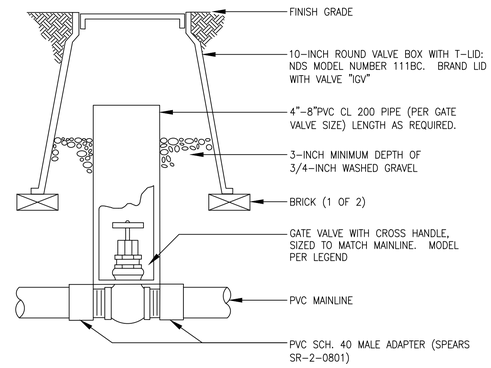


NOTE:
1. FOR 2-WIRE CONTROL SYSTEMS, DIRECT WIRE MASTER VALVE INTO MV SENSOR PORT. DECODER IS AN OPTIONAL CONNECTION.

2 MASTER VALVE ASSEMBLY

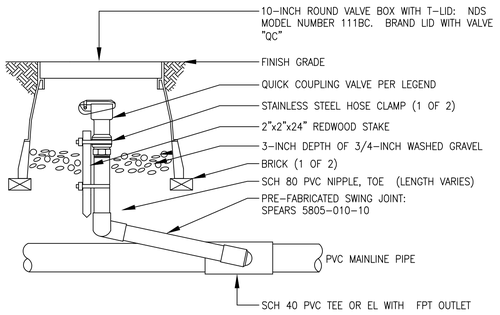


3 FLOW SENSOR ASSEMBLY

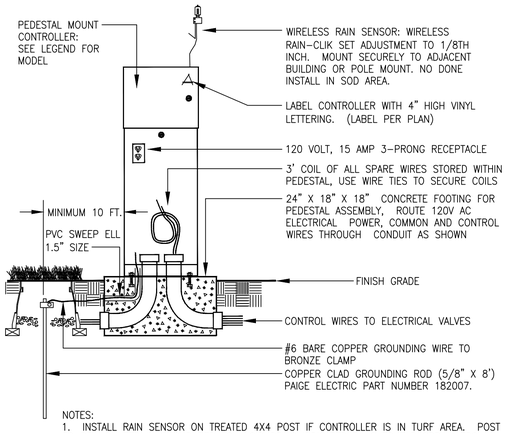


NOTES:
1. NOMINAL SIZE OF GATE VALVE TO MATCH NOMINAL MAINLINE SIZE.

4 ISOLATION GATE VALVE ASSEMBLY

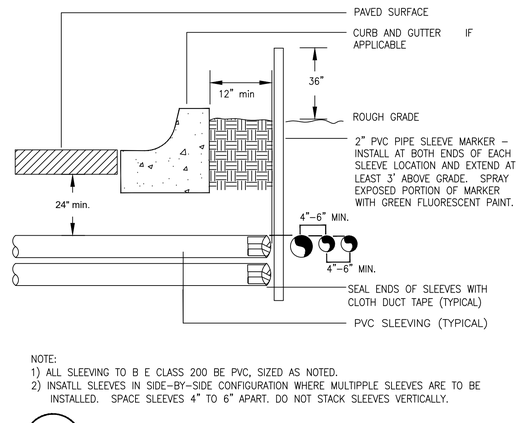


5 QUICK COUPLING VALVE ASSEMBLY



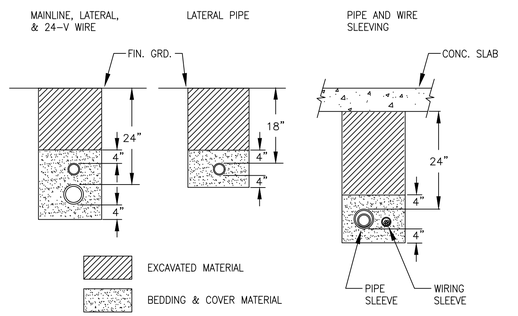
NOTES:
1. INSTALL RAIN SENSOR ON TREATED 4X4 POST IF CONTROLLER IS IN TURF AREA. POST TO BE MOUNTED IN SHRUB BED TO AVOID BEING IRRIGATED BY OVERHEAD SPRINKLERS.

6 PEDESTAL MOUNT CONTROLLER ASSEMBLY



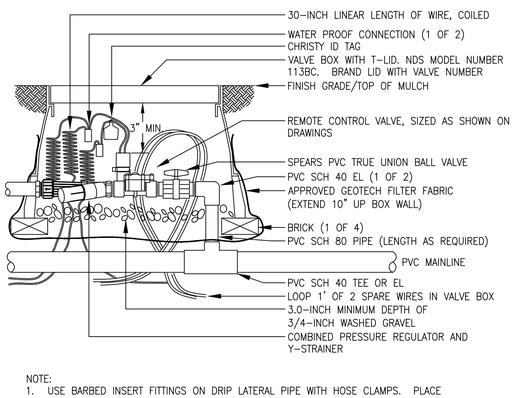
NOTE:
1) ALL SLEEVING TO B E CLASS 200 BE PVC, SIZED AS NOTED.
2) INSATLL SLEEVES IN SIDE-BY-SIDE CONFIGURATION WHERE MULTIPPLE SLEEVES ARE TO BE INSTALLED. SPACE SLEEVES 4" TO 6" APART. DO NOT STACK SLEEVES VERTICALLY.

7 TYPICAL SLEEVING DETAIL



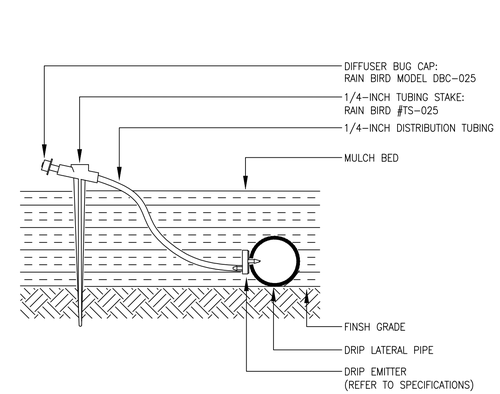
NOTES:
1. SLEEVE ALL PIPE AND WIRE SEPARATELY.
2. ALL PIPE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. "SNAKE" UNSLEEVED PLASTIC PIPE IN TRENCH. PROVIDE A MINIMUM OF 2" CLEARANCE TO SIDE OF TRENCH AND BETWEEN PIPES.
3. ALL 120-V WIRING SHALL BE INSTALLED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS. TAPE AND BUNDLE 24-V WIRE EVERY 10' AND PROVIDE LOOSE 20" LOOP AT ALL CHANGES OF DIRECTION OVER 30 DEGREES.

8 TYPICAL TRENCHING DETAIL

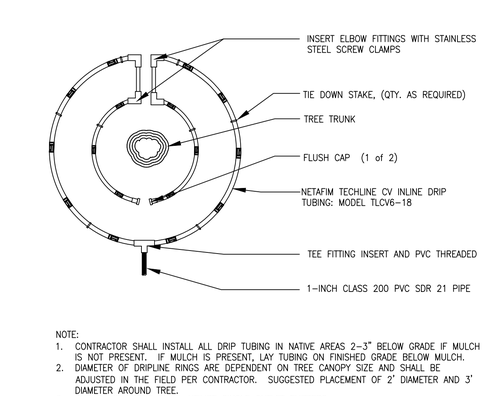


NOTE:
1. USE BARBED INSERT FITTINGS ON DRIP LATERAL PIPE WITH HOSE CLAMPS. PLACE CLAMPS ON DRIP TUBING DIRECTLY OVER BARBED AREA OF FITTING. PINCH CLAMPS ARE NOT ACCEPTABLE.
2. UTILIZE RAIN BIRF XCZ-LF-100-PRF FOR FLOWS LESS THAN 5 GPM.

9 REMOTE CONTROL DRIP VALVE ASSEMBLY

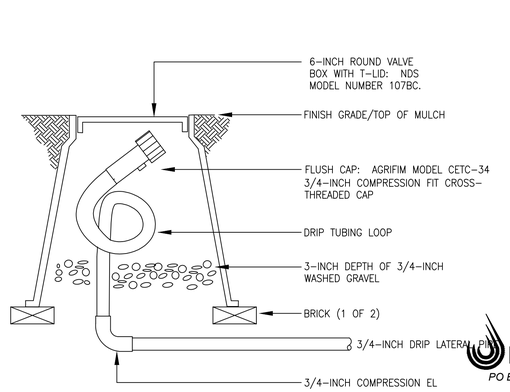


10 SINGLE OUTLET EMITTER ASSEMBLY



NOTE:
1. CONTRACTOR SHALL INSTALL ALL DRIP TUBING IN NATIVE AREAS 2-3" BELOW GRADE IF MULCH IS NOT PRESENT. IF MULCH IS PRESENT, LAY TUBING ON FINISHED GRADE BELOW MULCH.
2. DIAMETER OF DRIPLINE RINGS ARE DEPENDENT ON TREE CANOPY SIZE AND SHALL BE ADJUSTED IN THE FIELD PER CONTRACTOR. SUGGESTED PLACEMENT OF 2' DIAMETER AND 3' DIAMETER AROUND TREE.
3. SHRUBS IN NATIVE SHALL UTILIZE SINGLE OUTLET EMITTERS.

11 INLINE DRIP PIPE ASSEMBLY FOR TREES IN NATIVE



NOTE:
1. LOOP IRRIGATION DRIP TUBING INSIDE VALVE BOX FOR EXTENSION OUTSIDE OF BOX DURING BLOWOUT.

12 DRIP FLUSH CAP ASSEMBLY

MPi Designs
PO BOX 369 • AULT, CO • 80610
970-402-3047
Michelle@MPiDesignsllc.com

ditesco
Project & Construction Services
2133 S. Timberline Road, Suite 110
Fort Collins, Colorado 80525
Phone: (970) 282-1605
www.ditescoservices.com

P.E. Seal

SHEET STATUS
90% PLAN SET
NOT FOR CONSTRUCTION

IRRIGATION DETAILS

DESIGNED BY:	MLP	DATE:	FEBRUARY 8, 2023
DRAWN BY:	MLP	SCALE:	
APPROVED BY:	TEAM	FILE NAME:	

WELLINGTON BATCH PLANT
CONNELL RESOURCES

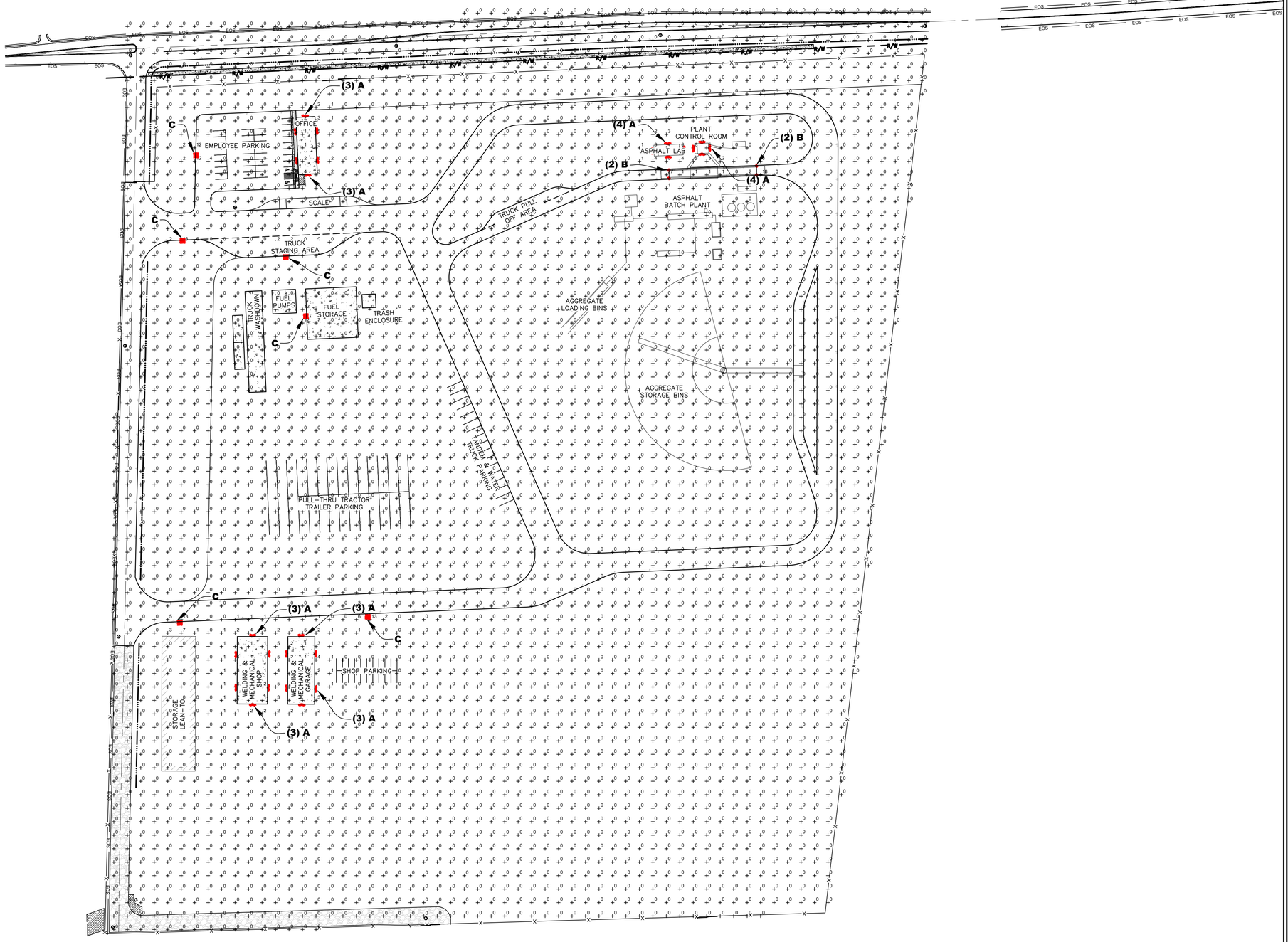
CONNELL

PROJECT NUMBER: 25034

SHEET NUMBER
IR2.1

SHEET INDEX: **27**

0 10 20 40
NORTH



80' 0 80' 160' 240'

SCALE: 1" = 80'
(True scale for 22x34 sheet size)

LEGEND:

- PHOTOMETRIC CALCULATION POINT (FOOT CANDLES)
- FIXTURE TYPE A
- FIXTURE TYPE B
- FIXTURE TYPE C
- SITE PROPERTY LINE
- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- PROPOSED EDGE OF ASPHALT
- PROPOSED EDGE OF SHOULDER
- EDGE OF GRAVEL ROAD
- PROPOSED SWALE
- PROPOSED CHAIN LINK FENCE
- PROPOSED 2-STRAND BARB-WIRE

NOTES:

1. PHOTOMETRIC VALUES ARE BASED UPON PLACEMENT OF FIXTURES AS SHOWN IN THE FIXTURE SCHEDULE ON P102.
2. BATCH PLANT OPERATIONS PRIMARILY OCCUR DURING DAYLIGHT HOURS. FIXTURES WILL BE INSTALLED TO PROVIDE SAFETY LIGHTING AT THE OFFICE AND A KEY OPERATIONAL LOCATIONS AROUND THE SITE.
3. ALL NEW ELECTRICAL INFRASTRUCTURE ROUTED TO NEW LIGHT POLES / WALL PACKS, AS APPLICABLE.

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Project & Construction Services
2133 S. Timberline Road, Suite 110
Fort Collins, Colorado 80525
Phone: 970.530.8080
www.ditescoservices.com

P.E. Seal

Sheet Revisions

No.	Revisions:	By:	Date:

PHOTOMETRICS PLAN

DESIGNED BY: D. Egger
DRAWN BY: R. Bunner
APPROVED BY: J. Burrell
DATE: February 8, 2023
SCALE: 1" = 80'
FILE NAME: Batch Plant Photometrics-Plan.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

CONNELL

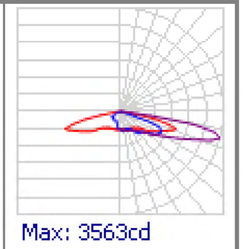
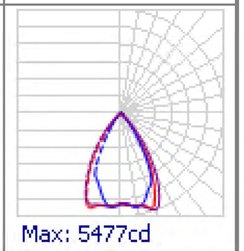
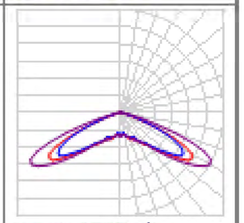
PROJECT NUMBER: XXXX

SHEET NUMBER
P101

SHEET INDEX: 28

Drawing Name: D:\Projects\Wellington Batch Plant\Dwg\Sheets\Batch Plant Photometrics-Plan.dwg Thursday, February 09, 2023 2:06 PM By: Rhonda Bunner

Schedule

Symbol	Label	Image	QTY	Manufacturer	Catalog	Description	Number Lamps	Lamp Output	LLF	Input Power	Polar Plot
	A		26	Holophane	HLWPC2 P20 30K XX T4M XXXXX 80CRI	Wallpack Full Cutoff LED, LED Performance Package P10, 3000 series CCT, Voltage, Type IV Medium with 80 CRI LEDs	1	4745	1	47	
	B		4	Holophane	PSLED P1 XXXXX 55 30K	Predator Small LED Floodlight with P1 Performance Package, Flood (5x5) (formally FL), 3000K CCT	1	Absolute	1	37	
	C		6	Holophane	MGLEDM P1 30K XXXXX AG	Mongoose Medium, P1 Performance Package, 3000K, Area (Type 5) with Refractor	1	15680	1	104.9	

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P.E. Seal

Sheet Revisions

No.	Revisions:	By	Date:

PHOTOMETRICS SCHEDULE

DESIGNED BY:	D. Egger	DATE:	February 8, 2023
DRAWN BY:	R. Bunner	SCALE:	NTS
APPROVED BY:	J. Burrell	FILE NAME:	Batch Plant Photometrics.dwg

WELLINGTON BATCH PLANT
CONNELL RESOURCES

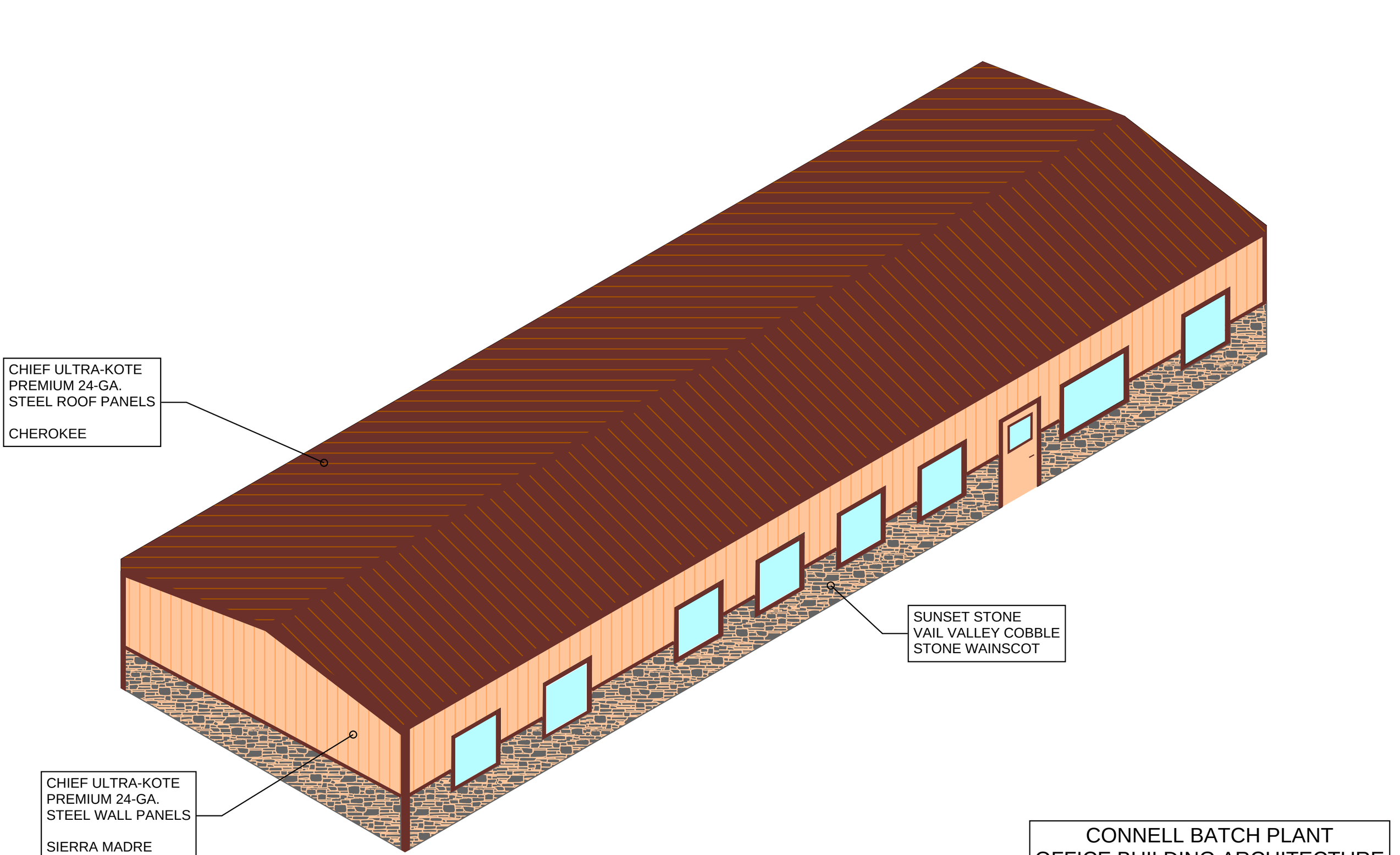
CONNELL

PROJECT NUMBER: XXXX

SHEET NUMBER
P102

SHEET INDEX: 29

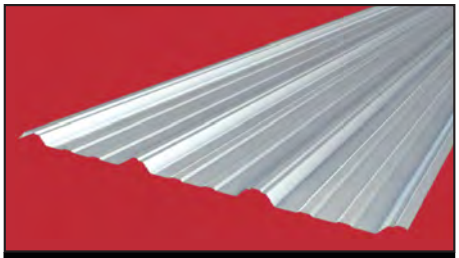
Drawing Name: D:\Projects\Wellington Batch Plant\Dwg\Sheets\Batch Plant Photometrics.dwg Friday, January 27, 2023 3:14 PM By: Rhonda Bunner



CONNELL BATCH PLANT
OFFICE BUILDING ARCHITECTURE
SAMPLE MATERIAL SUBMITTALS

CS/AP Panels

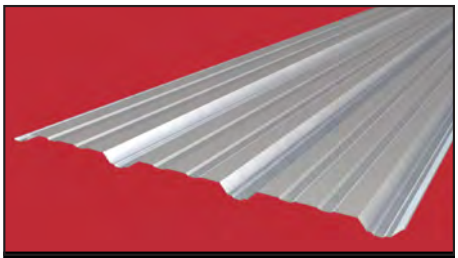
Ultra-Kote Premium (PVDF)



CS - Chief Standard
(Roof and Wall Panel)
36" Coverage

Superior materials make the difference...

Premium finishes and design give Chief's Standard Panels (CS) and Chief's Architectural Panels (AP) the edge when it comes to quality steel roof and wall panels. They're ideal for a variety of other applications as well. Interior liners, fascias, canopies, and soffits are just some of the many uses for this versatile panel. With a 1 1/8" deep corrugation for added strength, 36" panel widths for quicker erection and availability in many different colors, Chief's CS and AP ribbed panels are the perfect choice for your construction project.

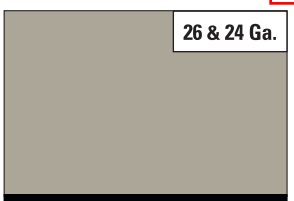


AP - Architectural Panel
(Wall Panel Only)
36" Coverage

ROOF PANELS

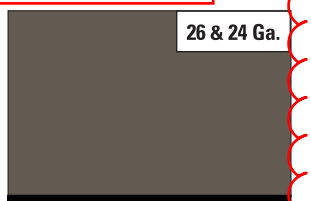
26 & 24 Ga.

Antique Bronze (AQ)



26 & 24 Ga.

Ash Gray (AG)

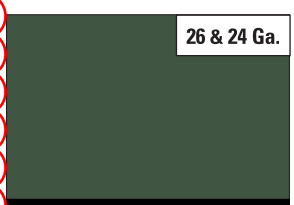


26 & 24 Ga.

Charcoal Gray (CG)

26 & 24 Ga.

Cherokee (CK)

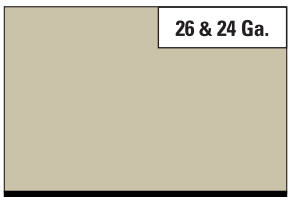


26 & 24 Ga.

Emerald Green (EG)

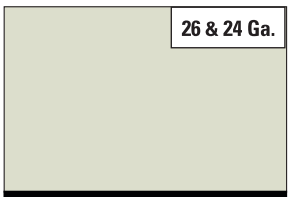
26 & 24 Ga.

Fieldstone (FS)



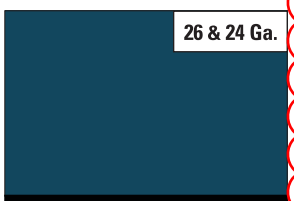
26 & 24 Ga.

Parchment (PA)



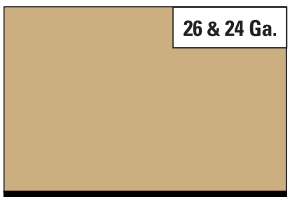
26 & 24 Ga.

Polar White (PW)



26 & 24 Ga.

Royale Blue (RB)

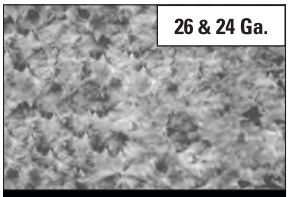


26 & 24 Ga.

Sierra Madre (SM)

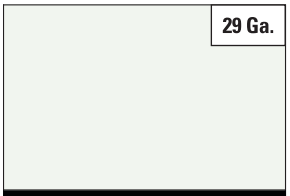
*Chief maintains inventory of all 26 Ga. Chief standard colors, 24 Ga. Polar White and 24 Ga. Galvalume. All other colors are available as Chief standard colors and may not be in stock.

WALL PANELS



26 & 24 Ga.

Galvalume (GM)



29 Ga.

White Polyester (WP)

Ultra-Kote Premium (UKP) Finish

Chief's Ultra-Kote Premium finish is made with polyvinylidene fluoride resin, where a minimum of 70% of the resin is PVDF (Kynar 500® or Hylar 5000®). This unique chemistry is combined with acrylic resin, as well as ceramic and select inorganic pigmentation. The result is Ultra-Kote Premium's proven ability to resist ultraviolet radiation in sunlight for maximum protection against general weathering effects, chalking and fading.

Acrylic Coated Galvalume® (GM)

Chief's exterior roof, wall and trim material is available in an industry standard ASTM A792 Acrylic Coated Galvalume® finish. Galvalume® is a unique coating of 55% aluminum and 45% zinc that resists corrosion. The Galvalume® sheet is coated with a thin, clear acrylic coating applied to both sides.

White Polyester (WP)

Chief's White Polyester is an economical polyester finish intended for interior applications only.
Note: 29 Ga. White polyester is a non-warranty product.

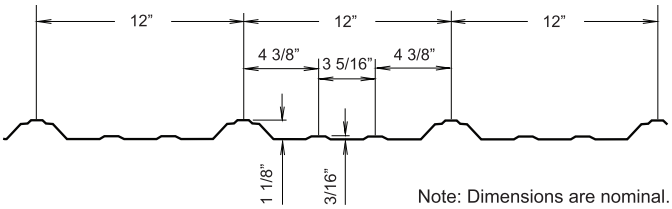
Since all color chips are affected by age, lighting conditions, heat and mechanical coating processes, the chips on this page may vary slightly in color or finish from the actual product. Oil canning in the flat areas of panels is inherent of coil steel products and shall not be a cause for product refusal. Chief reserves the right to change designs, prices and specifications at any time without notice.

Chief's Finish Warranties:

- Galvalume® Panel Limited Warranty - 25 Year
- Ultra-Kote Premium Roof Panel Finish Limited Warranty - 35 Year
- Ultra-Kote Premium Wall Panel Finish Limited Warranty - 35 Year

MEMBER MBMA METAL BUILDING MANUFACTURERS ASSOCIATION

1821 S. North Road P.O. Box 2078 Grand Island, NE 68802-2078 (308) 389-7281 fax: (308) 389-7282 http://www.chiefbuildings.com



Note: Dimensions are nominal.

Ribbed roof panel

a. Rollformed profile shall be CS (Chief Standard) configuration as manufactured by Chief Buildings. Panels shall have 1 1/8" deep major ribs spaced at 12" on center, with minor ribs between major ribs. Each panel shall provide a net coverage width of 36".
b. Panels shall be manufactured from 26 gauge or 24 gauge, 80,000 PSI material.
c. Provide roof panel assemblies with permanent resistance to air leakage through assembly of not more than 0.005 cfm/sf of fixed roof area when tested according to ASTM E1680 at a static pressure differential of 6.24 psf.
d. Provide roof panel assemblies with no water penetration as defined in the test method when tested according to ASTM E1646 at a static pressure differential of 12.0 psf.
e. Provide roof panel assemblies with UL Class 30, 60, or 90 uplift rating in accordance with UL 580 “Tests for Uplift Resistance of Roof Assemblies”.
f. Provide roof panel assemblies with UL Class A Fire Rating in accordance with UL 790 “Test Methods for Fire Tests of Roof Coverings”.
g. Provide roof panel assemblies with UL Class 4 Impact Rating in accordance with UL 2218 “Impact Resistance of Prepared Roof Covering Material”.
h. Panels shall be one piece for slope lengths less than 39'-6". Endlaps, if required, shall be 8" and occur at a purlin.
i. Panel finish shall be acrylic coated Galvalume® AZ55 coating in accordance with ASTM A792.

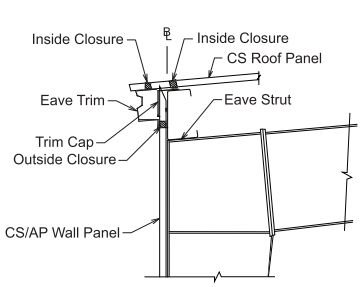
OR

i. Substrate shall be Galvalume® AZ50 coating in accordance with ASTM A792. Sheets shall be coated with a fluoropolymer topcoat containing not less than 70% polyvinylidene fluoride (PVDF) over primer with total DFT of 0.8–1.0. The reverse side shall be coated with pigmented. Exterior color to be selected from Chief standard color choices.

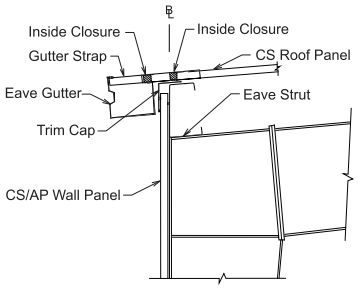
Exterior wall panel

a. Rollformed profile shall be CS (Chief Standard) or AP (Architectural Panel) configuration as manufactured by Chief Buildings. Panels shall have 1 1/8" deep major ribs spaced at 12" on center, with minor ribs between major ribs. Each panel shall provide a net coverage width of 36".
b. Manufactured from 26 gauge or 24 gauge, 50,000 PSI or 80,000 PSI material.
c. Provide wall panel assemblies (when installed with mastic in the walls) with permanent resistance to air leakage through assembly of not more than 0.006 cfm/sf of fixed wall area when tested according to ASTM E283 at a static pressure differential of 6.24 psf.
d. Provide wall panel assemblies (when installed with mastic in the walls) with no water penetration as defined in the test method when tested according to ASTM E331 at a static pressure differential of 12.0 psf.
e. Substrate shall be Galvalume® AZ50 coating in accordance with ASTM A792.
f. Sheets shall be coated with a fluoropolymer topcoat containing not less than 70% polyvinylidene fluoride (PVDF) over primer with total DFT of 0.8–1.0. The reverse side shall be coated with pigmented polyester. Exterior color to be selected from Chief standard color choices.

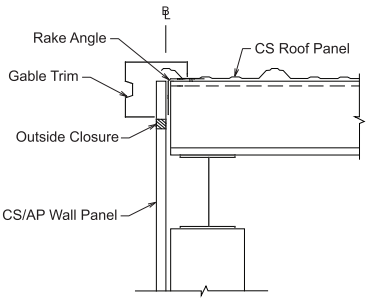
Eave Trim



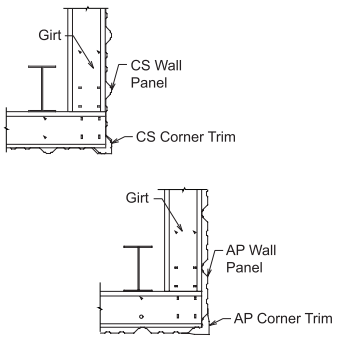
Eave Gutter



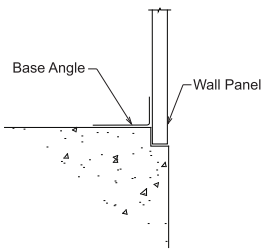
Gable Trim



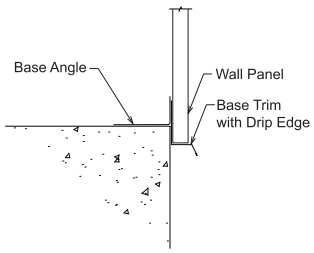
Outside Corner



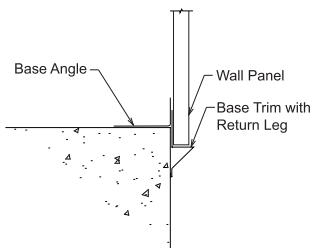
Notch in Concrete



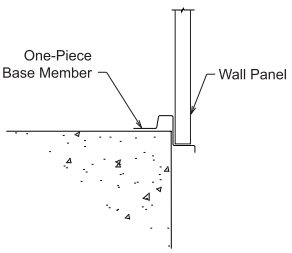
Base Trim with Drip Edge



Base Trim with Return Leg



One Piece Base Member



Natural Ledge

Welcome to Sunset Stone

Natural Cobble

Cobble

- 2½" to 8" high
- 8" to 22" long
- 1½" to 2" thick

Custom Cobble

Custom Cobble

Ponderosa Cobble

Gold Rundle Cobble

Vail Valley Cobble

Venetian Cobble

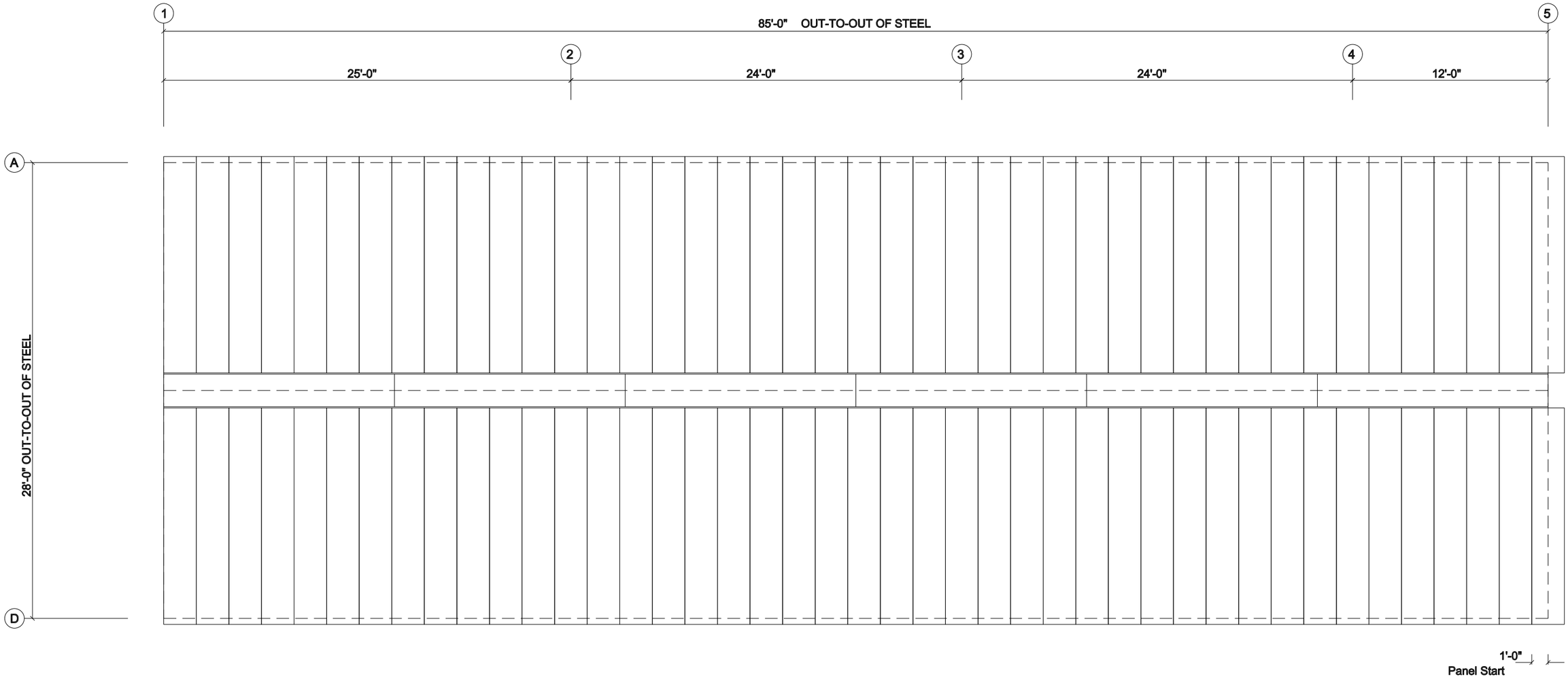
Cheyenne Cobble

Country Cobble

Alpine Cobble

Solterra Cobble

Colorado Cream Cobble



ROOF SHEETING PLAN

PANELS: 24 Ga. MSC - Galvalume (GM)

PRELIMINARY

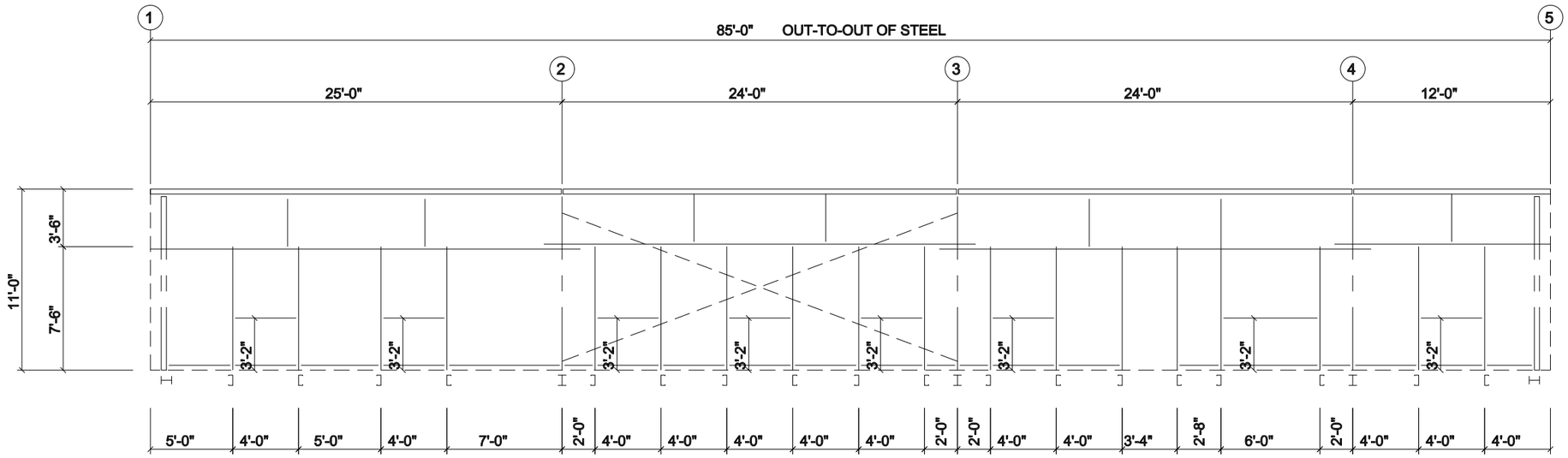
- Preliminary drawings for sales and estimating purposes only.
- Subject to change during order process.

NOT FOR CONSTRUCTION

Drawing	ROOF SHEETING
Buyer	Mountain West Constructors, LLC
Customer	Connell Resources Wellington, CO 80549
Project Name	Connell Office - Wellington Batch Plant

DATE DRAWN	QUOTE NO.
11/ 1/22	Ed85204A

CHIEF BUILDINGS



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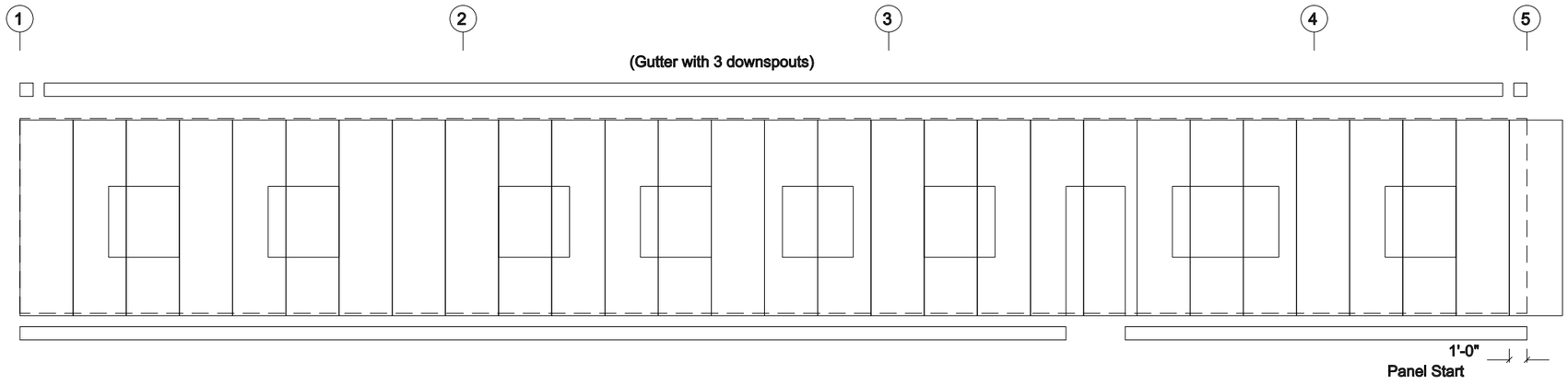


SIDEWALL SHEETING & TRIM: FRAME LINE D

PANELS: 26 Ga. AP - Std.PVDF-FEVE Finish

GIRT DEPTH: 8.00

PRELIMINARY

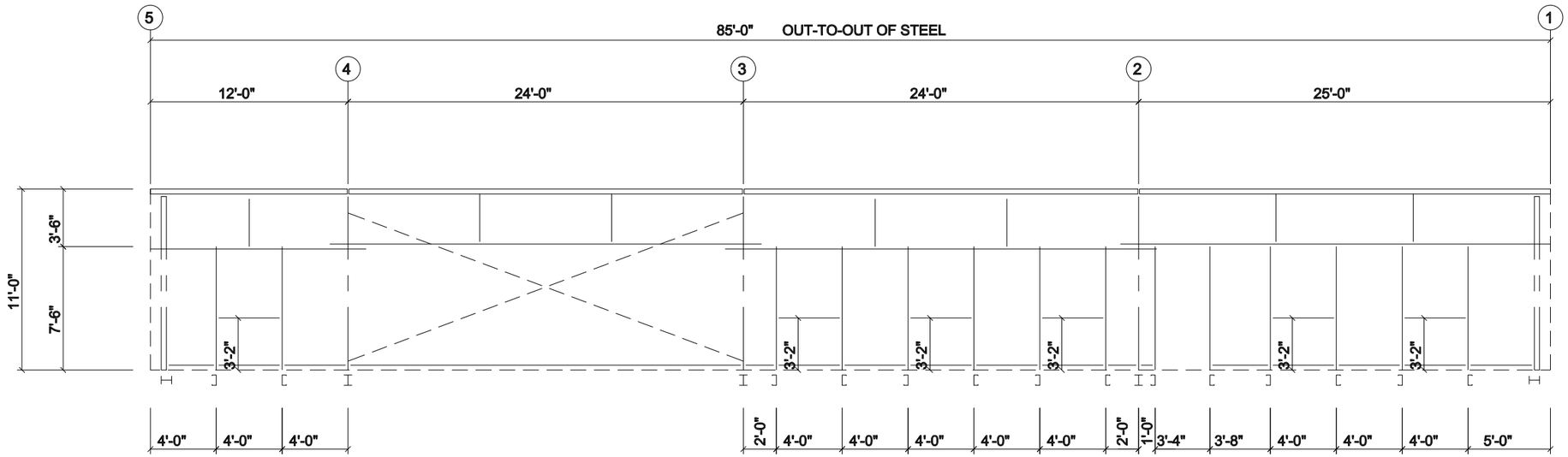
- Preliminary drawings for sales and estimating purposes only.
- Subject to change during order process.

NOT FOR CONSTRUCTION

Drawing	SIDEWALL DRAWING
Buyer	Mountain West Constructors, LLC
Customer	Connell Resources Wellington, CO 80549
Project Name	Connell Office - Wellington Batch Plant

CHIEF BUILDINGS

DATE DRAWN	QUOTE NO.
11/ 1/22	FJ85201A



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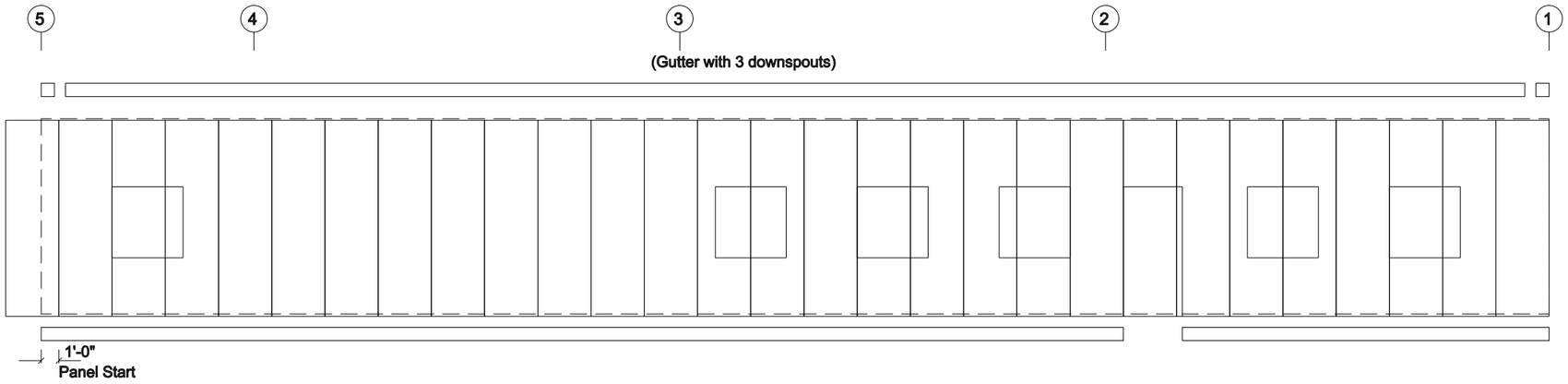

SIDEWALL SHEETING & TRIM: FRAME LINE A

PANELS: 26 Ga. AP - Std.PVDF-FEVE Finish

GIRT DEPTH: 8.00

PRELIMINARY

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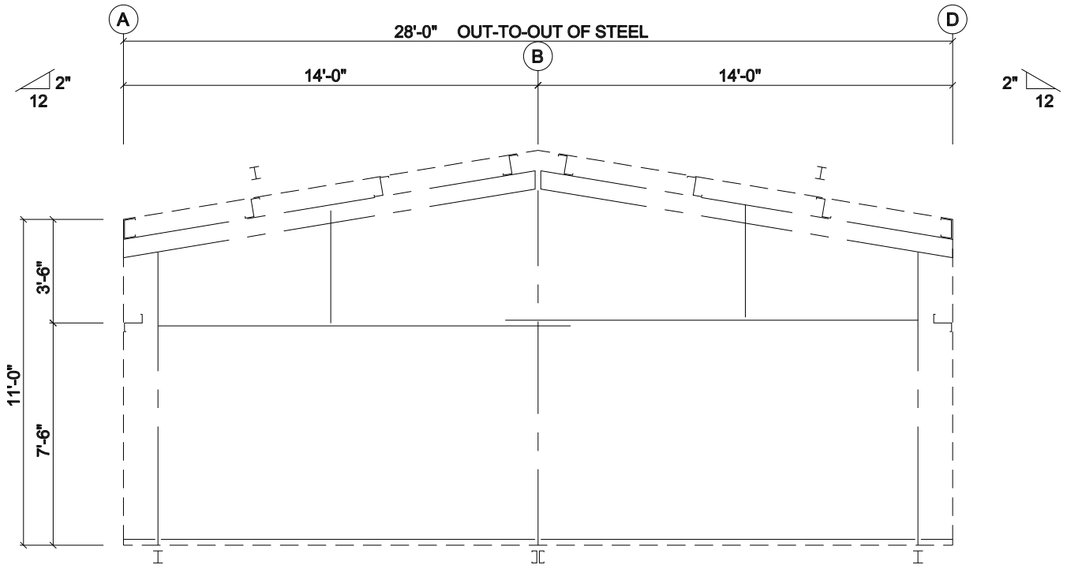
Buyer	Mountain West Constructors, LLC
Customer	Connell Resources Wellington, CO 80549
Project Name	Connell Office - Wellington Batch Plant

CHIEF BUILDINGS

DATE DRAWN	QUOTE NO.
11/ 1/22	FJ852201A



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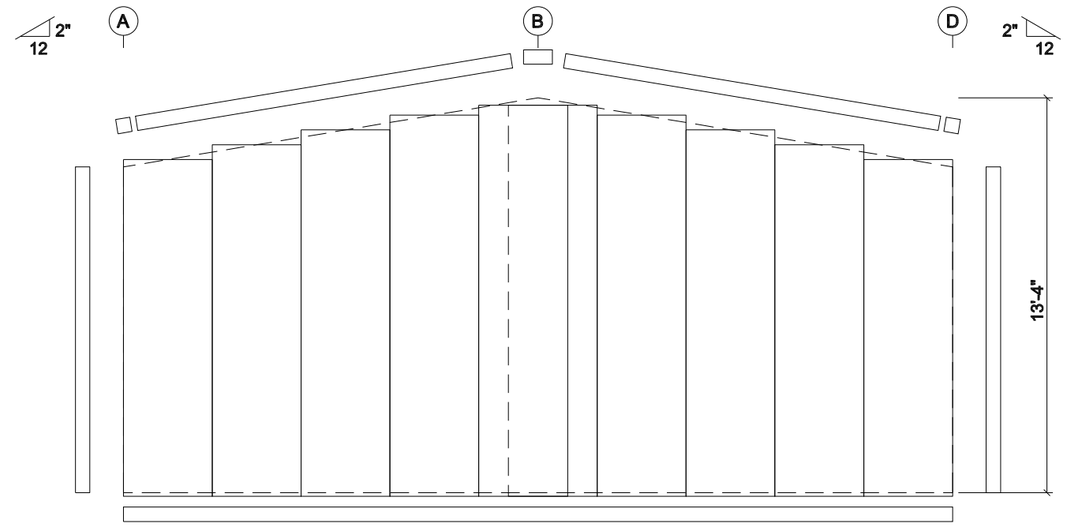

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PANELS: 26 Ga. AP - Std.PVDF-FEVE Finish

GIRT DEPTH: 8.00

PRELIMINARY

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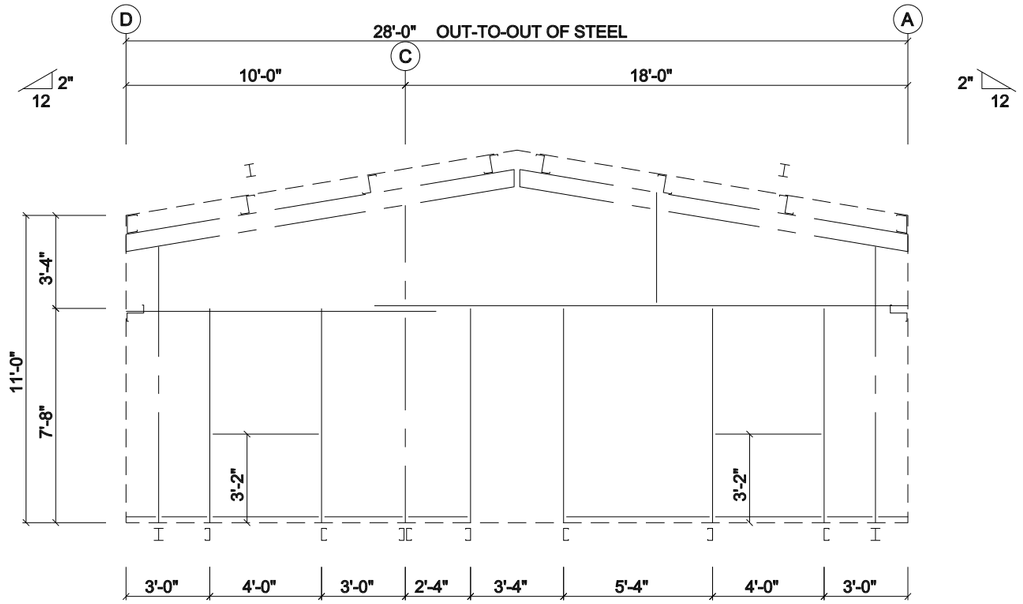
NOT FOR CONSTRUCTION

Drawing	ENDWALL DRAWING
Buyer	Mountain West Constructors, LLC
Customer	Connell Resources Wellington, CO 80549
Project Name	Connell Office - Wellington Batch Plant

CHIEF BUILDINGS

DATE DRAWN	QUOTE NO.
11/ 1/22	EJ65201A



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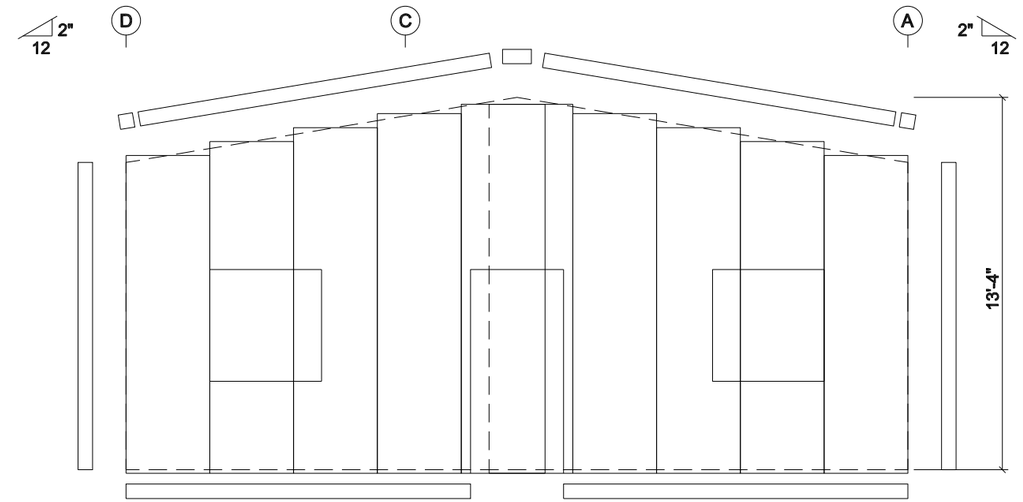

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PANELS: 26 Ga. AP - Std.PVDF-FEVE Finish

GIRT DEPTH: 8.00

PRELIMINARY

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- Subject to change during order process.

NOT FOR CONSTRUCTION

Drawing	ENDWALL DRAWING
Buyer	Mountain West Constructors, LLC
Customer	Connell Resources Wellington, CO 80549
Project Name	Connell Office - Wellington Batch Plant

CHIEF BUILDINGS

DATE DRAWN	QUOTE NO.
11/ 1/22	FJ852014

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Denver, Colorado 80202

Memorandum

Carolynne C. White
Attorney at Law
303.223.1197 direct
cwhite@bhfs.com

DATE: May 26, 2023

TO: Town of Wellington Planning Commission

FROM: Carolynne C. White

RE: Connell Resources – Site Plan Approval for the Wellington Asphalt Plant – Answers to Planning Commission Questions

Connell Resources, Inc. ("**Connell**" and/or the "**Applicant**") is requesting approval of its site plan for an asphalt mixing plant (the "**Proposed Use**") in the town of Wellington (the "**Town**"), county of Larimer (the "**County**"), state of Colorado (the "**State**") located along County Road 66 ("**CR 66**") on the north, the North Poudre Irrigation ditch along the west, and the BNSF rail line to the east (the "**Property**"). The Property is comprised of 35.56 acres and is zoned I – Industrial ("**I District**"). The Proposed Use is a use by right in the I District. The application (the "**Application**") proposes an office building, silos/plant, welding/maintenance shop, fueling facilities and workshop (the "**Project**").

The Application was presented to the Board of Adjustment ("**BOA**") on October 27, 2022 for approval of two variances (the "**Variances**"):

1. to reduce the required building setback from 1,000 feet from a residential district to 800 feet for a Heavy Industrial land use; and
2. to allow for a height increase for the silos structure from 45 ft to up to 70 ft.

The above Variances approved by the BOA are not subject to further appeal or modification by the Planning Commission or the Town Board of Trustees.

The BOA approved the Variances with the following six conditions of approval:

1. Site Plans must be reviewed and approved by the Planning Commission;
2. The height variance (up to 70-ft) is for the silos only;

3. A 15-foot earthen berm and landscaping is required along the west side of the site;
4. There is to be no signage on the silos;
5. Require signage and operator policies to disallow engine braking ("Jake Brakes");
6. Compliance with all applicable County and State permits for operation of an Asphalt Plant

The BOA also recommended that the Town-supplied potable water be reserved for office and occupied facility use only.

The Applicant then presented its application for a site plan to this Planning Commission (the "**Commission**") on March 6, 2023 (the "**Prior Hearing**"), which was continued to allow the Applicant and County staff to provide more information pertaining to the Commission and the public's questions regarding the Application. The Applicant is providing this summary memorandum to answer the Commission's questions.

1. **The site design minimizes negative impacts by placing the highest intensity uses farthest from nearby residential areas.**

The Applicant proposes a thoughtful design that locates the highest intensity activities and facilities adjacent to the railroad, which is the farthest area on the site from the residential area. Additionally, as set forth in the letters from local residents included in your packet, the residents that reside in homes that overlook the Project and the property owners directly to the west of the Property are in support of the Project.

The asphalt mixing plant and aggregate storage areas are located on the east side of the site. The plant is proposed at the base of an existing hill along the railroad tracks. This will provide natural screening and act as a background to protect the surrounding viewshed. Additionally, landscaped berms are proposed on the north, west, and southwest sides of the batch plant to help screen the industrial operations. The south half of the site will have little to no industrial usage and will be used as storage, maintenance, and stormwater detention.

The proposed office building is located in the northwest corner of the site. The office will feature attractive architectural features such as stone wainscot and decorative landscaping. The other buildings onsite will match the architecture and will be well maintained and clean.

The proposed access roads and parking lots will be paved to reduce dust. The layout of the roads was carefully designed to promote one-way traffic in an effort to reduce backup alarms onsite.

2. **The Landscape Plan provides significant perimeter and access road buffering.**

The Town requires that a minimum of 15% of the site be landscaped. The Application proposes a minimum of 18.38% of the Property be landscaped, which primarily focuses on perimeter

buffering and an 80ft to 110ft wide perimeter landscape area that includes trees, rock mulch and native grasses.

The landscaping will include alternative "buffering" techniques to effectively reduce visual impacts to the residential development, which may include site design and layout, earth berms, perimeter, walls/fences and landscape plantings. Any proposed access road along the western property line will also be lined with landscaping, berms and live-stock style welded wire fencing to create a buffering aesthetic. The proposed berms are 10 to 15 feet tall, as required by the BOA, and will block the views of the industrial activity from surrounding properties and roadways.

3. Traffic to and from the site will be mitigated.

The traffic study prepared by Delich Associates in October 2022, as amended on March 3, 2023 (the "**Traffic Study**"), which was submitted as part of the Application, concludes that the Project will generate an average of approximately 72 truck trips in and out of the Property each day.

The Applicant is committed to mitigating impacts from truck traffic traveling to and from the Property. The application proposes to mitigate traffic by improving the current roads to include new northbound right-turn lanes on County Road 7 ("**CR 7**") and paving a portion of CR 66 from the west boundary of the Property to the intersection of CR 66 and CR 7. The road improvements also include new bike lanes, a safer crossing over BNSF (in partnership with BNSF and Larimer County) and new roadway design to improve site lines at the BNSF rail crossing.

The Applicant also proposes to adjust the truck route (CR 66 to CR 7), north to Owl Canyon, then to I-25) to ensure that the trucks will not create traffic through the downtown, high school and residential areas, as demonstrated on the Haul Route Map attached hereto as Exhibit A. Truck traffic will be reduced such that that there will be fewer total trucks on the roads of Northern Colorado. Moving the plant closer to the aggregate source will reduce total traffic compared to the current facility in Timnath at Harmony Road and I-25. With truck traffic utilizing the Owl Canyon access, trucks will not be entering the general streets of the Town.

4. Potential material spills as result of trucks traveling to, from and on the Property will be sufficiently mitigated.

Under State law, spilling of loads on State highways is already prohibited, with liability attaching to the responsible party. *See, in part*, Colo. Rev. Stat. § 42-4-1407. The Applicant is responsible for cleaning up any potential materials on both the Property and connecting roadways, and will be subject to State law penalties if a spill were to occur.

a. Spills on Property

The Proposed Use does not include any materials or chemicals, hazardous or otherwise, which could spill or create environmental contamination conditions on the property. The only possible material which could theoretically create spills is fuel, and the Applicant will have a Spill,

Prevention, Containment, and Countermeasure Plan ("**SPCC Plan**") in place to properly contain any potential spill.

The storage of fuel tanks on the Property is regulated by the Environmental Protection Agency ("**EPA**") and the Colorado Department of Labor and Employment, which requires a permit. The Applicant must undergo a rigorous application process for approval of such a permit, which includes ongoing oversight, operator training, monthly and annual compliance inspections, periodic testing, continuous corrosion protection and maintaining spill prevention equipment such as spill buckets and overfill prevention devices.

Additionally, on March 1 of each year, every asphalt production facility is required by State and federal law to report the storage of any regulated onsite chemicals. This information is sent to emergency planning organizations. Concerned citizens can obtain this public information from State and federal agencies.

Potential runoff from the site will also be adequately maintained and controlled. The onsite detention pond and outlet structure on the Property have been designed to detain water from storm events and release it at a rate that matches the existing conditions on the site. The outlet structure includes a trash rack and orifice plate that restrict the release rate of the detained water. The orifice plate on the outlet structure restricts flows so that any suspended solids have time to settle to the bottom of the pond before they are released to downstream waterways. Additionally, a slide gate has been added to the outlet structure to prevent any stormwater release from the pond. The slide gate must be manually opened during storm events to allow the water to drain from the pond.

Moreover, the site earthwork and grading is completed so that all runoff is routed to the detention pond. In the event of a spill, such spills would be maintained and controlled on the site by the engineering design grades. If a spill event were to occur directly into the pond, the restricted release rate through the orifice plate, outlet structure, and slide gate would prevent the spilled material from escaping into downstream waterways.

b. Spills on Roads

As mentioned, the Applicant is committed to taking appropriate measures to mitigate any potential material spills. Pursuant to the Colorado Department of Transportation ("**CDOT**") regulations, the Applicant is responsible for cleaning up any spills that occur on the roads outside of the Property in connection with transportation of materials to the site. Trucks traveling to and from the site are considered "commercial motor vehicles" and are thus regulated as such under the CDOT rules. Moreover, the EPA has promulgated strict rules and requirements on spills. Nonetheless, studies conclude that the trucks transporting materials to the Property are not considered hazardous materials. According to the Material Safety Data Sheets (the "**MSDS**"), which are required under the OSHA Hazard Communication Standard (Subpart 1910.1200), the composition of asphalt materials used by the Applicant include asphalt and an emulsifier known as styrene-butadiene copolymer. This material, in the event of a spill, will typically harden within

48 hours depending on how quickly it cools. According to the MSDS, it can then be safely removed and disposed of in the same manner as household trash or in the Applicant's case, the material will be recycled. The spilt material will not seep into the ground and does not present any ecological hazards.

According to the Pipeline Hazardous Materials Safety Administration ("**PHMSA**"), which regulates the storage and transportation of hazardous materials, asphalt material for hot asphalt mix transported to and from the site is not considered a hazardous material, but rather an elevated temperature material. Thus, there are no placarding requirements because the material is below 300 degrees Fahrenheit.

When a permit violation or noncompliance issue leads to enforcement proceedings, corrective action is required and fines up to $15,000 per day can be levied against liable parties.

Under both the stringent State and federal regulations, no remediation plan is required until a spill occurs. The State and federal regulations set forth legal liability and requirements in the event of a spill. Thus, although no remediation plan is required at this time, the Applicant will be required to not only adhere to the strict standards, but to comply with all remediation procedures in the unlikely event of a spill. Any potential impacts to the roadways, groundwater or adjacent properties as a result of a spill are adequately protected by both State and federal regulations.

5. **The application adequately mitigates potential impacts to wildlife.**

As set forth in more detail within the Wildlife Mitigation Plan dated April 19, 2023 (the "**Wildlife Mitigation Plan**"), attached hereto as Exhibit B, there is limited wildlife located on the Property and therefore no wildlife mitigation strategies are warranted. The Wildlife Mitigation Plan concludes that there are no significant impacts to existing wildlife or habitat anticipated as a result of the Project.

6. **The Proposed Use will not generate noise in excess of applicable County and State regulations.**

The Town has not adopted an ordinance governing noise that specifics maximum decimal limits for noise; however, the Project will not exceed the County noise ordinance which sets forth appropriate noise levels for different activities and applies to properties within the incorporated County. Larimer County Noise Ordinance No. 97-03 (the "**County Ordinance**") specifies maximum sound levels at 55dbA at receiving property lines.

The Applicant has completed two Baseline Community Noise Assessments, performed and prepared by Antea Group ("**Antea**"), for both the new site in Wellington and another for the existing facility in Timnath (collectively, the "**Noise Assessments**"), attached hereto as Exhibit C, which demonstrate that noise levels generated by the facilities at both locations are well below the maximums specified by the County Ordinance. The Noise Assessments included on-site

measurement and mapping of sound levels at various locations throughout each property, along adjacent roadways, and around the entire perimeter of the properties.

Results from the Noise Assessments demonstrate that at the existing asphalt mixing facility in Timnath, recorded noise levels are 45-dbA to 50-dbA at 750 feet east of the asphalt production operation, which is well within compliance.

As set forth in the Noise Assessments, at 800 feet from the new facility in Wellington, noise levels generated by operation of the facility are expected to be below 45-dbA, which is well within the County Ordinance. However, results for the new facility in Wellington recorded current background noise levels at the site – without noise generated by the operation of the facility (because the facility has not yet been constructed) – already above the County Ordinance but still below the State's maximum noise levels of 80-dbA. Thus, the Noise Assessments conclude that these results indicate that current weather, geographical conditions, and neighboring properties near the Wellington site are contributing to higher noise levels in the area. The Noise Assessments conclude that given that background noise levels at the Wellington site are already above the County Ordinance, the Project will not be the cause of the current exceedance of the County Ordinance. The Noise Assessments also states that, "given the sound profile previously collected from the [Timnath] site, and the planned erection of dirt berms for noise attenuation, Connell Resources have properly planned to provide effective noise controls at their proposed Wellington location."

Attached hereto as Exhibit D is a decibel level comparison chart prepared by Yale University, which shows that the noise levels from the asphalt plant facility, when heard 750 feet from the facility, are at levels as low as a household refrigerator. Accordingly, this data indicates that hot asphalt mix plants are not significant generators of noise.

Moreover, the Applicant's site plan incorporates sound mitigation measures through berming and selective layout in order to absorb and direct noise away from adjacent properties. The Applicant has also committed to implementing mitigation measures to reduce noise, including restricting the use of engine brakes (Jake Brakes) for eastbound and westbound trucks on County Road 66 ("**CR 66**"). Signs will be posted in both directions of CR 66 to warn drivers of this restriction. The Applicant will also install white noise back up alarms on equipment being used at the asphalt facility in lieu of a manufactured back-up alarm that exude a loud beeping noise.

7. **The Applicant is required to obtain various State permits which shall ensure that the Applicant complies with all State environmental regulations.**

During the Prior Hearing, this Commission expressed concern regarding various environmental issues, and how the Town could be certain the Proposed Use would operate in compliance with various environmental regulations. Although BOA has already imposed a condition of approval requiring that all County and State permits be obtained and complied with, the County and State oversee and monitor the Applicant's operations which includes periodic inspection and testing.

The Applicant noted at the Prior hearing that the Proposed Use is subject to several permits in addition to the site plan and other approvals required by the Town. To help the Commission understand the scope and depth of the State's oversight of the Proposed Use, the Applicant has compiled a list of the environmental permits that the Applicant must obtain from various governmental organizations, which are set forth on Exhibit E. Asphaltic plant operations are licensed and monitored by the State for air pollutants, odor and dust particulates. The State has promulgated rules and standards to determine the safety of the operation of an asphalt plant and ensure that Applicant remains in ongoing compliance with such regulations. The State also requires regular inspection and monitoring to ensure compliance. Penalties for noncompliance with such regulations are also set forth on Exhibit E attached hereto.

As the Commission can see, the State engages in thorough oversight of projects like the Proposed Use, with the benefit of a set of detailed governing regulations, trained staff, and State funding.

8. **The Applicant has remained compliant with air quality standards, and the CDPHE Compliance Advisory from 2021 was due to a mechanical error and not noncompliance air quality standards.**

The Colorado Department of Public Health and Environment ("**CDPHE**"), which oversees and controls emissions of harmful pollutants, requires that hot mix asphalt plants test for emissions of air pollutants to demonstrate compliance with air standards. On June 25, 2021, the Applicant was performing an unobserved compliance stack test at its current facility. During the early stages of the test, the Applicant realized that an auger in the facility was experiencing a mechanical malfunction and causing an inaccurate reading. The plant staff ended the test so that the auger could be repaired. The Applicant self-reported the issue to CDPHE the same day. On July 27, 2021, the Applicant received correspondence from CDPHE that stopping a test prior to completion was considered a failed test. The Applicant disagreed with CDPHE's determination and requested that CDPHE grant the Applicant an opportunity to re-test with the facility repairs complete. CDPHE granted the Applicant's request for retesting. In October of 2021, the Applicant retested with passing emissions. The Applicant and CDPHE entered into an Early Settlement Agreement, attached hereto as Exhibit F, on December 19, 2022 wherein the parties agreed that, "Entering into this settlement shall not constitute an admission of violation of the air quality laws, or the alleged facts relating thereto, nor shall any third party infer it to be such an admission in any administrative or judicial proceeding."

As such, contrary to claims made by members of the community, there was no determination by CDPHE that the Applicant was non-compliant with air quality standards and members of the community are misinterpreting the Early Settlement Agreement between CDPHE and the Applicant. The Applicant's failed test was the result of a mechanical error, and not due to any noncompliance with air quality standards.

9. **The Proposed Use will not generate significant odor or negatively impact air quality.**

Asphalt Mixing Plants are recognized by the Environmental Protection Agency and CDPHE as minor sources of air pollution. The Applicant's current facility is permitted to a maximum emission of 19.5 tons of carbon monoxide per year. As demonstrated in the chart below of Larimer County's largest or major source generators of air pollution, the Applicant's current facility does not come close to the emissions generated by Larimer County's largest emitters.

Emitter	2014 Reportable Greenhouse Gas Emissions* (Tons of CO2)	2021 Reportable Greenhouse Gas Emissions (Tons of CO2)
Colorado State University	46,500	43,820
Anheuser Busch	50,493	43,712
Larimer County Landfill	145,812	195,915
Broadcom - Fort Collins	213,562	125,324
Rawhide	2,173,850	1,738,576

[1]

Asphalt plants must adhere to strict air requirements administered and monitored by CDPHE. Stringent limits are set for a range of pollutants based on their known effects to human health and environment. Technology and control systems are available to asphalt mixing facilities to ensure compliance with the State's air quality standards. The Applicant must submit Operation and Maintenance Plans to CDPHE to obtain approval for a permit and ensure that the facility is working in the most efficient manner. Additionally, dust control plans are required to control fugitive dust from material storage and handling areas and from trucks traveling on haul roads.

Asphalt plants are required by CDPHE to install controls or take other measures to reduce harmful air emissions. These measures and controls include counter-flow mixing equipment technology, baghouse systems to control particulate emissions, enclosed or partially enclosed conveyor systems, and top-of-silo emission recovery systems. In addition, best management practices to minimize emissions during hot mix asphalt production have been established by the asphalt industry. These best management practices include guidance on facility operation and maintenance to maximize efficiency and minimize emissions. Natural gas is a common fuel for asphalt plants. Therefore, the emissions from a plant fueled by natural gas are similar to a household furnace.

The Air Pollution Control Division (the "**APCD**"), which monitors air pollution for the State, has an enforcement staff that conducts routine inspections of asphalt plants to ensure that plant operators are properly maintaining the required air pollution equipment, keeping records, and complying with all conditions of the air permit. Most asphalt plants are inspected every 3 to 5 years, while others are inspected annually. The APCD also responds to citizen complaints on dust, odor, or noise problems at HMA plants. When a permit violation or noncompliance issue leads

[1] *See Jacy Marmaduke, Meet Larimer County's 5 Biggest Polluters,* THE COLORADAN, *https://www.coloradoan.com/story/news/2016/07/14/meet-larimer-countys-5-biggest-polluters/86818052/* (July 15, 2016).

to enforcement proceedings, corrective action is required and fines up to $15,000 per day can be levied against plants

Asphalt plants are also required to comply with federal requirements called New Source Performance Standards ("**NSPS**") provided in Colorado Regulation No. 6, Part A, Subpart I, Standards of Performance for Hot Mix Asphalt Facilities. The NSPS limits the allowable particulate emissions from an asphalt plant. To show that the asphalt plant can meet the NSPS air emission limits, the owner/operator must conduct a performance test for particulates, opacity, and sometimes CO emissions. Generally, the test is conducted within six months after the asphalt plant receives an initial approval to construct the plant.

Operators of hot mix asphalt plants are also required to submit an Air Pollution Emission Notice ("**APEN**") to the Air Pollution Control Division if air emissions exceed the reporting thresholds. Once submitted, the APEN is valid for five years. The APEN includes information on the location and ownership of the site and detailed information on the site-specific process equipment and air pollution control measures. The APCD uses the information provided on the APEN to write an air permit for the plant if it is needed.

The Proposed Use emits minimal odor. However, the Applicant conducts regular self-testing to monitor any odor and adheres to the County's standards on odor. The Applicant uses the same testing procedure as the County employs, and three of the Applicant's employees are trained to perform such testing. Pursuant to County regulations, odor nuisance is a complaint process.

10. The Applicant prepared a stormwater and drainage plan that meets the State's requirements.

Stormwater discharge is regulated by the CDPHE Water Quality Control Division and the Applicant must meet State requirements for water quality to operate the asphalt plant. The Applicant is required to obtain a Stormwater Discharge Permit from the Water Quality Control Division and the Colorado Department of Public Health and Environment. In connection with the Stormwater Discharge Permit, the Applicant must prepare a Stormwater Management Plan that must include: identification of potential sources of pollution and selection of best management practices that will be implemented to control the potential pollutants. Additionally, to maintain the Stormwater Drainage Permit, the Applicant must perform routine inspections and prepare an annual report to address compliance with the stormwater management plan.

The application proposes to construct a detention pond in the southwest corner of the parcel to drain off-site. This detention pond will regulate water quality, as well as maintaining flows offsite at no greater than the historic flow rate and quantity, as required by Colorado law.

No wetlands are located on the Property, nor does the Project propose to include a truck wash on site.

As previously mentioned, the site has been designed to capture stormwater flows in the detention pond in the southwest corner of the site. The "Rational Method" was applied to the site to size the pond and outlet structure. The Rational Method is applied by calculating existing stormwater flows on the property using area rainfall data, soil composition, impervious area, and slopes. The site is then analyzed using the proposed impervious areas and slopes. The historic and proposed stormwater flows are then compared, and the pond and outlet structure sized to properly detain and release the stormwater at historic rates.

Stormwater management and developed drainage is restricted to match existing conditions on the site. Additionally, the design must incorporate water quality control measures. The Town drainage criteria requires that the proposed drainage match the existing 10-year (minor) and 100-year (major) storm events. This means that the pond and outlet structure have been designed to detain water from storm events and release it at a rate that matches the existing conditions on the site. This protects downstream facilities from flooding due to the increased impervious area at a newly developed site. Additionally, the outlet structure includes a trash rack and orifice plate that restrict the release of the detained water. This is known as the "water quality capture volume" and is a widely accepted engineering practice. The orifice plate on the outlet structure restricts flows so that any suspended solids have time to settle to the bottom of the pond before they are released to downstream waterways.

The proposed outlet structure also includes a unique design feature that can provide further water quality measures. A slide gate has been added to the proposed outlet pipe that will remain closed during normal operation. During a stormwater event, the slide gate will be opened to allow the pond to drain. In the unlikely event of a spill, the Applicant has the ability to leave the slide gate closed and prevent any stormwater discharge while the spill is mitigated.

The proposed pond outlets to a North Poudre Irrigation Company ("**NPIC**") canal on the west boundary of the proposed site. The Applicant has reviewed the proposed design with NPIC to verify that it is an acceptable design and that the proposed site improvements will not negatively impact the canal.

11. The Applicant prepared a Groundwater Monitoring Plan to install groundwater monitoring wells and monitor water quality.

Water quality is also regulated by CDPHE, which oversees compliance, permitting, reporting, stormwater management. The Clean Water Enforcement Unit of CDPHE is tasked with ensuring compliance with water quality standards.

Although it is extremely unlikely that the Project will pose a risk to groundwater, the Applicant has voluntarily prepared a groundwater monitoring plan (the "**Groundwater Monitoring Plan**"), attached hereto as Exhibit G, which proposes to install two groundwater monitoring wells on the site. Additionally, as part of the Groundwater Monitoring Plan, the Applicant will retain an environmental consultant to assist in identifying the best on-site placement of the monitoring wells, registering the monitoring wells with the State Engineering Office and testing periodic

samples of the groundwater for analysis of water quality. Final design features will be coordinated with NPIC through an administrative process.

12. The Project will remain compliant with State and federal air quality standards.

At the request of this Commission, the Applicant retained a consultant, Antea, to conduct and complete a refined air modeling report dated May 19, 2023 (the "**Report**") to assess emissions for the Project.

The Report modeled the following pollutants: Particulate Matter, Nitrogen Oxide, Sulfur Dioxide, Carbon Monoxide, Acetaldehyde, Hexane, Formaldehyde, Toluene, Quinone, Benzene, Ethylbenzene, Xylene, Total PAH.

The Report demonstrates that the Applicant will meet all State and federal air quality standards at a maximum production level (i.e. worst case scenario). Furthermore, the Applicant voluntarily requested that the study perform air quality modeling at Eyestone Elementary School and Wellington Community Park as residents raised questions regarding the mixing plant's effect on air quality at these locations. The modeling results at these three locations demonstrate that none of the seventeen (17) pollutants modeled reach acute or chronic levels based on risk-based screening levels developed by the EPA, CalEPA, NIOSHA, Or ASTDR.

Additionally, Stephen G. Zemba, PhD, PE[2], Project Director of Sanborn, Head & Associates ("**Sanborn**") prepared a health risk assessment evaluation ("**HRAE**") of potential air quality impacts associated with emissions from the hot-mix asphalt plant, which is attached hereto as Exhibit I. The HRAE reviewed the Report and evaluated the incremental risks of cancer and other non-cancer health effects. Sanborn concluded that (1) emissions from the hot-mix asphalt plant will not present significant risks to human health, and (2) the highest incremental modeled concentrations will be small compared to existing background levels from other sources. Sanborn thus found that any increase in the risk of exposure to cancer-causing chemicals and various other chemicals is far below that which is deemed safe exposure by the Environmental Protection Agency.

13. Asphalt is a non-hazardous material and the Proposed Use may be safely operated.

Comments from the public during the Prior Hearing expressed concern that, according to the Occupational Safety and Health Administration ("**OSHA**"), asphalt causes cancer. This is incorrect; the National Asphalt Pavement Association ("**NAPA**") opines the opposite. While OSHA's website does identify certain potential health impacts associated with 'occupational' exposure to asphaltic material, including, as OSHA indicates, 'skin cancer', this potential effect is most likely associated with sun exposure during outdoor construction work and was only identified in one

[2] Stephen G. Zemba's resume, which describes his qualifications, expertise and experience, is attached hereto as Exhibit I. Stephen G. Zemba's powerpoint presentation, which summarizes the HRAE is also attached hereto as Exhibit I.

of twenty such scientific epidemiologic studies. Additionally, OSHA classifies asphalt as "non-hazardous." One reason members of the pubic could be confused is that the term 'asphalt' is not equivalent in every sense. For example, roofing asphalt has a much different composition and storage/application temperature compared to paving asphalt, and a logically different hazard potential.

The safety of asphalt and asphalt mix plant emissions is supported by the Agency for Toxic Substances and Disease Registry ("**ATSDR**"), which is the federal agency tasked with protecting communities from harmful health effects related to exposure to natural and man-made hazardous substances. Between 1998 and 2004, ATSDR conducted a series of investigations to determine potential health impacts of asphalt emissions on surrounding communities. Seven mix plant locations across the country were examined and ATSDR concluded "in communities surrounding asphalt facilities. . . there do not appear to be any chemicals or compounds at levels that would pose a public health hazard."

Lastly, as NAPA opines, neither USEPA's nor OSHA's hazard classification scheme defines or identifies asphalt or asphalt pavement mixture as 'hazardous'. This is supported by credible peer-reviewed research and governmental studies, including a letter from NAPA and an ATSDR study, that conclude that the asphalt pavement production process does not pose a health hazard to surrounding communities and that asphalt itself is considered non-hazardous. No credible evidence exists in the record to the contrary. The NAPA letter and the ATSDR studies are attached hereto as Exhibit H.

In regard to the pipeline operated by Sinclair Oil Corporation ("**Sinclair**") that runs from Wyoming to Commerce City and crosses under the subject property, Sinclair will have to approve the Applicant's site plan pursuant to the encroachment agreement. The Applicant has been consulting and working with Sinclair to ensure all appropriate safety measures are taken to protect the pipeline both during and after construction. Sinclair will not allow structures to be built over its easement over the Property, but has agreed to allow the Applicant to pave a portion of the area. Sinclair has provided the Applicant initial approval of the Project, and the Applicant will provide the Town with Sinclair's formal approval once it has been executed by the parties.

14. The application complies with the Industrial zoning of the property.

The Property has been zoned Industrial for over 22 years and the Proposed Use is one that the Town has long envisioned, as evidenced by the Property's zoning and that the Proposed Use is a use by right.

15. The application promotes the health, safety and general welfare of the Town.

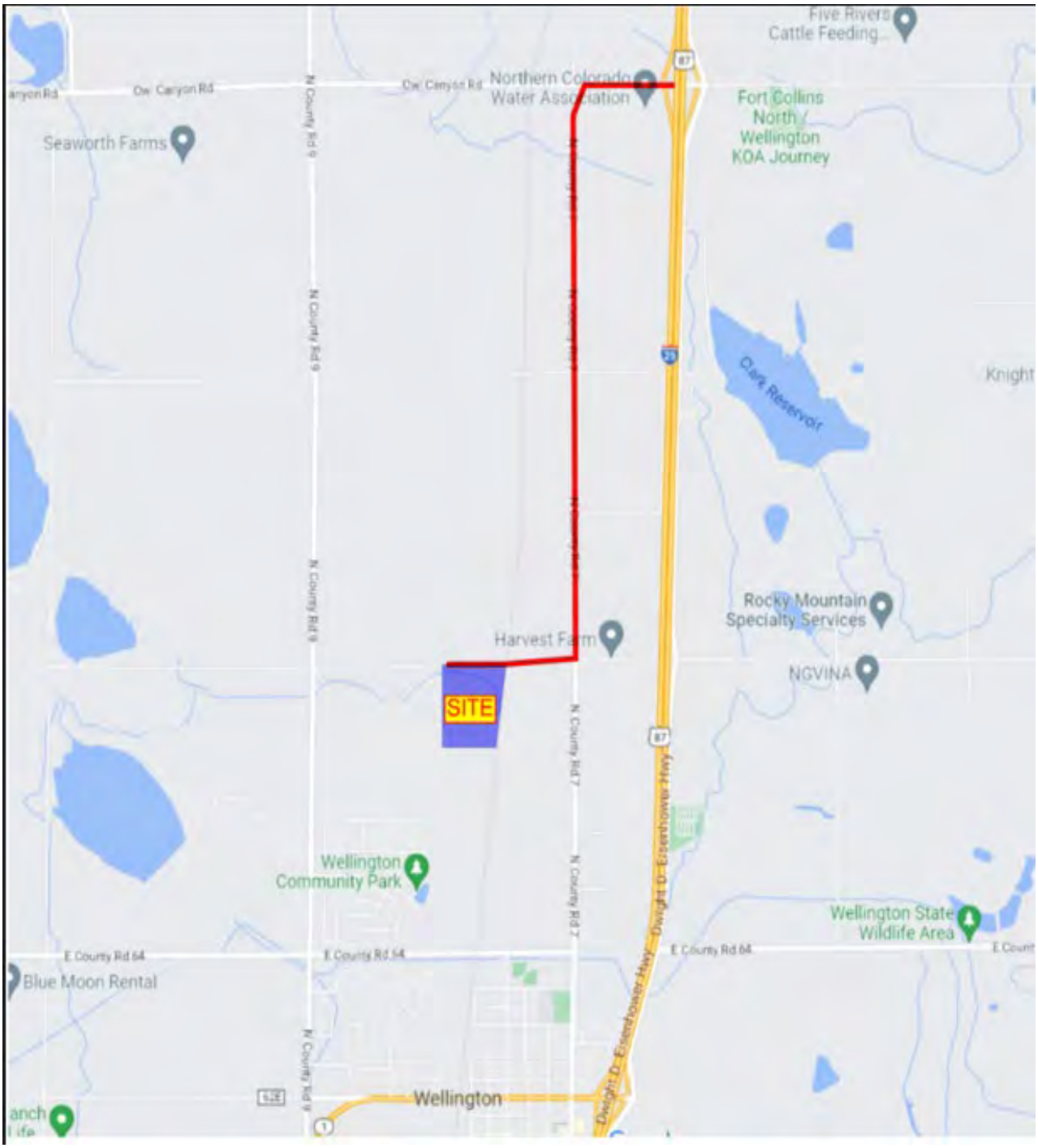
The purpose of the Town's Land Use Code (the "**Code**") includes, among others, the promotion of the health, safety, values and general welfare of the Town and the establishment of a variety of zoning district classifications with varying intensities of uses and standards. *Code, § 1.01.1.* The application complies with Section 1.01.1 of the Code by generating economic and employment

opportunities for the Town and increasing sales and property tax generation. Additionally, as the only land zoned Industrial within the Town, the Project provides for a new and varying use that does not currently exist within the Town. When the Town zoned the Property as Industrial, it determined the Property suitable for industrial operations, which includes a hot asphalt mix plant. In the last two years, the Property has undergone two public reviews and Town approvals – one in an update to the Town's Comprehensive Plan in 2021 and two in the update of the Code in 2022 – in connection with its Industrial zoning designation. Thus, the Town has already decided that the industrial uses permitted by right in the Industrial, including a hot asphalt mix plant, are safe for this Property and comply with Section 1.01.1 of the Code.

Connell has also, at the request of this Commission and as discussed throughout this memorandum, performed numerous studies and investigations to demonstrate that the Project will not have any unanticipated or negative impacts on the community.

Exhibit A

Haul Truck Route



25698270.1

Exhibit B

Wildlife Mitigation Plan

[see attached]

Technical Memo

PO Box 272150,

Fort Collins, CO 80527

(970) 988-3106

To: Larimer County Planning Department

From: Cedar Creek Associates, Inc.

Date: April 19, 2023

Subject: Connell LLC – Preliminary Wildlife Mitigation Plan

Cedar Creek Associates, Inc. (Cedar Creek) was contracted by Connell LLC to conduct an evaluation of wildlife features on a target property located on E County Road 64 in Wellington, Colorado. The project area comprises approximately 30.6 acres within parcel #8928000019. The site is primarily agricultural fields and a laydown yard for storing equipment. The proposed development site was assessed on April 12, 2023, to identify habitats and potential wildlife impacts to development.

Wildlife Habitat

Due to the current land uses on the property, there is limited wildlife habitat located on the property. Figure 1 shows that the majority of the site is actively farmed with a small portion on the northeast side open range. Farmed land over limited wildlife habitat value due to the homogenous landscape and anthropogenic activity. The southwest corner of the parcel is used for equipment storage. Within the vicinity of the target parcel, there are several large trees associated with residential areas to the east and northwest. These trees were surveyed for raptor nests, but no nests were found.

The Colorado Parks and Wildlife (CPW) Threatened and Endangered Species List and High Priority Habitat database (SB181) were queried for potential habitat on and in the vicinity of the project area. Potential habitat for threatened and endangered species is not present on or near the project area. The High Priority Habitat database revealed Aquatic Native Species

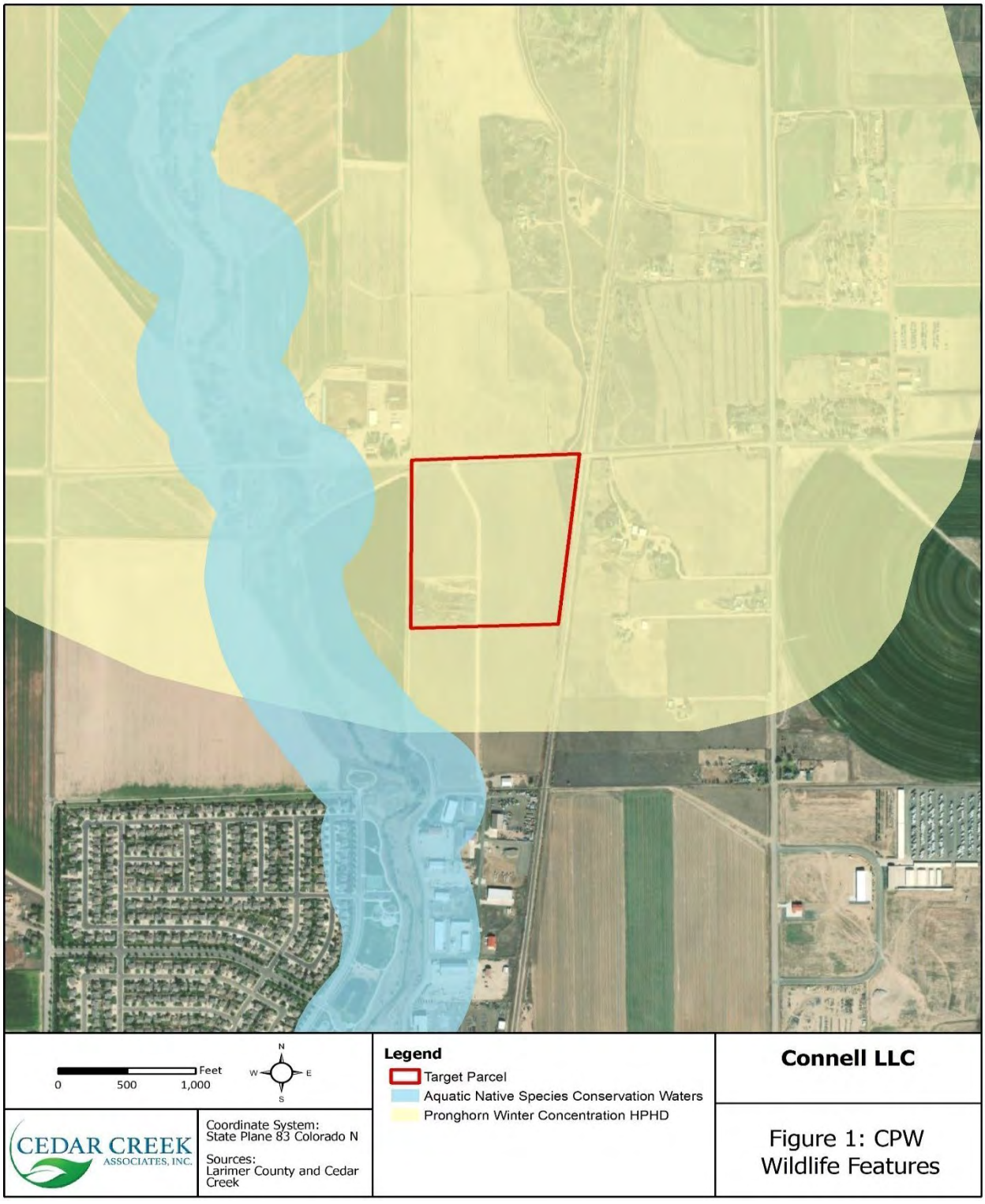
Conservation Waters associated with Boxelder Creek to the west of the project (Figure 1). However, the project area falls outside the buffer for that feature. The High Priority database also indicated Pronghorn Winter Concentration area which overlaps the project area (Figure 1). While there is the potential for valuable pronghorn habitat, the current land uses limit its habitat value.

Mitigation

Based on the limited habitat value on and near the project site, no wildlife mitigation strategies are warranted on this property. There are not anticipated to be any significant impacts to existing wildlife or habitat.

References

Colorado Parks and Wildlife (CPW). 2022. Colorado Parks and Wildlife High Priority Habitat Mapping. Publicly Available Data. December 5, 2022


0
500
1,000
Feet
N
W
E
S
Legend
Target Parcel
Aquatic Native Species Conservation Waters
Pronghorn Winter Concentration HPHD
Connell LLC
CEDAR CREEK ASSOCIATES, INC.
Coordinate System:
State Plane 83 Colorado N
Sources:
Larimer County and Cedar Creek
Figure 1: CPW Wildlife Features

25698270.1

Project Name: Connell	**Location:** Larimer County, Colorado	
Description: Agricultural fields		

Project Name: Connell	**Location:** Larimer County, Colorado	
Description: Agricultural fields		
Project Name: Connell	**Location:** Larimer County, Colorado	

Description: Laydown yard storing equipment		
Project Name: Connell	**Location:** Larimer County, Colorado	
Description: Trees surveyed for raptor nests		

Exhibit C

Predictive Sound Modeling & Noise Contour Map

[see attached]

Community Noise Assessment

Connell Resources Inc
Ft. Collins, Colorado
Assessment Date: April 7, 2023
Report Date: April 28, 2023

Antea®Group

Understanding today.
Improving tomorrow.

PREPARED FOR
Connell Resources Inc
7785 Highland Meadows Pkwy #100,
Windsor, CO

PREPARED BY
Antea Group

April 28, 2023

Project # 2023-01-501742

us.anteagroup.com

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Appendix A - Sound Level Mapping
Appendix B - Sound Level Meter Data
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Noise Assessment

Connell Resources Inc.
Fort Collins, CO

1.0 EXECUTIVE SUMMARY

Antea®Group, at the request of Connell Resources, completed a Community Noise Assessment of its Fort Collins, CO Site. The Community Noise Assessment was performed on April 7, 2023. Local on-site guidance was provided by Brandon Martin of Connell Resources. The Community Noise Assessment included on-site measurement and mapping of noise sources in various locations throughout the facility, along adjacent roadways, and at various perimeter distances from the asphalt plant.

Antea Group collected instantaneous sound levels using a hand-held sound level meter (SLM) to record the equivalent sound level, or sound pressure level in dB(A)(Lavg) in various locations within the property lines of the Connell Resources facility. Each sound level measurement was plotted in the Survey123 app, by ArcGIS. The app was used to create a sound map based on the collected GPS location and sound level data. These measurements were compared to the state of Colorado and Larimer County noise ordinances. Sound level maps are provided in **Appendix A** and raw data including specific GPS coordinates is included in **Appendix B.**

Results of the Community Noise Assessment indicate that, while not applicable to Connell Resources as an Industrial operation, the Connell Resources Inc. asphalt plant in Fort Collins, CO did not exceed the applicable state of Colorado noise ordinance of 80 db(A).

The asphalt plant appears to be well controlled, and, with installation of the planned berm, which exceeds the height of the current berm. Noise levels are expected to be attenuated to below 55db outside of the berm at the new Wellington site if the site has similar sound characteristics as the Fort Collins site.

1.1 RECOMMENDATIONS

- Construct dirt berms along the perimeter of the new site at a sufficient height to adequately contain noise sources within the property lines as a best management practice.
- Monitor background noise at the new Wellington site before and after construction of the new plant to establish a baseline and an adjusted community noise assessment after plant operation to ensure continued compliance with the Larimer County and State of Colorado noise ordinances.
- Establish communications with the Town of Wellington Police Department and county to clarify what constitutes a prima facie determination of unreasonable noise.

2.0 INTRODUCTION

Antea Group conducted on-site sampling at the Connell Resources facility in Fort Collins, Colorado on April 7, 2023. The purpose of the study was to evaluate the environmental noise levels generated by the asphalt plant and review the measurements to the local state and county community noise ordinance. The scope of work involved using a hand-held type 1 sound level meter to measure sound levels around the plant, along the entire perimeter of the property, and at select locations across a county road for noise mapping. The purpose of this assessment was to collect data of current sound level measurements at the Fort Collins site as baseline which may provide an approximation of anticipated sound levels at the future Wellington site. Antea Group was unable

to compare sound level measurements to the Town of Wellington noise ordinance (Sec. 10-10-10. Unreasonable Noise) as the threshold is determined by members of the Police Department via a prima facie determination as to whether a noise is unreasonable.

2.1 DESCRIPTION OF OPERATIONS

The Connell Resources Fort Collins location has several different operations, serving their asphalt, grading and excavation, paving, and utility installation customers. On the day of sampling, Connell Resources was operating its asphalt plant on the north side of the property and conducting non-routine grading and other construction-related dirt work on the southeast side of the property. During asphalt production, the aggregate was collected from nearby stockpiles by an articulated loader and brought to the asphalt plant for processing. Once at the plant, the aggregate is typically processed through a series of steps that involve drying and heating, as well as mixing with the asphalt binder to create asphalt concrete. Prior to production, dump trucks are typically lined up to the west of the plant and waiting to be loaded with the finished product via the silo, which serves as a storage container until the asphalt concrete is ready to be transported to the construction site.

2.2 STANDARDS AND GUIDELINES

Sound Levels were compared to the noise level ordinances established by Larimer County (Ordinance No. 97-03) and the State of Colorado (25-12-103 - Maximum permissible noise levels). Sound level ordinances are provided below in **Table 1.** Connell Resources Inc. is classified as an Industrial facility and is located on land zoned for Industrial Land Use.

Table 1: Regulatory Noise Ordinance Sound Thresholds

Sound Type	Regulatory Body	Noise Ordinance Effective Time	Residential Source db(A)	Commercial Source db(A)	Light Industrial Source db(A)	Industrial Source db(A)	Location of measurement
Continuous Max db(A)	State of Colorado	7 am-7 pm	55	60	70	**80**	25 feet from noise source property line
		7pm-7am	50	55	65	**75**	
	Larimer County*	7 am-7 pm	55	NA	NA	NA	At or within the residential source property line
		7pm-7am	50	NA	NA	NA	
<15 minute Max db(A)	State of Colorado	7 am-7 pm	65	70	80	**90**	25 feet from noise source property line
		7pm-7am	55	60	70	**80**	
	Larimer County*	7 am-7 pm	55	NA	NA	NA	At or within the residential source property line
		7pm-7am	50	NA	NA	NA	
Impulse Max db(A)	State of Colorado	7 am-7 pm	50	55	65	**75**	25 feet from noise source property line
		7pm-7am	45	50	60	**70**	
	Larimer County*	7 am-7 pm	55	NA	NA	NA	At or within the residential source property line
		7pm-7am	50	NA	NA	NA	

* Based on the language of the Larimer County Ordinance, it appears that the ordinance applies solely to noise sources originating from residential or public, non-industrial and non-commercial sources. Section 5 suggests that only sources from residential land use are covered by the ordinance, so the columns for Commercial, Light Industrial, and Industrial Sources are exempt and marked NA (Not Applicable). Please note that Antea Group USA cannot provide legal advice, and any legal interpretations of the noise ordinances should be verified by an attorney licensed to practice in the state of Colorado.

Exemptions:

- General traffic
- Railroad noise
- Agricultural equipment
- Aircraft or other federal preemptions
- Emergency vehicles
- Sponsored athletic events
- Non-residential emitters (Larimer County)

The following appendices supplement the results of the Community Noise Assessment discussed in this report:

- Appendix A – Sound Level Mapping
- Appendix B - Sound Level Mapping Data
- Appendix C – Calibration Certificates

3.0 SUMMARY OF RESULTS

3.1 SOUND LEVEL SURVEY

A Community noise assessment was conducted on April 7, 2023 throughout the Connell Resources Asphalt Plant facility as part of the Community Noise Assessment. A sound level meter Casella CEL-633C Type I Sound Level Meter (SLM) was set to slow response, A-weighted scale, 0 db threshold, and equipped with a windscreen. The instrument was pre-calibrated on site and post-calibrated immediately after the survey and had an instrument drift of fewer than 0.1 decibels.

The SLM was used to measure instantaneous sound levels in various locations within and outside of the property lines of Connell Resources, including inside and outside the dirt berm on the east and west side of the property, along the property line shared with Interstate 25, and across the street from the east property line.

A road was located on the east property line and was a source of traffic from a large retail store to the north of the property. Sound levels were collected on either side of the road without traffic. Sound levels were then collected on the east side of the road with traffic to compare to non-traffic sound level measurements. The purpose of collecting sound levels on the east side of the road was to demonstrate the effect of road noise independent of asphalt plant noise.

Each sound level measurement was plotted in the Survey123 app, by ArcGIS. The app was used to precisely plot sound levels to locations across the site with an accuracy of 3 meters and used to create a sound map based on the collected data. 248 data points were collected across the plant, property line, and across the road to the east of the property.

Results of the sound level survey are presented in sound maps in **Appendix A**, raw data in **Appendix B**, and in a PowerBI dashboard previously provided.

A review of the sound level survey data indicated that Connell Resources Inc. does not exceed noise ordinances for either the State of Colorado or Larimer County.

4.0 RECOMMENDATIONS

Based on the results of the community noise assessment Antea Group recommends the following:

- Construct dirt berms along the perimeter of the new site at a sufficient height to adequately contain noise sources within the property lines as a best management practice.
- Monitor background noise at the new Wellington site before and after construction of the new plant to establish a baseline and an adjusted community noise assessment based on baseline noise surveys to ensure continued compliance with the State of Colorado noise ordinance.
- Establish communications with the Town of Wellington Police Department and to clarify what constitutes a prima facie determination of unreasonable noise.

5.0 DISCUSSION

- West Property Line: Sound levels were collected on either side of the dirt berm on either side of the property. On the west side of the property, Interstate 25 contributed to a majority of excessive noise and data collected inside of the berm separating the site from the interstate were lower than those collected outside of the west berm. Sound level measurements collected directly west of the plant were elevated due to idling dump trucks. The dirt berms provided excellent noise reduction from the interstate noise.
- Southeast Property Line: Sound level measurements were elevated near the construction project occurring on the southeast of the property. Heavy dirt moving equipment were present and are not a part of the Asphalt Plant operations.
- South Property Line: Traffic along the south property line were the primary contributor to elevated sound level measurements.
- East Property Line: A road was located on the east property line and was a source of traffic from a large retail store to the north of the property. Sound levels were collected on either side of the road without traffic. Sound levels were then collected on the east side of the road with traffic to compare to non-traffic sound level measurements. The purpose of collecting sound levels on the east side of the road was to demonstrate the effect of road noise independent of asphalt plant noise.
- East Berm: The east berm had areas that contributed to good sound attenuation. However, the berm on the north side of the east property line was approximately 5-6 feet tall, but as data points were collected moving south, the wall tapered down. At the closest point to the plant, the highest sound level measurement along the east property line was 55.4 db(A). Unfortunately, the berm at this location was approximately 12-18 inches tall, making it a poor attenuator of sound. If the berm were at an adequate height, Connell could achieve better attenuation and reduce noise levels to less than 55 db(A).
- Sound Pressure Theory: Sound waves follow the Inverse Square law which roughly means each doubling of distance from a noise source equates to an approximate reduction of 6 decibels. The loudest measurement at the Connell Asphalt plant was 83db(A). A calculation of noise levels at various distances is provided in **Table 2.**

Table 2: Inverse Square Law Calculations

Sound Pressure Level db(A)	Distance (ft)	Sound Pressure Level db(A)	Distance (ft)	Sound Pressure Level db(A)	Distance (ft)
83 (source)	1	55.0	150	38.6	1000
70.6	25	52.5	200		
64.6	50	46.5	400		
58.6	100	44.6	800		

6.0 REMARKS

The recommendations contained in this report represent Antea Group USA, Inc.'s professional opinions based upon the currently available information and are arrived at in accordance with currently accepted professional standards. This report is based upon a specific scope of work requested by the client. The contract between Antea Group USA, Inc. and its client outlines the scope of work, and only those tasks specifically authorized by that contract or outlined in this report were performed. This report is intended only for the use of Antea Group USA, Inc.'s client and anyone else specifically identified in writing by Antea Group USA, Inc. as a user of this report. Antea Group USA, Inc. will not and cannot be liable for unauthorized reliance by any other third party. Other than as contained in this paragraph, Antea Group USA, Inc. makes no express or implied warranty as to the contents of this report.

Antea Group appreciates the opportunity to perform this industrial hygiene evaluation at the Connell Resources Inc. Fort Collins Pit. Please contact us with any questions, or if you would like further assistance in reviewing the information presented above.

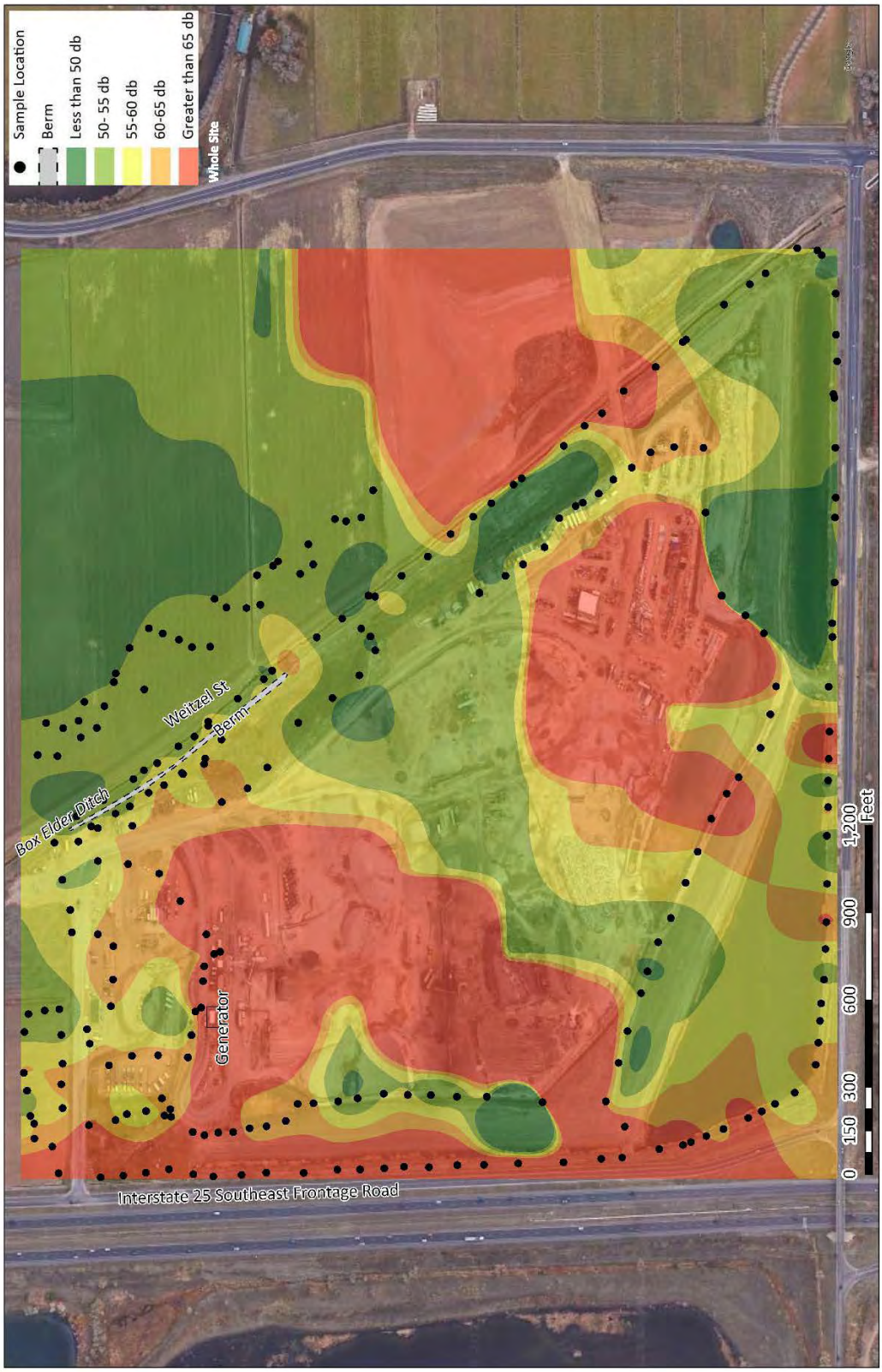
Prepared by:

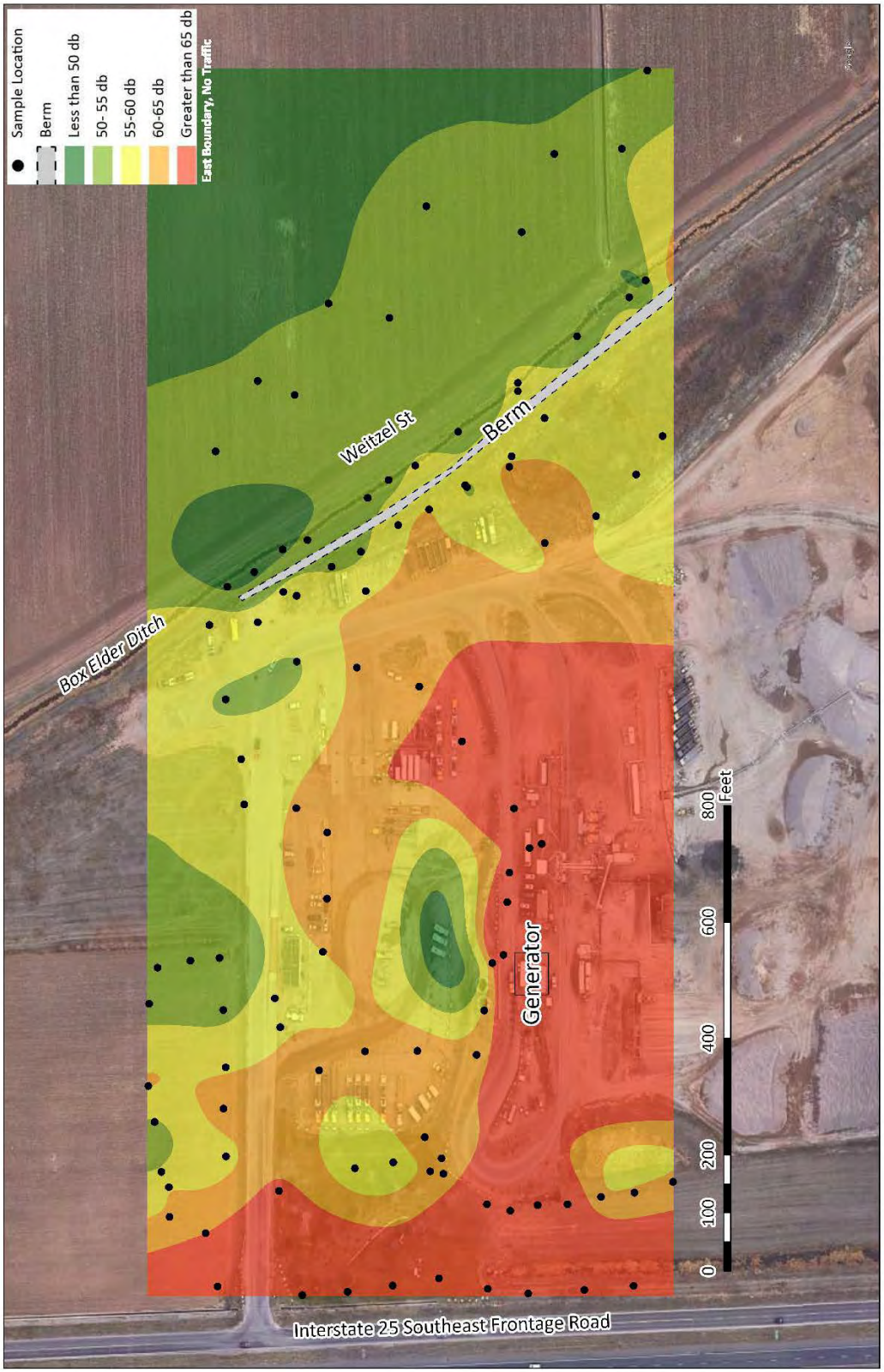
John F. Wright, MPH, CIH, CSP
Senior Professional

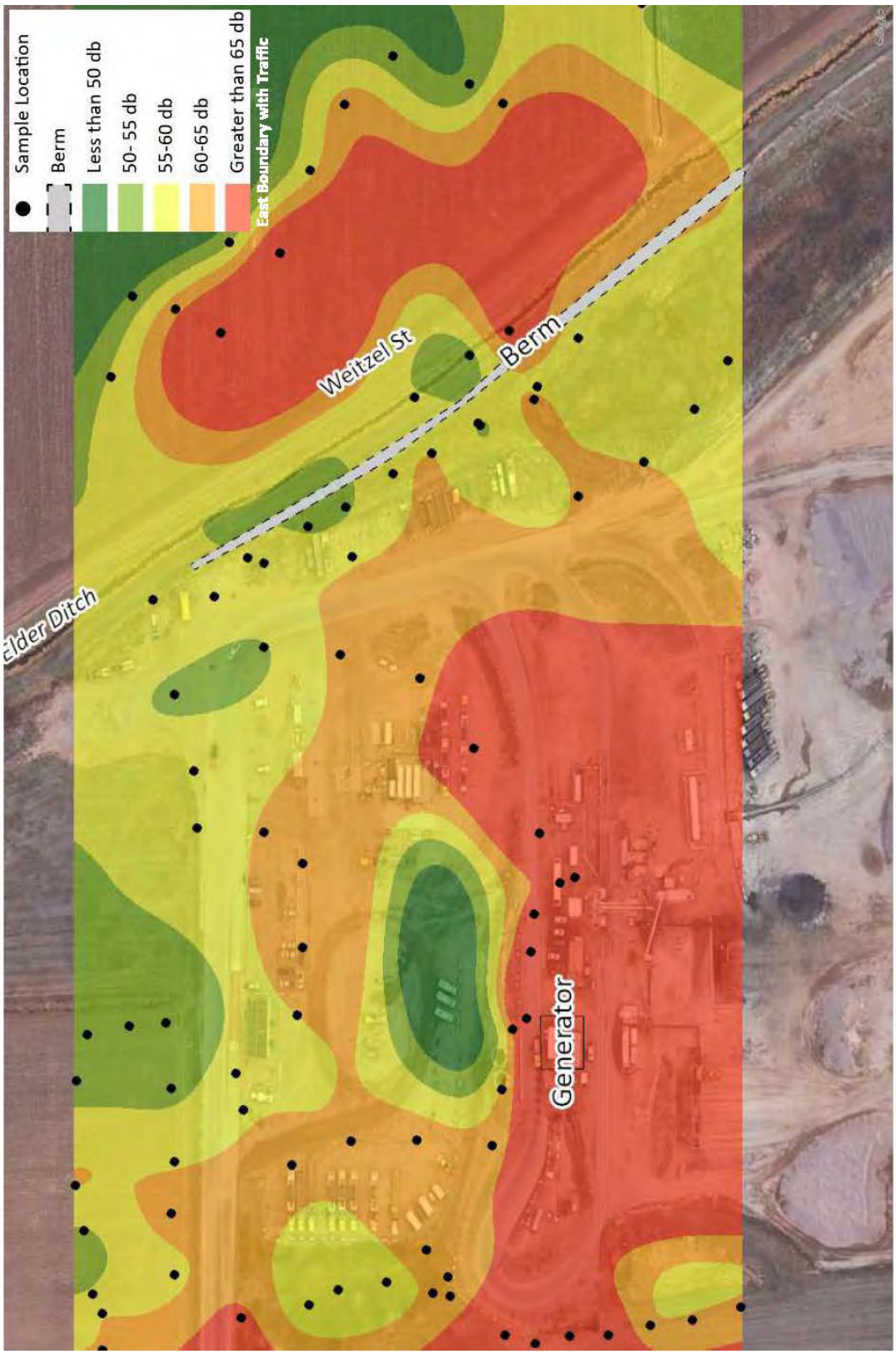
Reviewed by:

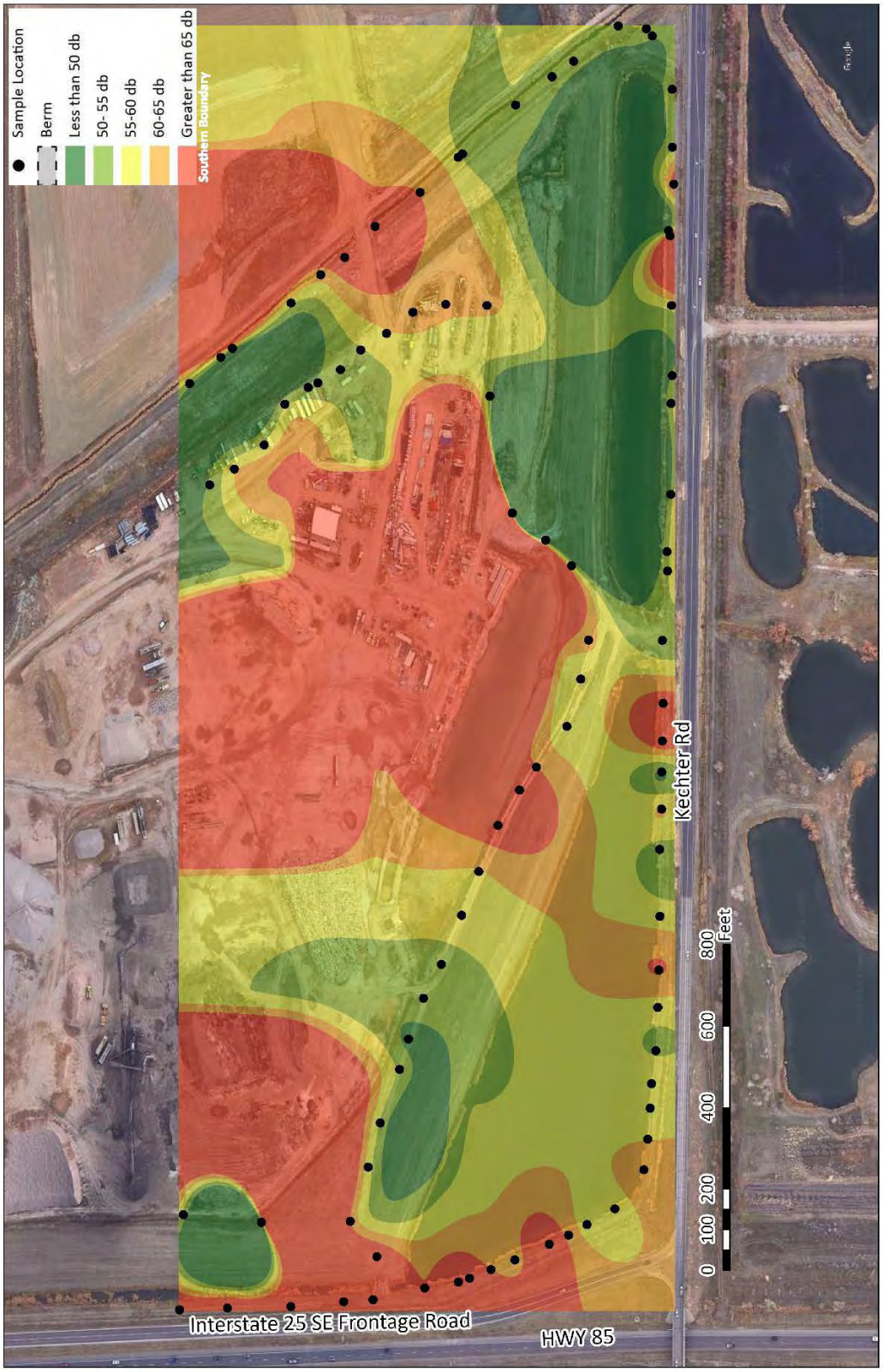
Jennene Lyda, MS, CIH, CSP
Senior Project Manager

Appendix A – Sound Level Mapping


Sample Location
Berm
Less than 50 db
50- 55 db
55-60 db
60-65 db
Greater than 65 db
Whole Site
Weitzel St
Berm
Box Elder Ditch
Generator
Interstate 25 Southeast Frontage Road
0
150
300
600
900
1,200
Feet


Sample Location
Berm
Less than 50 db
50- 55 db
55-60 db
60-65 db
Greater than 65 db
East Boundary, No Traffic
Weitzel St
Berm
Box Elder Ditch
Generator
Interstate 25 Southeast Frontage Road
0
100
200
400
600
800
Feet


Sample Location
Berm
Less than 50 db
50- 55 db
55-60 db
60-65 db
Greater than 65 db
East Boundary with Traffic
Weitzel St
Berm
Elder Ditch
Generator


Sample Location
Berm
Less than 50 db
50- 55 db
55-60 db
60-65 db
Greater than 65 db
Southern Boundary
Kechter Rd
Interstate 25 SE Frontage Road
HWY 85
0
100
200
400
600
800
Feet

Appendix B - Sound Level Meter Data

Object ID	Sample Location (Specific Point)	LAVG Reading	Date and Time	Coordinate x	Coordinate y
1	Generator	83	4/7/2023 4:52:00 PM	-104.9898617	40.51461539
2	Towers	79.7	4/7/2023 4:53:00 PM	-104.9891727	40.51456578
3	West plant near tower	70.2	4/7/2023 4:54:00 PM	-104.989358	40.51449222
4	West plant near tower	69.2	4/7/2023 4:56:00 PM	-104.9894741	40.51458741
5	West plant near tower	74.4	4/7/2023 4:57:00 PM	-104.9896138	40.51459765
6	West plant near tower	65	4/7/2023 4:59:00 PM	-104.9899003	40.51466766
7	West plant near tower	60.6	4/7/2023 4:59:00 PM	-104.9901232	40.51470582
8	West plant near tower	63	4/7/2023 5:01:00 PM	-104.990332	40.51474102
9	West plant near tower	60.8	4/7/2023 5:02:00 PM	-104.990819	40.51490598
10	east side of berm	60.7	4/7/2023 5:02:00 PM	-104.9908797	40.51496047
11	east side of berm	58	4/7/2023 5:03:37 PM	-104.9908376	40.51513336
12	e berm	57.6	4/7/2023 5:04:33 PM	-104.9908654	40.51531467
13	past berm near ent traffic noise	56.8	4/7/2023 5:05:00 PM	-104.9909216	40.51542267
14	entrance corner near freeway	66.3	4/7/2023 5:07:14 PM	-104.9909715	40.51567177
15	entrance corner near freeway	78.5	4/7/2023 5:09:00 PM	-104.9914223	40.51596009
16	entrance corner near freeway	65	4/7/2023 5:10:55 PM	-104.9911717	40.51601708
17	entrance corner near freeway	60.6	4/7/2023 5:11:00 PM	-104.9910947	40.51618724
18	entrance corner near freeway	59.5	4/7/2023 5:12:44 PM	-104.9909544	40.51618906
19	north side other side of north berm	55.7	4/7/2023 5:13:00 PM	-104.9908829	40.51622496
20	north side other side of north berm	54.7	4/7/2023 5:13:38 PM	-104.990647	40.51625656
21	north side other side of north berm	60	4/7/2023 5:14:00 PM	-104.9904785	40.51628705
22	north side other side of north berm	53.3	4/7/2023 5:15:00 PM	-104.9900911	40.51628225
23	north side other side of north berm	53.1	4/7/2023 5:16:00 PM	-104.9899217	40.51624341
24	north side other side of north berm	53.3	4/7/2023 5:16:00 PM	-104.9898887	40.5160883
25	north side other side of north berm	51	4/7/2023 5:17:00 PM	-104.9898759	40.51595156
26	north side other side of north berm	53.7	4/7/2023 5:17:46 PM	-104.990121	40.51593326
27	north side other side of north berm	59.3	4/7/2023 5:18:22 PM	-104.9903908	40.51592163
28	north side other side of north berm	62.2	4/7/2023 5:18:53 PM	-104.9905844	40.51593243
29	north side other side of north berm	58.7	4/7/2023 5:19:00 PM	-104.9908102	40.51592058
30	west of berm freeway	75.5	4/7/2023 5:20:00 PM	-104.9914621	40.51556183
31	west of berm freeway	78.7	4/7/2023 5:21:00 PM	-104.9914473	40.51534881
32	west of berm freeway	73.3	4/7/2023 5:22:09 PM	-104.9914176	40.51513701
33	west of berm freeway	75.4	4/7/2023 5:22:50 PM	-104.9913835	40.51491958
34	west of berm freeway	75.1	4/7/2023 5:23:00 PM	-104.9914335	40.51468958
35	west of berm freeway	74.6	4/7/2023 5:23:00 PM	-104.9914545	40.51449915
36	west of berm freeway	75.5	4/7/2023 5:24:00 PM	-104.9914382	40.5142341
37	west of berm freeway	79.2	4/7/2023 5:25:00 PM	-104.9914189	40.5140028
38	west of berm freeway	81.1	4/7/2023 5:25:00 PM	-104.9914194	40.51364949
39	west of berm freeway	72.2	4/7/2023 5:26:35 PM	-104.991387	40.5133332
40	west of berm freeway	77.6	4/7/2023 5:27:00 PM	-104.9913877	40.51311622
41	west of berm freeway	75.1	4/7/2023 5:27:42 PM	-104.991377	40.51289095
42	west of berm freeway	76.4	4/7/2023 5:28:00 PM	-104.991362	40.51270257
43	west of berm freeway	78.4	4/7/2023 5:28:00 PM	-104.9913659	40.51246798
44	west of berm freeway	77.1	4/7/2023 5:29:08 PM	-104.9913461	40.51220233
45	west of berm freeway	75.6	4/7/2023 5:29:00 PM	-104.9913429	40.51194943
46	west of berm freeway	78.8	4/7/2023 5:30:00 PM	-104.9913318	40.51162774
47	west of berm freeway	76.9	4/7/2023 5:30:00 PM	-104.9913202	40.51120147
48	west of berm freeway	79.6	4/7/2023 5:31:00 PM	-104.9912878	40.51084568
49	west of berm freeway	83.7	4/7/2023 5:32:09 PM	-104.9912756	40.51064863
50	west of berm freeway	72.6	4/7/2023 5:32:44 PM	-104.990984	40.51062306
51	mulch north of position blocking plant	65.3	4/7/2023 5:33:00 PM	-104.9907463	40.51080198
52	east of berm	53.5	4/7/2023 5:35:00 PM	-104.9907532	40.51139759
53	east of berm	52.1	4/7/2023 5:36:29 PM	-104.9907536	40.51139839
54	east of berm	53.4	4/7/2023 5:37:00 PM	-104.990703	40.51192375
55	east of berm	52.8	4/7/2023 5:37:00 PM	-104.9907014	40.5122039
56	east of berm	51.6	4/7/2023 5:38:16 PM	-104.9906883	40.51244955
57	e berm plant visible	56.1	4/7/2023 5:39:05 PM	-104.9906839	40.51266639
58	e berm behind soil pile	54.4	4/7/2023 5:39:00 PM	-104.9906739	40.51289571
59	behind soil pile	50.7		104.9907183	40.51313939
60	behind soil	51.8	4/7/2023 5:41:15 PM	-104.9907463	40.51332435

61	e berm plant visible	61.1	4/7/2023 5:42:00 PM	-104.9907647	40.51355755
62	e berm plant visible	60.7		-104.9907694	40.5137051
63	e berm plant visible	61	4/7/2023 5:43:17 PM	-104.9909294	40.51381822
64	e berm plant visible	60.7	4/7/2023 5:44:11 PM	-104.9909797	40.51399977
65	e berm near dump trucks	61.5	4/7/2023 5:44:00 PM	-104.9909999	40.51415642
66	next to dump trucks running	70.9	4/7/2023 5:45:32 PM	-104.9910345	40.51431323
67	running dump truck	71	4/7/2023 5:46:03 PM	-104.9910386	40.51445371
68	dump trucks	67.8	4/7/2023 5:47:00 PM	-104.9910653	40.51458351
69	dump trucks	72.7	4/7/2023 5:47:23 PM	-104.9910344	40.51469341
70	near dump trucks	61.6	4/7/2023 5:48:00 PM	-104.9908919	40.51489784
71	near trucks	62.7	4/7/2023 5:48:00 PM	-104.9907186	40.51498503
72	Lot between plant and scales	62.7	4/7/2023 5:49:34 PM	-104.9903126	40.51502027
73	Lot between plant and scales	60.5	4/7/2023 5:50:00 PM	-104.9903156	40.51526687
74	next to scale trailer	60.7	4/7/2023 5:51:00 PM	-104.9904048	40.51548322
75	next to scale trailer	59.3	4/7/2023 5:52:00 PM	-104.9902011	40.51566562
76	next to trailer no berm to west	57.7	4/7/2023 5:53:33 PM	-104.9900656	40.51569091
77	in front scale trailer	60	4/7/2023 5:54:19 PM	-104.9898481	40.51546491
78	in front scale trailer	63.2	4/7/2023 5:54:00 PM	-104.9895978	40.51544529
79	in front scale trailer	62.5	4/7/2023 5:55:00 PM	-104.9892848	40.51544411
80	lot next to scales	60.4	4/7/2023 5:56:02 PM	-104.9891713	40.51558953
81	lot next to scales	57.9	4/7/2023 5:56:00 PM	-104.9891532	40.51583507
82	lot next to scales	57.3	4/7/2023 5:57:00 PM	-104.9889408	40.51584929
83	fenceline	54.6	4/7/2023 5:58:00 PM	-104.9886592	40.51592208
84	next to road no berm	58.1	4/7/2023 5:59:00 PM	-104.9883089	40.51599842
85	e of berm no traffic	49.2	4/7/2023 5:59:47 PM	-104.9881294	40.51591434
86	e of berm in fenceline no traffic	48.9	4/7/2023 6:00:36 PM	-104.9880601	40.51578846
87	e of berm no traffic	49.3	4/7/2023 6:01:26 PM	-104.987954	40.51565376
88	e berm no traffic	50.8	4/7/2023 6:01:53 PM	-104.987909	40.51553707
89	e berm no traffic slight wind	52.9	4/7/2023 6:02:55 PM	-104.9877111	40.5152546
90	e berm no traffic	53.2	4/7/2023 6:03:00 PM	-104.9876266	40.51515535
91	e of berm	55.5	4/7/2023 6:04:34 PM	-104.9875589	40.51502992
92	e of berm	53.6	4/7/2023 6:05:27 PM	-104.9874	40.51482831
93	e of berm short traffic	68	4/7/2023 6:07:06 PM	104.9873087	40.51467939
94	e berm no traffic short berm	55.4	4/7/2023 6:08:35 PM	-104.9872092	40.51454719
95	e berm no traffic short berm	55.4	4/7/2023 6:10:00 PM	104.9871689	40.51454725
96	e berm no traffic short berm	53.7	4/7/2023 6:11:00 PM	-104.986951	40.51426942
97	e berm no traffic	53.3	4/7/2023 6:12:59 PM	-104.9867674	40.51402386
98	e berm short no traffic	51.9	4/7/2023 6:13:45 PM	-104.9866877	40.51394702
99	e of berm short no traffic	52.2	4/7/2023 6:15:00 PM	-104.9866871	40.51394614
100	e berm short no traffic	52.6	4/7/2023 6:16:00 PM	-104.9863735	40.51352549
101	e berm no traffic	50.1	4/7/2023 6:17:37 PM	-104.9861975	40.51328541
102	e berm no traffic short	49.7	4/7/2023 6:19:45 PM	-104.9859832	40.51303751
103	w berm	51.1	4/7/2023 6:20:46 PM	-104.9862915	40.51310595
104	w berm	49.9	4/7/2023 6:21:28 PM	104.986365	40.51302149
105	w berm	50	4/7/2023 6:22:00 PM	-104.9864958	40.5129744
106	w berm	50.9	4/7/2023 6:22:43 PM	-104.9867311	40.51312533
107	w berm	50.7	4/7/2023 6:23:00 PM	-104.9869448	40.51337817
108	w berm	53.5	4/7/2023 6:24:00 PM	104.9871773	40.51370128
109	w berm	55.6	4/7/2023 6:25:00 PM	-104.9874197	40.51386682
110	w berm	57.4	4/7/2023 6:26:26 PM	-104.9876007	40.51399059
111	w berm	59.9	4/7/2023 6:27:15 PM	104.9877965	40.51417907
112	w berm near plant	60.2	4/7/2023 6:28:05 PM	-104.9879236	40.51442107
113	w berm	60.9	4/7/2023 6:28:57 PM	-104.987566	40.51458687
114	w berm	55.3	4/7/2023 6:29:45 PM	-104.9876511	40.51479517
115	w berm	56.9	4/7/2023 6:40:20 PM	-104.987336	40.51442271
116	w berm	58.9	4/7/2023 6:40:00 PM	-104.9875152	40.51457666
117	w berm	54.8	4/7/2023 6:41:41 PM	-104.9876605	40.5147872
118	w berm drum visible	59.9	4/7/2023 6:42:21 PM	-104.9877654	40.51496575
119	w berm	58.6	4/7/2023 6:42:00 PM	-104.9878389	40.515111
120	w berm behind trailer	54.4	4/7/2023 6:43:27 PM	104.9879647	40.51528586
121	w berm no trailer	59.2	4/7/2023 6:46:56 PM	-104.9881493	40.51526332

122	w berm	54.2	4/7/2023 6:47:37 PM	-104.988035	40.51542371
123	w berm	58.8	4/7/2023 6:48:31 PM	-104.9881724	40.51558925
124	w berm	56.3	4/7/2023 6:49:00 PM	-104.9881537	40.51565077
125	w berm low	57.2	4/7/2023 6:50:43 PM	-104.9882969	40.51577188
126	in lot	54.8	4/7/2023 6:51:34 PM	-104.988482	40.51558751
127	near gas pumps	61.1	4/7/2023 6:52:22 PM	-104.9885102	40.51530489
128	near fuel tanks	63.5	4/7/2023 6:53:25 PM	-104.9885992	40.51501121
129	near fuel tanks	71.2	4/7/2023 6:54:16 PM	-104.9888573	40.51481042
130	next to plant	80.2	4/7/2023 6:55:32 PM	-104.9893388	40.51443486
131	traffic	55.6	4/7/2023 7:08:00 PM	-104.9874825	40.51615594
132	traffic	51	4/7/2023 7:09:00 PM	-104.9871814	40.51607654
133	traffic	63.3	4/7/2023 7:10:00 PM	-104.9872288	40.51591673
134	traffic	75.7	4/7/2023 7:11:06 PM	-104.9873161	40.51575002
135	traffic	54.6	4/7/2023 7:11:48 PM	-104.9869811	40.51571511
136	traffic	74.3	4/7/2023 7:12:00 PM	-104.9870226	40.51552781
137	traffic	59.9	4/7/2023 7:13:13 PM	-104.9870226	40.51552781
138	traffic	58.6	4/7/2023 7:13:00 PM	-104.9867132	40.51541922
139	traffic	62.1	4/7/2023 7:14:04 PM	-104.9864725	40.51528836
140	traffic	52.1	4/7/2023 7:14:46 PM	-104.9862897	40.5151082
141	traffic	52.2	4/7/2023 7:15:40 PM	-104.9863966	40.51482557
142	traffic	63.3	4/7/2023 7:15:00 PM	-104.9864664	40.51470117
143	traffic	58.4	4/7/2023 7:16:20 PM	-104.9864664	40.51470117
144	traffic	59.2	4/7/2023 7:17:08 PM	-104.9860095	40.51449092
145	traffic	55.3	4/7/2023 7:17:00 PM	-104.9860973	40.51418729
146	traffic	62.4	4/7/2023 7:19:09 PM	-104.9857879	40.514088
147	traffic	51.3	4/7/2023 7:19:57 PM	-104.9856588	40.51389171
148	traffic	66.2	4/7/2023 7:20:30 PM	-104.9857764	40.51368087
149	traffic	68.8	4/7/2023 7:21:11 PM	-104.9854962	40.51360441
150	traffic	60.7	4/7/2023 7:22:05 PM	-104.9852784	40.51325071
151	traffic	60.2	4/7/2023 7:22:48 PM	-104.9849883	40.51299582
152	notraf	51.2	4/7/2023 7:23:06 PM	-104.9849883	40.51299582
153	notraf	50.9	4/7/2023 7:23:00 PM	-104.9852427	40.51310813
154	notraf	51	4/7/2023 7:24:29 PM	-104.9852603	40.51335624
155	notraf	51.7	4/7/2023 7:26:00 PM	-104.9856871	40.5135585
156	notraf	50.3	4/7/2023 7:27:27 PM	-104.9856994	40.51393784
157	notraf	54.1	4/7/2023 7:27:58 PM	-104.9860676	40.51405778
158	notraf	51.1	4/7/2023 7:29:00 PM	-104.9860919	40.51437655
159	notraf	54.8	4/7/2023 7:29:57 PM	-104.9864598	40.51452987
160	notraf	51.6	4/7/2023 7:30:00 PM	-104.9863387	40.51497813
161	notraf	52.8	4/7/2023 7:32:06 PM	-104.9868639	40.51515225
162	notraf	50.1	4/7/2023 7:32:00 PM	-104.9867962	40.51543861
163	notraf	53.7	4/7/2023 7:33:14 PM	-104.9872268	40.515598
164	notraf	51.3	4/7/2023 7:33:46 PM	-104.9871603	40.51577126
165	notraf	52	4/7/2023 7:34:00 PM	-104.9874932	40.51596994
166	e berm notraf	54.2	4/7/2023 7:49:00 PM	-104.9859891	40.51297698
167	eberm	51.1	4/7/2023 7:50:15 PM	-104.9857931	40.51272739
168	e berm notraf	52.4	4/7/2023 7:50:00 PM	-104.9856127	40.51247722
169	e berm notraf	63.2	4/7/2023 7:51:25 PM	-104.985399	40.51226464
170	eberm near const	55.2	4/7/2023 7:52:59 PM	-104.9852359	40.51205178
171	e berm near const	51.6	4/7/2023 7:53:19 PM	-104.985111	40.51188121
172	eberm near const	52.8	4/7/2023 7:53:00 PM	-104.9849351	40.51167132
173	e berm near const	51.2		-104.9848753	40.51159386
174	eberm near const	56.1	4/7/2023 7:54:35 PM	-104.9848754	40.51159382
175	e berm near const	56.8	4/7/2023 7:55:00 PM	-104.9845698	40.51119898
176	e berm near const	62.2	4/7/2023 7:55:33 PM	-104.9843806	40.51100116
177	near mine ent	70.3	4/7/2023 7:56:14 PM	-104.9842637	40.51083708
178	e fence near const	66.5	4/7/2023 7:57:10 PM	-104.9840539	40.510634
179	efence near const	64.9	4/7/2023 7:58:14 PM	-104.9838246	40.51033082
180	e fence	56.1	4/7/2023 7:58:57 PM	-104.9835891	40.51007525
181	e fence	53.9	4/7/2023 7:59:00 PM	-104.9835669	40.51004496
182	e fence	54.4	4/7/2023 8:00:00 PM	-104.9832367	40.5096872

183	e fence	52.5	4/7/2023 8:00:30 PM	-104.9830468	40.50944417
184	e fence	51.9	4/7/2023 8:00:49 PM	-104.9829438	40.50929655
185	near road traf	54.1	4/7/2023 8:01:28 PM	-104.9827055	40.50899792
186	near road	54.7	4/7/2023 8:01:57 PM	-104.9827255	40.50880777
187	near road	50.8	4/7/2023 8:02:00 PM	-104.9827733	40.50876808
188	near road	52.4	4/7/2023 8:02:24 PM	-104.9831322	40.50863469
189	near road	54.5	4/7/2023 8:03:00 PM	-104.9835214	40.5086335
190	traffic	67	4/7/2023 8:03:00 PM	-104.9837712	40.50862298
191	near road	53.2	4/7/2023 8:04:00 PM	-104.9840821	40.50865807
192	traffic	70.2	4/7/2023 8:04:00 PM	-104.9841172	40.50864887
193	traffic	57.3	4/7/2023 8:04:58 PM	-104.9845863	40.50863817
194	near road	50.2	4/7/2023 8:05:29 PM	-104.9850571	40.50863525
195	near road	53.3	4/7/2023 8:05:54 PM	-104.9852449	40.50864235
196	near road	52.3	4/7/2023 8:06:38 PM	-104.9858575	40.50864422
197	near road	53.3	4/7/2023 8:07:03 PM	-104.9862416	40.50866938
198	near road	54.2	4/7/2023 8:07:20 PM	-104.9863714	40.50866622
199	near road	51	4/7/2023 8:07:48 PM	-104.9868393	40.50870101
200	traffic	68.1	4/7/2023 8:08:00 PM	-104.9872617	40.50869422
201	near road	70	4/7/2023 8:08:00 PM	-104.987517	40.50870119
202	near road	49.4	4/7/2023 8:08:50 PM	-104.9877238	40.50870653
203	near road	60.2	4/7/2023 8:09:09 PM	-104.9879739	40.50870661
204	near road	53.2	4/7/2023 8:09:30 PM	-104.9882443	40.50871903
205	near road	57.5	4/7/2023 8:09:59 PM	-104.9886961	40.50871694
206	near road	65.5	4/7/2023 8:10:00 PM	-104.9890574	40.50872456
207	near road	57.5	4/7/2023 8:10:47 PM	-104.9893088	40.50873178
208	near road	54.4	4/7/2023 8:11:00 PM	-104.9895993	40.50874361
209	near road	58.6	4/7/2023 8:11:22 PM	-104.9898225	40.50877317
210	near road	55.4	4/7/2023 8:11:00 PM	-104.9899866	40.50878194
211	near road	59.8	4/7/2023 8:11:49 PM	-104.9901944	40.5087987
212	near road	63.9	4/7/2023 8:12:03 PM	-104.9903998	40.50882484
213	near road	57.5	4/7/2023 8:12:27 PM	-104.9906639	40.5090198
214	near road	57.9	4/7/2023 8:12:00 PM	-104.9907688	40.50920727
215	near road	63.6	4/7/2023 8:13:00 PM	-104.9908394	40.50933166
216	near road	69.8	4/7/2023 8:13:12 PM	-104.9909011	40.50946146
217	near road	63.5	4/7/2023 8:13:33 PM	-104.9910069	40.50969336
218	near road	65.1	4/7/2023 8:13:48 PM	-104.9910718	40.5098547
219	near road	69.8	4/7/2023 8:13:59 PM	-104.9911302	40.50999862
220	near road	72.5	4/7/2023 8:14:11 PM	-104.9911563	40.5100732
221	near road	65.7	4/7/2023 8:14:37 PM	-104.9911954	40.51029931
222	near road	57.7	4/7/2023 8:16:00 PM	-104.9903827	40.51068172
223	near road	54.3	4/7/2023 8:16:49 PM	-104.9900851	40.51059797
224	near road	53.8	4/7/2023 8:17:20 PM	-104.9897251	40.51046858
225	near road	48.7	4/7/2023 8:17:00 PM	-104.9895213	40.51040876
226	near road	53.3	4/7/2023 8:18:00 PM	-104.9892458	40.51030915
227	near road	53.3	4/7/2023 8:18:34 PM	-104.9890193	40.51018877
228	near road	57.8	4/7/2023 8:18:58 PM	-104.9886873	40.51005198
229	near road	59.7		-104.9883941	40.50993688
230	near road	69.2	4/7/2023 8:19:58 PM	-104.9880835	40.50980737
231	near road	72.1	4/7/2023 8:20:15 PM	-104.9878463	40.50966296
232	near road	65.1	4/7/2023 8:20:00 PM	-104.9876918	40.50954964
233	near road	57.3	4/7/2023 8:20:53 PM	-104.9874169	40.50934383
234	near road	56.5	4/7/2023 8:21:00 PM	-104.9870996	40.50924989
235	near road	61.5	4/7/2023 8:21:29 PM	-104.9868371	40.50919673
236	near road	57.7	4/7/2023 8:22:15 PM	-104.9863362	40.50931272
237	near road	46.1	4/7/2023 8:22:55 PM	-104.9861662	40.50948613
238	near road	51.1	4/7/2023 8:23:00 PM	-104.985983	40.50970917
239	near road	59.5		-104.9859836	40.50971128
240	near road	52.3	4/7/2023 8:24:32 PM	-104.9851966	40.50986211
241	const	60.7	4/7/2023 8:25:19 PM	-104.9845863	40.5098809
242	South Property	61.1	4/7/2023 8:25:00 PM	-104.9845794	40.51015826
243	const	62.7	4/7/2023 8:26:03 PM	-104.9846314	40.51037918

244 South Property	59.5	4/7/2023 8:26:00 PM	-104.9847747	40.51055611
245 South Property	54.6	4/7/2023 8:26:00 PM	-104.9848867	40.51072988
246 South Property	53.6	4/7/2023 8:27:01 PM	-104.985018	40.51086734
247 South Property	51	4/7/2023 8:27:19 PM	-104.9851064	40.51101849
248 South Property	51.1	4/7/2023 8:27:43 PM	-104.9851373	40.51108481
249 South Property	53.8	4/7/2023 8:28:00 PM	-104.9852506	40.51124061
250 South Property	56.2	4/7/2023 8:28:37 PM	-104.9855253	40.51137921
251 semi truck	59.1	4/7/2023 8:29:02 PM	-104.985687	40.51158107
252 South Property	50.6	4/7/2023 8:29:21 PM	-104.9857935	40.51174714
253 South Property	51.1	4/7/2023 8:29:49 PM	-104.985951	40.51199383

Appendix C – Calibration Certificates

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CASELLA

Certificate of Conformity and Calibration FA05191

Instrument Type:-	CEL-633C		
Serial Number	4210644		
Firmware revision	V006-05		
Microphone Type:-	CEL-252	**Preamplifier Type:-**	CEL-495
Serial Number	90996	Serial Number	005042
Instrument Class/Type:-	2		

Applicable standards:-

IEC 61672: 2002 / EN 60651 (Electroacoustics - Sound Level Meters)
IEC 60651 1979 (Sound Level Meters), ANSI S1.4: 1983 (Specifications For Sound Level Meters)

Note:- *The test sequences performed in this report are in accordance with the current Sound level meter Standard - IEC61672. The combination of tests performed are considered to confirm the products electro-acoustic performance to all applicable standards including superceeded Sound Level Meter Standards - IEC60651 and IEC60804.*

Test Conditions:-	22 °C	Test Engineer:-	Nicola Cartwright
	32 %RH	Date of Issue:-	July 4, 2022
	1014 mBar		

Declaration of conformity:-

This test certificate confirms that the instrument specified above has been successfully tested to comply with the manufacturer's published specifications. Tests are performed using equipment traceable to national standards in accordance with Casella's ISO 9001:2015 quality procedures. This product is certified as being compliant to the requirements of the CE Directive.

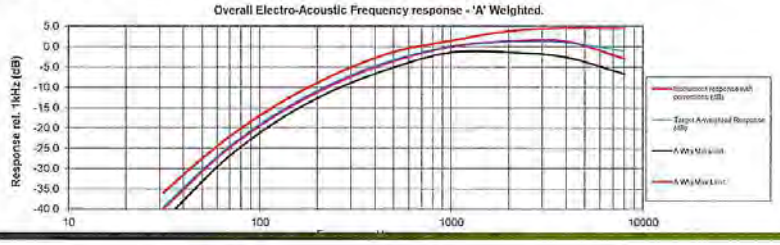
Test Summary:-

Self Generated Noise Test	All Tests Pass
Electrical Signal Test Of Frequency Weightings	All Tests Pass
Frequency & Time Weightings At 1 kHz	All Tests Pass
Level Linearity On The Reference Level Range	All Tests Pass
Toneburst Response Test	All Tests Pass
C-peak Sound Levels	All Tests Pass
Overload Indication	All Tests Pass
Acoustic Tests	All Tests Pass

Combined Electro-Acoustic Frequency Response - *A Weighted*

Combined Electro-Acoustic Frequency Response - A Weighted (IEC 61672-3:2006)

The following A-Weighted frequency response graph shows this instruments overall frequency response based upon the application of multi-frequency pressure field calibrations. The microphones Pressure to Free field correction coefficients are applied to pressure response. Reference level taken at 1kHz.



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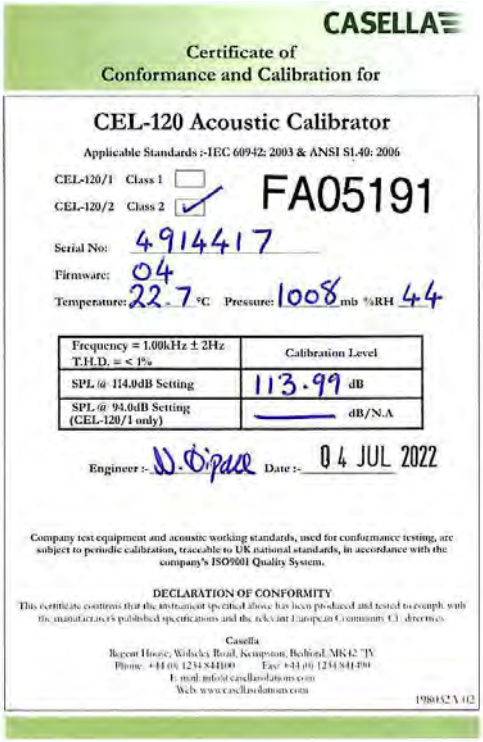

CASELLA

Certificate of
Conformance and Calibration for

CEL-120 Acoustic Calibrator

Applicable Standards :-IEC 60942: 2003 & ANSI S1.40: 2006

CEL-120/1 Class 1 ☐
CEL-120/2 Class 2 ☑ FA05191

Serial No: 4914417
Firmware: 04
Temperature: 22.7 °C Pressure: 1008 mb %RH 44

Frequency = 1.00kHz ± 2Hz T.H.D. = < 1%	Calibration Level
SPL @ 114.0dB Setting	113.99 dB
SPL @ 94.0dB Setting (CEL-120/1 only)	——— dB/N.A

Engineer :- D. Dipple Date :- 04 JUL 2022

Company test equipment and acoustic working standards, used for conformance testing, are subject to periodic calibration, traceable to UK national standards, in accordance with the company's ISO9001 Quality System.

DECLARATION OF CONFORMITY
This certificate confirms that the instrument specified above has been produced and tested to comply with the manufacturer's published specifications and the relevant European Community CE directives.

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Web: www.casellaofdatum.com

1980S2A/02

www.casellasolutions.com

CASELLA

Certificate of Conformity and Calibration FA05191

Instrument Type:-	CEL-633C		
Serial Number	4210644		
Firmware revision	V006-05		
Microphone Type:-	CEL-252	**Preamplifier Type:-**	CEL-495
Serial Number	90996	Serial Number	005042
Instrument Class/Type:-	2		

Applicable standards:-

IEC 61672: 2002 / EN 60651 (Electroacoustics - Sound Level Meters)
IEC 60651 1979 (Sound Level Meters), ANSI S1.4: 1983 (Specifications For Sound Level Meters)

Note:- *The test sequences performed in this report are in accordance with the current Sound level meter Standard - IEC61672. The combination of tests performed are considered to confirm the products electro-acoustic performance to all applicable standards including superceeded Sound Level Meter Standards - IEC60651 and IEC60804.*

Test Conditions:-	22 °C 32 %RH 1014 mBar	Test Engineer:- Date of Issue:-	Nicola Cartwright July 4, 2022

Declaration of conformity:-

This test certificate confirms that the instrument specified above has been successfully tested to comply with the manufacturer's published specifications. Tests are performed using equipment traceable to national standards in accordance with Casella's ISO 9001:2015 quality procedures. This product is certified as being compliant to the requirements of the CE Directive.

Test Summary:-

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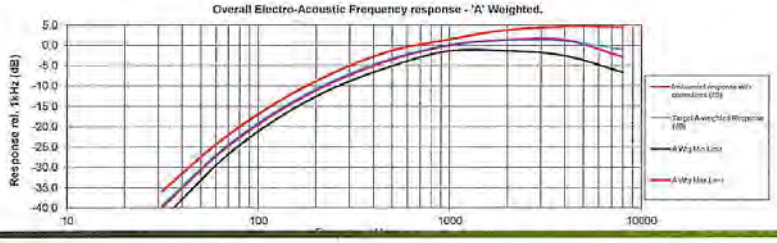
Combined Electro-Acoustic Frequency Response - *A Weighted*

Combined Electro-Acoustic Frequency Response - A Weighted (IEC 61672-3:2006)

The following A-Weighted frequency response graph shows this instruments overall frequency response based upon the application of multi-frequency pressure field calibrations. The microphones Pressure to Free field correction coefficients are applied to pressure response. Reference level taken at 1kHz.

Overall Electro-Acoustic Frequency response - 'A' Weighted.



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Tested to CEL-63X test sheet TP444 revision 01-00

Community Noise Assessment

Connell Resources Inc
Wellington, Colorado
Assessment Date: May 12, 2023
Report Date: May 19, 2023

Antea®Group

Understanding today.
Improving tomorrow.

PREPARED FOR
Connell Resources, Inc.
7785 Highland Meadows Pkwy #100,
Windsor, CO

PREPARED BY
Antea Group

May 19, 2023

Project # 2023-01-501742

us.anteagroup.com

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Noise Assessment

Connell Resources, Inc.
Wellington, CO

1.0 EXECUTIVE SUMMARY

Antea®Group, at the request of Connell, completed a Baseline Community Noise Assessment of its Wellington, CO Site. The Community Noise Assessment was performed on May 12, 2023. Local on-site guidance was provided by Brandon Martin of Connell Resources. The Community Noise Assessment included on-site measurement and mapping of sound levels at various locations throughout the property, along adjacent roadways, and around the entire perimeter of the property.

Antea Group collected instantaneous sound levels using a hand-held sound level meter (SLM) to record the average sound level (L_{avg}), or sound pressure level in decibels on the A-weighted scale (dB(A))(L_{avg}) in various locations within the property lines of Connell Resources. Each sound level measurement was plotted in the Survey123 app, by ArcGIS. The app was used to create a sound map based on the plotted GPS location and collected sound level data. These measurements were compared to the state of Colorado and Larimer County noise ordinances. Sound level maps are provided in **Appendix A** and raw data including specific GPS coordinates is included in **Appendix B.**

Results of the Community Noise Assessment indicate that, while not applicable to Connell Resources as an Industrial operation, the Connell Resources Inc. property in Wellington, CO did not exceed the applicable state of Colorado noise ordinance of 80 db(A). However, current sound levels at the unoccupied, inactive, unstaffed, Connell property exceed the Larimer county noise ordinance. These results indicate that current weather, geographical conditions, and neighboring properties currently generate sound that exceed Larimer county noise ordinances without further operational noise contributions from the Wellington site.

The Wellington site is not currently active and has no operations, activities, active equipment, or personnel on site. On the date of the assessment sound levels were collected to assess a baseline background sound profile for the site. Baseline levels across the entire site ranged from 57.4 db(A) to 71.1 db(A).

The existing sound profile of the Wellington site exceeds the Larimer county noise ordinance of 55db(A) but does not exceed the State of Colorado noise ordinance of 80 db(A). Given the site is already above the Larimer county ordinance, the proposed Connell Resources site in Wellington, CO won't be the cause of the current exceedance of the the Larimer county noise ordinance. Furthermore, given the sound profile previously collected from the Fort Collins site, and the planned erection of dirt berms for noise attenuation, Connell Resources have properly planned to provide effective noise controls at their proposed Wellington location.

2.0 INTRODUCTION

Antea Group conducted on-site sampling at the Connell Resources property located in Wellington, Colorado on May 12, 2023. The purpose of the study was to evaluate the baseline environmental noise levels prior to construction or industrial activities at the proposed Wellington site. These measurements would be compared to local, state, and county community noise ordinances. The scope of work involved using a hand-held type 2 sound level meter to measure sound levels along the entire perimeter of the property, along the north road, and at

various points at the interior of the unoccupied, inactive property for noise mapping. The purpose of this assessment was to collect data of current sound level measurements at the Wellington site to establish a baseline noise profile prior to commencing industrial operations at the proposed Wellington site. Antea Group was unable to compare sound level measurements to the Town of Wellington noise ordinance (Sec. 10-10-10. Unreasonable Noise) as the threshold is determined by members of the Police Department via a prima facie determination for whether a noise is unreasonable.

2.1 DESCRIPTION OF OPERATIONS

The Connell Resources Wellington location has no current operations. The site has various pieces of equipment attachments on site that appear to have been out of use for an extended period at the south end of the property. The majority of the property appears to have been last used for agricultural use prior to acquisition by Connell Resources. On the day of sampling, there were no activities, equipment, or personnel on site and no source of noise generation at any place on or within the Wellington site property lines.

2.2 STANDARDS AND GUIDELINES

Sound Levels were compared to the noise level ordinances established by Larimer County (Ordinance No. 97-03) and the State of Colorado (25-12-103 - Maximum permissible noise levels). Sound level ordinances are provided below in **Table 1.** Connell Resources Inc. is classified as an Industrial facility and is located on land zoned for Industrial Land Use.

Exemptions:

- General traffic
- Railroad noise
- Agricultural equipment
- Aircraft or other federal preemptions
- Emergency vehicles
- Sponsored athletic events
- Non-residential emitters (Larimer County)

The following appendices supplement the results of the Community Noise Assessment discussed in this report:

- Appendix A – Sound Level Mapping
- Appendix B - Sound Level Mapping Data
- Appendix C – Calibration Certificates

Table 1: Regulatory Noise Ordinance Sound Thresholds

Sound Type	Regulatory Body	Noise Ordinance Effective Time	Residential Source db(A)	Commercial Source db(A)	Light Industrial Source db(A)	Industrial Source db(A)	Location of measurement
Continuous Max db(A)	State of Colorado	7 am-7 pm	55	60	70	80	25 feet from noise source property line
		7pm-7am	50	55	65	75	
	Larimer County*	7 am-7 pm	55	NA	NA	NA	At or within the residential source property line
		7pm-7am	50	NA	NA	NA	
<15 minute Max db(A)	State of Colorado	7 am-7 pm	65	70	80	90	25 feet from noise source property line
		7pm-7am	55	60	70	80	
	Larimer County*	7 am-7 pm	55	NA	NA	NA	At or within the residential source property line
		7pm-7am	50	NA	NA	NA	
		7 am-7 pm	50	55	65	75	

Impulse Max db(A)	State of Colorado	7pm-7am	45	50	60	70	25 feet from noise source property line
	Larimer County*	7 am-7 pm	55	NA	NA	NA	At or within the residential source property line
		7pm-7am	50	NA	NA	NA	

*Based on the language of the Larimer County Ordinance, it appears that the ordinance applies solely to noise sources originating from residential or public, non-industrial and non-commercial sources. Section 5 suggests that only sources from residential land use are covered by the ordinance, so the columns for Commercial, Light Industrial, and Industrial Sources are exempt and marked NA (Not Applicable). Please note that Antea Group USA cannot provide legal advice, and any legal interpretations of the noise ordinances should be verified by an attorney licensed to practice in the state of Colorado.

3.0 SUMMARY OF RESULTS

3.1 SOUND LEVEL SURVEY

A Community noise assessment was conducted on May 12, 2023, at the Connell Resources Wellington property as part of the baseline Community Noise Assessment. A TSI Soundpro DL-2 Type II Sound Level Meter (SLM) was set to slow-response, A-weighted scale, 10 db threshold, and equipped with a windscreen. The instrument was pre-calibrated on site and post-calibrated immediately after the survey and had an instrument drift of fewer than 0.1 decibels. The Larimer County and Colorado State ordinances limit valid measurements, collected with a windscreen, to less than 25 miles per hour (mph). Wind speed on the day of the assessment reached a max of 15mph during time on-site were within acceptable valid data collection parameters as defined by the aforementioned ordinances.

The SLM was used to measure instantaneous sound levels (L_{Avg}) in various locations within and outside of the property lines of the Connell Resources Wellington property, and across the street from the north property line. Antea Group did not have permission from property owners on the south, west, or north side of the property lines nor the railroad utility to the east and thus only collected measurements within public and Connell Resources owned property.

A dirt road was located on the north property line and was observed to be used primarily for agricultural-related traffic. During the assessment, approximately 10 cars utilized the road over a period of two hours and were not a substantial source of noise during the assessment. Sound levels were collected on either side of the road with and without traffic.

Each sound level measurement location was plotted in the Survey123 app, by ArcGIS. The app was used to plot sound levels with their correlated locations across the site with an accuracy of 3 meters and used to create a sound map based on the collected data. 202 data points were collected across the property, along the entire property line, and across the road to the north of the property.

Results of the sound level survey are presented in sound maps in **Appendix A** and raw data in **Appendix B.**

A review of the sound level survey data indicates that the baseline noise conditions on the property exceed the noise ordinance for Larimer County of 55db(A) and do not exceed the State of Colorado noise ordinance of 80db(A).

4.0 RECOMMENDATIONS

Based on the results of the community noise assessment Antea Group recommends the following:

- Construct dirt berms along the perimeter of the new site at a sufficient height to adequately contain noise sources within the property lines as a best management practice.
- Monitor background noise at the new Wellington site after construction of the new plant to establish an adjusted community noise assessment during typical plant operation to ensure continued compliance with the State of Colorado noise ordinance of 80db(A).
- Establish communications with the Town of Wellington Police Department and county to clarify what constitutes a prima facie determination of unreasonable noise.

5.0 DISCUSSION

- There was no activity on the farm to the north or west and no measurements were collected during any period of railroad operation. The industrial site to the south did not appear to be operating any equipment or conducting any substantial noise generating activities. The source of noise on site appears to be a feature of the geographical and natural sound profile of the area and not attributable to commercial, residential, or industrial sources in the surrounding area.
- Sound Pressure Theory: Sound waves follow the Inverse Square law which roughly means each doubling of physical distance from a noise source equates to an approximate reduction of 6 decibels. The loudest measurement at the Connell Asphalt plant was 83db(A). A calculation of noise levels at various distances is provided in **Table 2.**

Table 2: Inverse Square Law Calculations

Sound Pressure Level db(A)	Distance (ft)	Sound Pressure Level db(A)	Distance (ft)	Sound Pressure Level db(A)	Distance (ft)
83 (source)	1	55.0	150	38.6	1000
70.6	25	52.5	200		
64.6	50	46.5	400		
58.6	100	44.6	800		

6.0 REMARKS

The recommendations contained in this report represent Antea Group USA, Inc.'s professional opinions based upon the currently available information and are arrived at in accordance with currently accepted professional standards. This report is based upon a specific scope of work requested by the client. The contract between Antea Group USA, Inc. and its client outlines the scope of work, and only those tasks specifically authorized by that contract or outlined in this report were performed. This report is intended only for the use of Antea Group USA, Inc.'s client and anyone else specifically identified in writing by Antea Group USA, Inc. as a user of this report. Antea Group USA, Inc. will not and cannot be liable for unauthorized reliance by any other third party. Other than as contained in this paragraph, Antea Group USA, Inc. makes no express or implied warranty as to the contents of this report.

Antea Group appreciates the opportunity to perform this industrial hygiene evaluation at the Connell Resources Inc. Fort Collins Pit. Please contact us with any questions, or if you would like further assistance in reviewing the information presented above.

Prepared by:

John F. Wright, MPH, CIH, CSP
Senior Professional

Reviewed by:

Jennene Lyda, MS, CIH, CSP
Senior Project Manager

Appendix A – Sound Level Mapping


Legend
Less than 45 db
45 - 50 db
50 - 55 db
Greater than 55 db
Minimum: 57.4 db
Maximum: 71.1 db
0 75 150 300 450 600
Feet
FIGURE 1
SOUND LEVEL MAP
CONNELL - FORT COLLINS
WELLINGTON, CO
PROJECT NO.
XXXXXXX
PREPARED BY
JS
REF SCALE
1:1,800
DATE
5/18/2023
REVIEWED BY
XXX
MAP SCALE
1 INCH = 300 FEET
anteagroup
Z:\GIS Projects\Connell\!Project Template\Fort Collins, CO\Project Number\Layout\Connell Fort Collins Sound Map.mxd

Appendix B - Sound Level Meter Data

ObjectID	Sample Location (Specific Point)	LAVG Reading	Date and Time	x	y
1	north along county 66 connell side	61.6	5/12/2023 20:22	-105.008	40.72577
2	north along county 66 connell side	60.9	5/5/2023 20:23	-105.008	40.72577
3	north along county 66 connell side	61.3	5/12/2023 20:23	-105.008	40.72576
4	north along county 66 connell side	61.1	5/12/2023 20:23	-105.008	40.72577
5	north along county 66 connell side	61	5/12/2023 20:23	-105.008	40.72576
6	north along county 66 connell side	66.4	5/12/2023 20:24	-105.008	40.72573
7	north along county 66 connell side	65.6	5/12/2023 20:24	-105.008	40.72577
8	north along county 66 connell side	65.4	5/12/2023 20:25	-105.008	40.72578
9	north along county 66 connell side	65.2	5/12/2023 20:25	-105.008	40.72578
10	north along county 66 connell side	65	5/12/2023 20:26	-105.007	40.72579
11	north along county 66 connell side	64.9	5/12/2023 20:26	-105.007	40.72577
12	north along county 66 connell side	64.8	5/12/2023 20:26	-105.007	40.72577
13	north along county 66 connell side	64.6	5/12/2023 20:27	-105.007	40.72579
14	north along county 66 connell side	64.6	5/12/2023 20:27	-105.007	40.72578
15	north along county 66 connell side	64.5	5/12/2023 20:27	-105.007	40.72579
16	north along county 66 connell side	64.3	5/12/2023 20:28	-105.007	40.7258
17	north along county 66 connell side	64.2	5/12/2023 20:28	-105.007	40.72581
18	north along county 66 connell side	63.9	5/12/2023 20:29	-105.006	40.72581
19	north along county 66 connell side	63.8	5/12/2023 20:29	-105.006	40.72581
20	north along county 66 connell side	63.8	5/12/2023 20:30	-105.006	40.72581
21	north along county 66 connell side	63.8	5/12/2023 20:30	-105.006	40.72582
22	north along county 66 connell side	63.7	5/12/2023 20:30	-105.006	40.72581
23	north along county 66 connell side	63.6	5/12/2023 20:31	-105.006	40.72582
24	north along county 66 connell side	63.6	5/12/2023 20:31	-105.006	40.72582
25	north along county 66 connell side	63.5	5/12/2023 20:31	-105.005	40.7258
26	north along county 66 connell side	63.4	5/12/2023 20:31	-105.005	40.7258
27	north along county 66 connell side	63.3	5/12/2023 20:32	-105.005	40.72574
28	north along county 66 connell side	63.3	5/12/2023 20:32	-105.005	40.72562
29	north along county 66 connell side	63.2	5/12/2023 20:32	-105.005	40.72563
30	north along county 66 connell side	63.1	5/12/2023 20:33	-105.005	40.72553
31	north along county 66 connell side	63	5/12/2023 20:33	-105.005	40.72539
32	north along county 66 connell side	63	5/12/2023 20:33	-105.005	40.72528
33	north along county 66 connell side	62.9	5/12/2023 20:34	-105.006	40.72528
34	north along county 66 connell side	62.8	5/12/2023 20:34	-105.006	40.72538
35	north along county 66 connell side	62.7	5/12/2023 20:35	-105.006	40.72542
36	north along county 66 connell side	62.6	5/12/2023 20:35	-105.006	40.72555
37	north along county 66 connell side	62.6	5/12/2023 20:35	-105.006	40.72568
38	north along county 66 connell side	62.5	5/12/2023 20:36	-105.006	40.72574
39	north along county 66 connell side	62.4	5/12/2023 20:36	-105.006	40.72591
40	north along county 66 connell side	62.4	5/12/2023 20:36	-105.006	40.7259
41	north along county 66 connell side	62.3	5/12/2023 20:37	-105.006	40.72591
42	north along county 66 connell side	62.3	5/12/2023 20:37	-105.006	40.7259
43	north along county 66 connell side	62.3	5/12/2023 20:37	-105.007	40.72592
44	north along county 66 connell side	62.2	5/12/2023 20:38	-105.007	40.72587
45	north along county 66 connell side	62.2	5/12/2023 20:38	-105.007	40.72587
46	north along county 66 connell side	62.1	5/12/2023 20:38	-105.007	40.72587
47	north along county 66 connell side	62.1	5/12/2023 20:38	-105.007	40.7259
48	north along county 66 connell side	62	5/12/2023 20:39	-105.007	40.72588

49	north along county 66 connell side	61.9	5/12/2023 20:39	-105.007	40.72589
50	north along county 66 connell side	61.9	5/12/2023 20:40	-105.007	40.72589
51	north along county 66 connell side	61.9	5/12/2023 20:40	-105.008	40.72587
52	north along county 66 connell side	61.8	5/12/2023 20:40	-105.008	40.72587
53	north along county 66 connell side	61.8	5/12/2023 20:41	-105.008	40.7259
54	north along county 66 connell side	62.6	5/12/2023 20:41	-105.009	40.72577
55	north along county 66 connell side	62.6	5/12/2023 20:42	-105.009	40.72576
56	north along county 66 connell side	62.5	5/12/2023 20:42	-105.009	40.72573
57	north along county 66 connell side	62.5	5/12/2023 20:42	-105.009	40.72574
58	north along county 66 connell side	62.5	5/12/2023 20:42	-105.009	40.72571
59	north along county 66 connell side	62.4	5/12/2023 20:42	-105.009	40.72569
60	north along county 66 connell side	62.4	5/12/2023 20:43	-105.009	40.72568
61	north along county 66 connell side	62.4	5/12/2023 20:43	-105.009	40.72564
62	north along county 66 connell side	62.3	5/12/2023 20:43	-105.009	40.72564
63	north along county 66 connell side	61	5/12/2023 20:46	-105.009	40.72557
64	north along county 66 connell side	60.1	5/12/2023 20:49	-105.009	40.72574
65	north along county 66 connell side	59.9	5/12/2023 20:49	-105.009	40.72569
66	north along county 66 connell side	59.7	5/12/2023 20:49	-105.009	40.7257
67	north along county 66 connell side	59.4	5/12/2023 20:50	-105.009	40.72571
68	north along county 66 connell side	59.2	5/12/2023 20:50	-105.009	40.72561
69	north along county 66 connell side	58.9	5/12/2023 20:51	-105.009	40.72552
70	north along county 66 connell side	58.8	5/12/2023 20:51	-105.009	40.72544
71	north along county 66 connell side	58.6	5/12/2023 20:51	-105.01	40.72534
72	north along county 66 connell side	58.5	5/12/2023 20:51	-105.01	40.72529
73	w of site on road	58.4	5/12/2023 20:51	-105.01	40.72522
74	w of site on road	58.2	5/12/2023 20:52	-105.01	40.72521
75	w of site on road	58.1	5/12/2023 20:52	-105.01	40.72508
76	w of site on road	58	5/12/2023 20:52	-105.01	40.72501
77	w of site on road	57.9	5/12/2023 20:52	-105.01	40.72495
78	w of site on road	57.8	5/12/2023 20:53	-105.01	40.72488
79	w of site on road	57.7	5/12/2023 20:53	-105.01	40.72474
80	w of site on road	57.6	5/12/2023 20:53	-105.01	40.72463
81	w of site on road	57.6	5/12/2023 20:53	-105.01	40.72452
82	w of site on road	57.4	5/12/2023 20:54	-105.01	40.72446
83	w of site on road	57.4	5/12/2023 20:54	-105.01	40.72435
84	w of site on road	59.7	5/12/2023 20:55	-105.01	40.72427
85	w of site on road	62.3	5/12/2023 20:55	-105.01	40.72419
86	w of site on road	63.4	5/12/2023 20:55	-105.01	40.72409
87	w of site on road	63.7	5/12/2023 20:56	-105.01	40.72405
88	w of site on road	63.8	5/12/2023 20:56	-105.01	40.72394
89	w of site on road	64.3	5/12/2023 20:56	-105.01	40.72386
90	w of site on road	64.3	5/12/2023 20:56	-105.01	40.72376
91	w of site on road	64.7	5/12/2023 20:57	-105.01	40.72365
92	w of site on road	64.6	5/12/2023 20:57	-105.01	40.72356
93	w of site on road	64.6	5/12/2023 20:57	-105.01	40.72349
94	w of site on road	65	5/12/2023 20:57	-105.01	40.72337
95	w of site on road	65.2	5/12/2023 20:58	-105.01	40.72325
96	w of site on road	66.2	5/12/2023 20:58	-105.01	40.72317
97	w of site on road	67.8	5/12/2023 20:58	-105.01	40.72305

98	w of site on road	68.3	5/12/2023 20:59	-105.01	40.72291
99	w of site on road	68.4	5/12/2023 20:59	-105.01	40.7228
100	w of site on road	68.9	5/12/2023 21:00	-105.01	40.72269
101	w of site on road	68.9	5/12/2023 21:00	-105.01	40.72259
102	w of site on road	69.6	5/12/2023 21:00	-105.01	40.72246
103	w of site on road	69.9	5/12/2023 21:01	-105.01	40.72235
104	w of site on road	69.8	5/12/2023 21:01	-105.01	40.72233
105	w of site on road	69.8	5/12/2023 21:01	-105.01	40.72233
106	w of site on road	69.9	5/12/2023 21:01	-105.009	40.72232
107	w of site on road	70	5/12/2023 21:02	-105.009	40.72231
108	w of site on road	70	5/12/2023 21:02	-105.009	40.72232
109	w of site on road	69.9	5/12/2023 21:02	-105.009	40.72226
110	w of site on road	69.9	5/12/2023 21:03	-105.009	40.72226
111	w of site on road	69.9	5/12/2023 21:03	-105.009	40.72224
112	w of site on road	70.5	5/12/2023 21:04	-105.008	40.72225
113	w of site on road	70.6	5/12/2023 21:04	-105.008	40.72221
114	w of site on road	70.7	5/12/2023 21:04	-105.008	40.7222
115	w of site on road	70.8	5/12/2023 21:05	-105.008	40.72221
116	w of site on road	70.9	5/12/2023 21:05	-105.008	40.7222
117	w of site on road	71.1	5/12/2023 21:05	-105.008	40.72219
118	w of site on road	71	5/12/2023 21:06	-105.008	40.72219
119	w of site on road	71	5/12/2023 21:06	-105.008	40.72218
120	w of site on road	71	5/12/2023 21:06	-105.007	40.72217
121	w of site on road	70.9	5/12/2023 21:07	-105.007	40.72216
122	south part of field	70.7	5/12/2023 21:11	-105.007	40.72217
123	south part of field	70.6	5/12/2023 21:11	-105.007	40.72217
124	south part of field	70.6	5/12/2023 21:11	-105.007	40.72217
125	south part of field	70.8	5/12/2023 21:11	-105.007	40.72216
126	south part of field	70.5	5/12/2023 21:12	-105.007	40.72217
127	south part of field	70.4	5/12/2023 21:12	-105.007	40.72216
128	south part of field	70.4	5/12/2023 21:12	-105.007	40.72213
129	south part of field	70.3	5/12/2023 21:12	-105.006	40.72213
130	south part of field	70.2	5/12/2023 21:13	-105.006	40.72212
131	south part of field	70.2	5/12/2023 21:13	-105.006	40.7221
132	south part of field	70.2	5/12/2023 21:14	-105.006	40.72209
133	south part of field	70.1	5/12/2023 21:14	-105.006	40.72209
134	south part of field	70.1	5/12/2023 21:14	-105.006	40.72206
135	south part of field	70	5/12/2023 21:14	-105.006	40.7221
136	south part of field	69.8	5/12/2023 21:16	-105.006	40.72208
137	south part of field	69.8	5/12/2023 21:16	-105.006	40.72215
138	south part of field	69.8	5/12/2023 21:17	-105.006	40.72225
139	south part of field	69.7	5/12/2023 21:17	-105.006	40.72236
140	south part of field	69.7	5/12/2023 21:17	-105.006	40.7225
141	south part of field	69.6	5/12/2023 21:18	-105.006	40.72267
142	south part of field	69.5	5/12/2023 21:18	-105.006	40.72278
143	south part of field	69.5	5/12/2023 21:19	-105.006	40.72296
144	south part of field	69.4	5/12/2023 21:19	-105.006	40.7231
145	East of field	69.3	5/12/2023 21:20	-105.006	40.72321
146	East of field	69.3	5/12/2023 21:21	-105.006	40.72321

147	East of field	69.3	5/12/2023 21:21	-105.006	40.72333
148	East of field	69.2	5/12/2023 21:22	-105.006	40.72342
149	East of field	69.2	5/12/2023 21:22	-105.006	40.72342
150	East of field	69.1	5/12/2023 21:23	-105.006	40.72357
151	East of field	69.1	5/12/2023 21:23	-105.006	40.72365
152	East of field	69	5/12/2023 21:24	-105.006	40.7237
153	East of field	69	5/12/2023 21:24	-105.006	40.7238
154	East of field	69	5/12/2023 21:24	-105.006	40.7239
155	East of field	69	5/12/2023 21:24	-105.006	40.72396
156	East of field	68.9	5/12/2023 21:24	-105.006	40.72401
157	East of field	68.9	5/12/2023 21:25	-105.006	40.7241
158	East of field	68.9	5/12/2023 21:25	-105.006	40.72414
159	East of field	68.9	5/12/2023 21:25	-105.006	40.72419
160	East of field	68.8	5/12/2023 21:25	-105.006	40.72424
161	East of field	68.8	5/12/2023 21:25	-105.006	40.72425
162	East of field	68.8	5/12/2023 21:26	-105.006	40.72429
163	East of field	68.8	5/12/2023 21:26	-105.006	40.72433
164	East of field	68.8	5/12/2023 21:26	-105.006	40.72437
165	East of field	68.8	5/12/2023 21:26	-105.006	40.72442
166	East of field	68.7	5/12/2023 21:26	-105.006	40.72451
167	East of field	68.7	5/12/2023 21:27	-105.006	40.72455
168	East of field	68.7	5/12/2023 21:27	-105.006	40.72458
169	East of field	68.7	5/12/2023 21:27	-105.006	40.72469
170	East of field	68.7	5/12/2023 21:27	-105.006	40.72473
171	East of field	68.6	5/12/2023 21:27	-105.006	40.72476
172	East of field	68.6	5/12/2023 21:28	-105.006	40.72482
173	East of field	68.6	5/12/2023 21:28	-105.006	40.72486
174	East of field	68.6	5/12/2023 21:28	-105.006	40.72491
175	East of field	68.6	5/12/2023 21:28	-105.006	40.72494
176	East of field	68.6	5/12/2023 21:28	-105.006	40.72499
177	East of field	68.5	5/12/2023 21:28	-105.006	40.72503
178	East of field	68.5	5/12/2023 21:28	-105.006	40.72506
179	East of field	68.5	5/12/2023 21:29	-105.006	40.72511
180	East of field	68.5	5/12/2023 21:29	-105.006	40.72515
181	East of field	68.5	5/12/2023 21:29	-105.006	40.72519
182	East of field	68.5	5/12/2023 21:29	-105.006	40.72522
183	East of field	68.4	5/12/2023 21:30	-105.006	40.72526
184	East of field	68.4	5/12/2023 21:30	-105.006	40.72532
185	East of field	68.4	5/12/2023 21:30	-105.006	40.7254
186	East of field	68.4	5/12/2023 21:30	-105.006	40.72544
187	East of field	68.4	5/12/2023 21:30	-105.006	40.72548
188	East of field	68.4	5/12/2023 21:30	-105.006	40.72552
189	East of field	68.3	5/12/2023 21:31	-105.006	40.72557
190	East of field	68.3	5/12/2023 21:31	-105.006	40.72558
191	East of field	68.3	5/12/2023 21:32	-105.006	40.72542
192	East of field	68.2	5/12/2023 21:32	-105.007	40.7252
193	East of field	68.2	5/12/2023 21:33	-105.007	40.72495
194	East of field	68.1	5/12/2023 21:33	-105.007	40.72465
195	East of field	68.1	5/12/2023 21:34	-105.007	40.72439

196	Center of field	68.1	5/12/2023 21:34	-105.007	40.72426
197	Center of field	68	5/12/2023 21:35	-105.008	40.72416
198	Center of field	68	5/12/2023 21:35	-105.008	40.72396
199	Center of field	68	5/12/2023 21:36	-105.008	40.72412
200	Center of field	67.9	5/12/2023 21:36	-105.008	40.72435
201	Center of field	67.9	5/12/2023 21:37	-105.009	40.72462

Appendix C – Calibration Certificates

FA03994

TSI INCORPORATED – OCONOMOWOC

1060 Corporate Center Drive, Oconomowoc, WI 53066 USA
tel 651 490 2811 + toll free 800 245 0779 + web www.tsi.com

An ISO 9001 Registered Company

Certificate of Calibration

Certificate No:1082556A BGT020002

Submitted By: ECO RENTAL SOLUTIONS LLC
7340 TRADE STREET STE A
SAN DIEGO CA 92121-2457

Serial Number: BGT020002
Customer ID: FA03994
Model: SOUNDPRO DL-2 SLM

Date Received: 4/3/2023
Date Issued: 4/11/2023
Valid Until: 4/11/2024

Test Conditions:

Temperature: 18°C to 29°C
Humidity: 20% to 80%
Barometric Pressure: 890 mbar to 1050 mbar

Model Conditions:

As Found: IN TOLERANCE
As Left: IN TOLERANCE

SubAssemblies:

Description:

TYPE 2 PREAMP
MICROPHONE QE 7052 1/2 IN. ELECTRET

Serial Number:

1018 3401
50902

Calibrated per Procedure:53V899

Reference Standard(s):

I.D. Number	Device	Last Calibration	Date Calibration Due
EF000107	QUEST-CAL	11/10/2022	11/10/2023
ET0000556	B&K ENSEMBLE	4/16/2021	4/16/2023

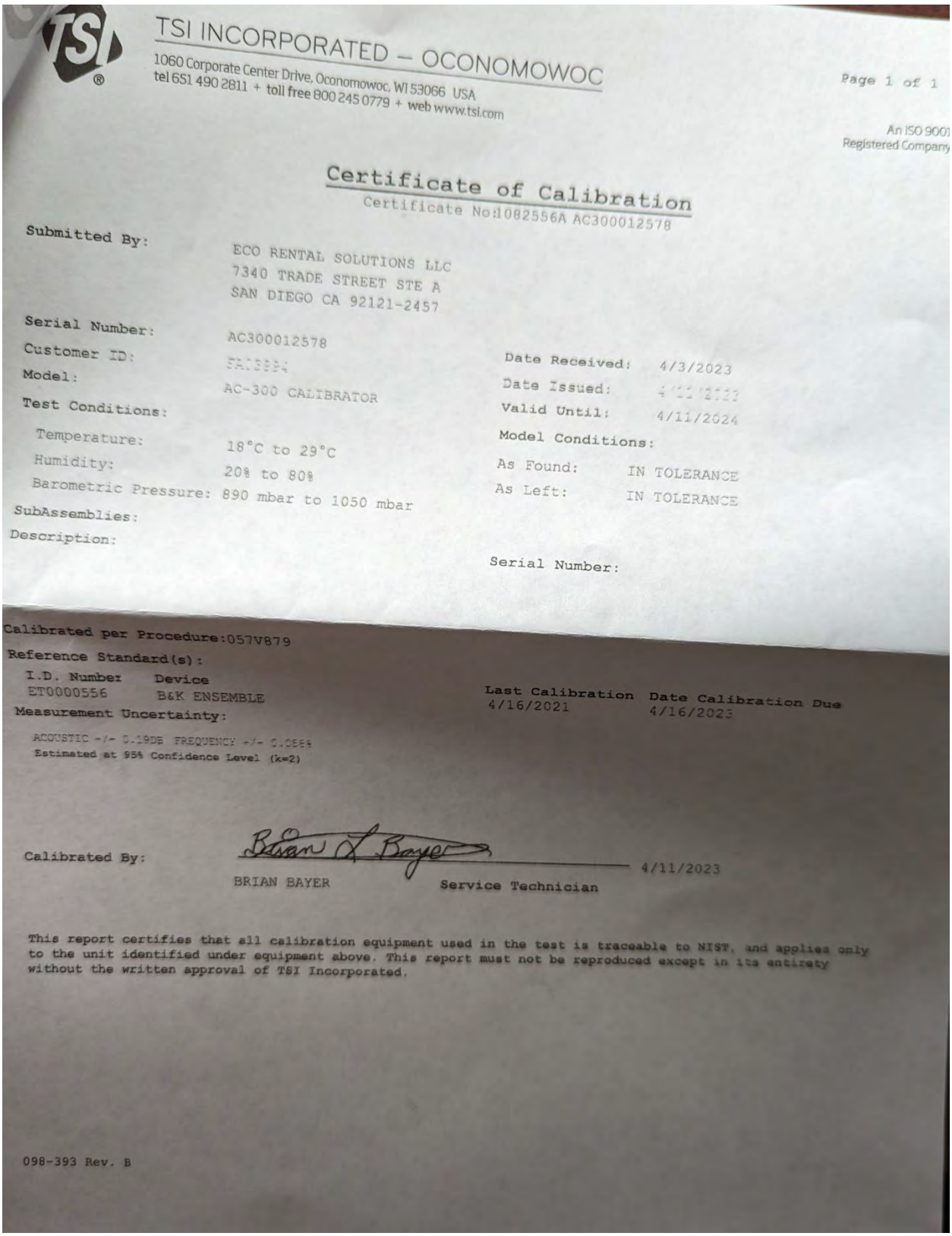
Measurement Uncertainty:

ACOUSTIC +/- 0.29DB
Estimated at 95% Confidence Level (k=2)

Calibrated By: Brian L Bayer 4/11/2023
BRIAN BAYER Service Technician

This report certifies that all calibration equipment used in the test is traceable to NIST, and applies only to the unit identified under equipment above. This report must not be reproduced except in its entirety without the written approval of TSI Incorporated.

098-393 Rev. B



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tel 651 490 2811 + toll free 800 245 0779 + web www.tsi.com

Page 1 of 1

An ISO 9001
Registered Company

Certificate of Calibration

Certificate No:1082556A AC300012578

Submitted By:
ECO RENTAL SOLUTIONS LLC
7340 TRADE STREET STE A
SAN DIEGO CA 92121-2457

Serial Number: AC300012578
Customer ID: [illegible]
Model: AC-300 CALIBRATOR

Date Received: 4/3/2023
Date Issued: [illegible]
Valid Until: 4/11/2024

Test Conditions:
Temperature: 18°C to 29°C
Humidity: 20% to 80%
Barometric Pressure: 890 mbar to 1050 mbar

Model Conditions:
As Found: IN TOLERANCE
As Left: IN TOLERANCE

SubAssemblies:
Description: **Serial Number:**

Calibrated per Procedure: 057V879

Reference Standard(s):

I.D. Number	Device	Last Calibration	Date Calibration Due
ET0000556	B&K ENSEMBLE	4/16/2021	4/16/2023

Measurement Uncertainty:
ACOUSTIC +/- 0.19DB FREQUENCY +/- 0.05%
Estimated at 95% Confidence Level (k=2)

Calibrated By: Brian L Bayer 4/11/2023
BRIAN BAYER Service Technician

This report certifies that all calibration equipment used in the test is traceable to NIST, and applies only to the unit identified under equipment above. This report must not be reproduced except in its entirety without the written approval of TSI Incorporated.

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Registered Company

Certificate of Calibration

Certificate No:1082556A AC300012578

Submitted By:
ECO RENTAL SOLUTIONS LLC
7340 TRADE STREET STE A
SAN DIEGO CA 92121-2457

Serial Number: AC300012578
Customer ID: [illegible]
Model: AC-300 CALIBRATOR

Test Conditions:
Temperature: 18°C to 29°C
Humidity: 20% to 80%
Barometric Pressure: 890 mbar to 1050 mbar

SubAssemblies:
Description:

Date Received: 4/3/2023
Date Issued: [illegible]
Valid Until: 4/11/2024

Model Conditions:
As Found: IN TOLERANCE
As Left: IN TOLERANCE

Serial Number:

Calibrated per Procedure:057V879

Reference Standard(s):

I.D. Number	Device	Last Calibration	Date Calibration Due
ET0000556	B&K ENSEMBLE	4/16/2021	4/16/2023

Measurement Uncertainty:

ACOUSTIC +/- 0.19DB FREQUENCY +/- 0.058%
Estimated at 95% Confidence Level (k=2)

Calibrated By: Brian L Bayer 4/11/2023
BRIAN BAYER Service Technician

This report certifies that all calibration equipment used in the test is traceable to NIST, and applies only to the unit identified under equipment above. This report must not be reproduced except in its entirety without the written approval of TSI Incorporated.

98-393 Rev. B

Exhibit-D

Decibel Level Comparison Chart

Decibel Level Comparison Chart

Environmental Noise	*dBA*
Jet engine at 100'	140
Pain Begins	*125*
Pneumatic chipper at ear	120
Chain saw at 3'	110
Power mower	107
Subway train at 200'	95
Walkman on 5/10	94
Level at which sustained exposure may result in hearing loss	*80-90*
City Traffic	85
Telephone dial tone	80
Chamber music, in a small auditorium	75-85
Vacuum cleaner	75
Normal conversation	60-70
Business Office	60-65
Household refrigerator	55
Suburban area at night	40
Whisper	25
Quiet natural area with no wind	20
Threshold of hearing	0

Note: dBA = Decibels, A weighted

Exhibit E

Required Permitting

Permit Type	Permit Number	AIRS ID	Purpose	Governing Entity	Enforcement Fine Range	Governing Agency Inspection Freq.	CRI Inspection Frequency	CRI Testing Frequency
Air	00LR0746*	069-0373	HMA plant permit	CDPHE-APCD	$15,000 - $54,833 per day per violation	Target Freq: Every 2 Years	Monthly, Annual, Per O/M Plan	Monthly, Annual, Per O/M** Plan
Air	20LR0484.XA*	069-0353	HMA plant genset permit	CDPHE-APCD	$15,000 - $54,833 per day per violation	Target Freq: Every 2 Years	Monthly, Annual, Per O/M Plan	Monthly, Annual, Per O/M** Plan
Air	TBD	TBD	Facility air permit for aggregate processin	CDPHE-APCD	$15,000 - $54,833 per day per violation	Target Freq: Every 2 Years	Monthly, Annual	NA
Air	Various	Various	Individual permits for crushing equipmen	CDPHE-APCD	$15,000 - $54,833 per day per violation	Target Freq: Every 2 Years	Monthly, Annual	Depends on each crushing unit
Stormwater	COR900000	NA	Facility industrial stormwater discharge	CDPHE-WQCD	$10,000 - $47,357 per day per violation	Target Freq: Every 2 Years	Quarterly, Annual & Post Storm Events	Bi-monthly, Quarterly, Annual
Petroleum Storage	TBD	NA	AST registration with Colorado	CDLE-OPS	$0-$37,500 /day/violation with no cap	Target Freq: Every 2 Years	Monthly, Annual	Annual
SPCC	NA	NA	Plan for petroleum storage	CDLE-OPS	$0-$37,500 /day/violation with no cap	Target Freq: Every 2 Years	Monthly, Annual	Annual

*Permit number will change when permit issued for new facility

**CDPHE-APCD Approved Operation/Maintenance Plan

CDPHE-APCD (Colorado Department Public Health Environment - Air Pollution Control Division)

CDPHE-WQCD (Colorado Departmetn Public Health Environment - Water Quality Control Division)

CDLE-OPS (Colorado Department Labor & Employment - Oil & Public Safety)

Exhibit F

Letter to CDPHE and Early Settlement Agreement

[see attached]

COLORADO
Department of Public Health & Environment

December 5, 2022

SENT VIA ELECTRONIC MAIL

Brandon Martin
Connell Resources, Inc.
7785 Highland Meadows Pky. #100
Fort Collins, CO 80528

Re: Proposed Early Settlement Agreement in the Matter of Connell Resources, Inc.
AIRS No.: 069-0373
Case No.: 2022-180

Dear Brandon Martin:

Connell Resources, Inc. ("CRI") owns and operates the asphalt paving material plant located at 5150 SE Frontage Road, Fort Collins, Larimer County, Colorado ("Facility"). The Facility is subject to the terms and conditions of Colorado Construction Permit Number 00LR0746, Issuance 4 issued to CRI on November 30, 2020 ("Permit Number 00LR0746"); Colorado Air Quality Control Statutes; and Colorado Air Quality Control Commission ("AQCC") Regulations. The Facility's hot mix asphalt equipment (AIRS ID 069-0373-001), is relevant to this enforcement action.

On June 25, 2021, CRI conducted compliance testing on the Facility's hot mix asphalt equipment ("Compliance Test"). The Compliance Test was unobserved by the Colorado Air Pollution Control Division ("Division"). Based on the Compliance Test, and a review of records related to the Facility, the Division issued a Compliance Advisory to CRI on October 20, 2022. On November 15, 2022, the Division and CRI met to discuss the issues identified in the Compliance Advisory.

Based upon a review of the inspection, records related to the Facility, and the information provided by CRI, the Division has determined the following:

A. Pursuant to Permit Number 00LR0746, Condition 7, emissions of air pollutants from the Facility's hot mix asphalt equipment must not exceed 8.5 tons per year of NOx and 19.9 tons per year of CO. Pursuant to Permit Number 00LR0746, Condition 19, a source initial compliance test must be conducted on the main stack to measure and demonstrate compliance with the pollutant emission rates in the permit. The compliance test must be conducted in accordance with the Division's Compliance Test Manual. The Compliance Test conducted on June 25, 2021 was stopped by CRI before completion due to failing test results. CRI was therefore out of compliance with the hot mix asphalt equipment NOx and CO emission rates. From June 25, 2021 to October 20, 2021, CRI failed to demonstrate compliance with the hot mix asphalt equipment NOx and CO emission rates, violating Permit Number 00LR0746, Conditions 7 and 19.

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe
Jared Polis, Governor | Jill Hunsaker Ryan, MPH, Executive Director

On October 20, 2021, CRI successfully conducted a full compliance test of the hot mix asphalt equipment, demonstrating compliance with the emission rates in Permit Number 00LR0746.

The Colorado Air Pollution Prevention and Control Act, at § 25-7-122(1)(b), C.R.S., specifies the penalty for such violations. The monetary amount of the Division's settlement offer specified below takes into account, among other factors, the magnitude and severity of the violation, cooperation of the company, as well as the prior history of violations of air quality requirements associated with any of the company's facilities/operations in the State of Colorado (including a company's parent or subsidiary relations, if applicable). Settlement offers are based on the evaluation of the same factors and criteria in all cases. Based upon CRI's cooperation, and its efforts to bring its operations into compliance with the regulations and permit conditions identified above, the Division acknowledges that CRI has appropriately and adequately addressed all compliance issues identified above. In the interest of settling the matters cited herein, the Division therefore offers the following settlement in accordance with the Division's settlement policy.

1. Payment of a reduced penalty in the sum of **Seven Thousand Dollars ($7,000.00)**. Payment of the penalty precludes further enforcement by the Division for the above-described violation against CRI. The Division retains its authority to take enforcement actions based on any and all violations not specifically described above.

2. Entering into this settlement shall not constitute an admission of violation of the air quality laws, or the alleged facts relating thereto, nor shall any third party infer it to be such an admission in any administrative or judicial proceeding. However, CRI agrees not to challenge the factual or legal determinations herein, the Division's authority to bring, or the court's jurisdiction to hear, any action, insofar as it pertains to the matters contained herein, to enforce the terms of this settlement agreement. The described violation will constitute part of CRI's compliance history for any purpose for which such history is relevant.

This letter constitutes an offer of settlement and is not a demand for payment. Please contact me if you wish to discuss this offer of settlement. We remain willing to consider any information you wish to submit related to the violation. Please be advised, however, that the offer of settlement contained in this letter is predicated on resolving this matter within fifteen (15) days of the date of this settlement proposal letter. If you elect to continue the negotiation of this matter beyond that date, this offer shall be deemed withdrawn, and any penalty mitigation built into this settlement proposal may be revoked. If you require additional time to evaluate this settlement proposal or discuss remaining issues with the Division, however, please contact me regarding your request for an extension of the offer. Any extension of the offer, if agreed to by the Division, must be confirmed, in writing, by the Division.

If the above terms are acceptable to you, please have the appropriate person sign and return this letter and send a check in the sum of **$7,000.00**, made payable to the Colorado Department of Public Health and Environment, to

Air Pollution Control Division
Attn: Heather Wuollet
4300 Cherry Creek Drive South
APCD-SS-B1
Denver, Colorado 80246-1530

This offer of settlement, upon being fully endorsed by both the Division and CRI, shall constitute full and final resolution of the noncompliance issues identified herein and in the Compliance Advisory issued to CRI.

You may write or call to request a settlement conference if you wish to discuss the matter with representatives of the Division's compliance staff. If we do not receive a response from you within fifteen (15) days of the date of this letter, we will assume that you are not interested in resolving this matter as outlined above. Please call me, at 303-692-3259, or Heather Wuollet, at 720-515-0279, if you have any further questions regarding this matter.

Sincerely,

DocuSigned by:

Shannon McMillan
Compliance and Enforcement Program Manager

I certify that I am authorized by Connell Resources, Inc. to execute this settlement agreement and bind Connell Resources, Inc., and any affiliated entities, to the terms and conditions of this agreement. I have read the above settlement and agree to the terms and conditions of this offer.

Name: John M Warren

Title: President

DocuSigned by:

Signature	970.223.3151 Telephone Number	12/19/2022 Date

cc:
Shannon McMillan, APCD
Paul Carr, APCD
Heather Wuollet, APCD
Ben Cappa, APCD
Tom Roan, Attorney General's Office
Jeffrey Bishop, APCD
Beth Pilson, APCD
Tom Lovell, APCD
Michael Stovern, EPA (Region VIII)
File

August 2, 2021

Colorado Department of Public Health and Environment
APCD-SS-B1
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

RE: Notification of Violation/Stack Test Memo Response – Construction Permit 00LR0746

To Whom It May Concern,

This letter transmits a response to an e-mail sent by Joe Richhiuto on 07/27/2021 regarding a Notification of Violation from a 06/25/2021 stack test that was required for self-certification. Before the alleged violation is addressed, a brief timeline of related events follows:

1) 02/14/2019, Construction Permit 00LR0746 APEN modification submitted for a new burner
2) 11/30/2020, Construction Permit 00LR0746 issued
3) 03/15/2021, Notice of Start-Up submitted
4) 04/01/2021, Burner tuned by Southeastern Plant Services (see attachment 4.A)
5) 06/25/2021, Stack test completed by erthwrks (see attached Test Report in e-mail)
6) 07/27/2021, Notification of Violation – Stack Test Memo received via e-mail from APCD (see attachment 5.A)

After reviewing the 06/25/2021 stack test report, the APCD concludes in the Stack Test Memo there is an exceedance of the 8.5 TPY NOx limit. Connell Resources, Inc (CRI) does **NOT** agree with this with assumption and has evidence to prove a NOx permit exceedance has not occurred.

Please refer to Unit 650001: TC HMA Plant – Production and Emissions spreadsheet (see attachment 1.A) and monthly Product Report records for March – July 24th, 2021 (see attachment 1.B - 1.F). The production total from November 30, 2020 – July 24, 2021, is 63,205 tons. Using the emissions factor of 0.077 lb/ton of asphalt produced from erthwrks Air Emissions Compliance Test Summary of Results (see attachment 2.A), the calculated NOx emissions since the November 30, 2020 are 2.43 tons and do not exceed the NOx 8.5 TPY limit. See first calculation below:

1. *63,205 tons / 2000 lb/ton * 0.077 lb/ton asphalt produced = 2.433 Tons*

2. *220,082 tons / 2000 lb/ton * 0.077 lb/ton asphalt produced = 8.502 TPY*

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CRI is aware that continued production at the rate of 0.077 lb/ton of asphalt produced will exceed the NOx limit of 8.5 TPY **if** 220,825 tons of asphalt (see second calculation above) are made in a 12-month period. To prevent this from happening and to meet self-certification requirements, CRI is making significant changes by switching from on-spec used oil and investing in either propane or CNG to fuel the HMA plant. At this point in time, a conversion to either propane or CNG will not occur until December 2021 due to factory shortages on all components necessary for a conversion. Please see the Maxam Equipment, Inc. proposal from 07/22/2021 (see attachment 3.A) and update to original proposal from 07/29/2021 (see attachment 3.B) for timeline regarding part availability due to supply chain issues. The Maxam Equipment, Inc proposal is specifically for a CNG conversion. CRI is waiting for documentation from another vendor regarding a propane conversion and will make this documentation available to APCD once received. CRI has been verbally notified that a propane conversion is at least 16 weeks out due to part availability and production issues, similar to CNG. Once all necessary parts are on-site, either conversion (propane or CNG) can be completed in a couple of days.

In addition, conversations with KC Houlden (Permits Unit Supervisor) have been on-going regarding Construction Permit 00LR0746 language. Permit corrections are being applied to Construction Permit 00LR0746 that will allow for use of propane and CNG. The permit will be updated with appropriate language shortly, per KC Houlden on 07/29/2021 (see attachment 6.A).

In summary to the alleged violation in the Notification of Violation – Stack Test Memo, CRI has not exceeded the NOx 8.5 TPY limit as shown in Attachment 1.A – 1.F. In addition, CRI is investing in major changes to the fuel system which will result in cleaner emissions from the HMA plant. CRI formally requests the alleged finding of the NOx 8.5 TPY limit exceedance be nullified.

Please feel free to contact me with any questions.

Sincerely,

Brandon L. Martin
EHS Specialist

/Enclosures

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Exhibit G

Ground Monitoring Plan

[see attached]

OLSON HARRIS LTD.

FOR TOWN OF WELLINGTON PLANNING COMMISSION

Connell Resources is in the planning stages of moving an asphalt mixing plant to an industrial parcel in Wellington, Colorado. This proposal outlines a groundwater monitoring plan for this future site.

OVERVIEW

Connell Resources is pleased to prepare this proposal for a groundwater monitoring program at the future site in Wellington. The purpose of this groundwater monitoring program is to get a baseline for groundwater quality and identify potential contamination areas, if any, prior to beginning mobilization and disturbance.

Basic Plan Components

Prior to disturbance by Connell Resources, two groundwater monitoring wells will be installed. An environmental consultant will be hired to assist in identifying the best on-site placement of the monitoring wells and registering the monitoring wells with the State Engineering Office.

- **Initial groundwater samples will be analyzed for metals, semi-volatile organic compounds (SVOCs) and volatile organic compounds (VOCs) from both well points per the Colorado Discharge Permit System Short-Term Construction Dewatering Application.**
- **The results from initial sampling will be reviewed by Connell Resources and an environmental consultant to determine groundwater quality.**
- **Annual testing will occur from both well points for benzene, toluene, ethylbenzene, and xylene (BTEX) at a minimum, assuming no parameters of concern were identified during initial sampling.**
- **Every 5 years, both well points will be resampled for metals, SVOCs, and VOCs.**
- **Records and test results will be available to the Town of Wellington upon request with reasonable notice.**

Exhibit H

NAPA and ATSDR studies

[see attached]

SANBORN HEAD

Building Trust. Engineering Success.

EMISSIONS COMPARISON: ASPHALT PAVEMENT MIXTURE PLANTS AND SELECT SOURCE CATEGORIES

Prepared for the National Asphalt Pavement Association
File No. 4197.02
December 2018

SANBORN, HEAD & ASSOCIATES, INC.

www.sanbornhead.com

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List of Abbreviations

APM	Asphalt Pavement Mixture
AQIA	Air Quality Impact Assessment
CHIEF	EPA Clearinghouse for Inventories and Emission Factors
CO	Carbon Monoxide
EPA	U.S. Environmental Protection Agency
NAPA	National Asphalt Pavement Association
NHEXAS	National Human Exposure Assessment Survey
NO_x	Nitrogen Oxides
NYSERDA	New York State Research and Development Authority
PAH	Polycyclic Aromatic Hydrocarbons
PM	Particulate Matter
SO_x	Sulfur Oxides
THC	Total Hydrocarbons
VOC	Volatile Organic Compounds

1.0 INTRODUCTION AND SUMMARY

The purpose of this report is to evaluate emissions and air quality impacts from asphalt pavement mixture (APM) plants, providing comparisons to other sources of air pollutant emissions commonly found in both urban and rural areas. The report updates and expands preceding work. In September 2001, Clayton Group Services (Clayton) released a study sponsored by the National Asphalt Pavement Association (NAPA) that compared air emissions from a continuous drum APM plant (having an annual production of 200,000 tons) to air emissions emitted from seven common source categories: residential fireplaces, residential wood stoves, bakeries, gasoline filling stations, barbeque grills, lawn mowers, and fast-food restaurants. Following their study, Clayton summarized their findings in a document titled "Emission Comparison: Continuous Drum Asphalt Plant and Selected Source Categories" (The Clayton Report), which used available emission factors, combined with available activity data to calculate emission estimates from an APM plant and each source category. Using these emission estimates, Clayton quantified the impacts of an APM plant by comparing the APM plant emission estimations to the number of sources in each category that had comparable calculated emissions (*i.e*, 13 residential fireplaces, 12 gas filling stations, *etc.*).

To obtain emission factor data, Clayton conducted searches through the U.S. Environmental Protection Agency's (EPA) AP-42 emission factor data, as well as related references. Where U.S. EPA data did not exist, Clayton performed searches into peer reviewed literature, journal articles, and state-sponsored emission studies. Clayton recognized that sources outside of the U.S. EPA were potentially not as reliable; however, they were still useful to provide adequate data to perform emission estimation calculations and comparisons.

The Clayton Report was developed as a tool to help interpret the magnitude of emissions from a typical APM plant, with a goal of developing information to assist in community-based discussions on local environmental issues. As such, the document has been a reliable reference since its publication in 2001.

In September 2017, Sanborn, Head & Associates Inc. (Sanborn Head), at the request of NAPA, performed a review of the Clayton report. We reviewed the report for accuracy and provided any updates and/or corrections that had occurred since its original issuance in September 2001. Throughout our review, we found that some updated emission factor data had become available in the past 15 years as there had been a push to make sources "cleaner" and reduce pollutant emission rates from many sources. Additionally, since 2001, more source categories had been introduced into communities as interest had expanded into different consumer products. While most, if not all, of the source categories investigated in 2001 are still common sources, and are still useful in comparison studies, there are several "new" source categories that are of interest today. We found that with the addition of new source categories there came an increase of air emissions and possibly "new" pollutants that were not investigated in 2001. We compiled our information in 2017 and built upon the original Clayton report, updating previous data as appropriate and adding a new source category (breweries) for comparison. Table 1 provides a summary of the changes to emission factors and comparisons. We also added a section on air quality impacts from APM plants and exposure comparisons to key pollutants associated with APM plants. These new sections are

intended to provide better perspective on potential exposure to pollutants released from APM plants. This report thus serves as an update and expansion of the Clayton Report. The following sections will describe our review of the methodology of the Clayton Report and our approach to updating or improving assumptions and calculations.

2.0 EMISSION ESTIMATES

The emission comparison methodology involves several steps. First, emissions are evaluated from a "typical" APM plant. Other common candidate source categories that emit similar pollutants to APM plants are considered and literature searches conducted to identify emission factors and activity data. Finally, the emission factors and activity data for each category are used to determine annual emissions for comparison to emissions from a typical APM plant. In deriving annual emission estimates for each source category, an attempt is made to develop the number of the sources similar to the emission levels from a typical APM plant. That approach in essence showed the number of sources in each category that would have emissions comparable to emissions from an asphalt plant (for example: 20 residential fireplaces, two gas filling stations, three fast-food restaurants).

To acquire data for the analysis, information searches included the U.S. EPA's Clearinghouse for Inventories and Emission Factors (CHIEF) on the U.S. EPA Technology Transfer Network, U.S. EPA's home page information sources function, California South Coast Air Quality Management District home page information sources function, and the U.S. EPA Research Triangle Park library. Where possible, U.S. EPA references are used (such as AP-42 document sections, Locating & Estimating documents, and other laboratory research reports) to enhance the uniformity and credibility of the results. These references tend to base emission estimates on a larger data set than would a journal article or a government-sponsored emissions study.

Emission estimates were determined for each source category by combining emission factors with reasonably available activity data (throughput, consumption, *etc.*). With one exception, emission factors for the various source categories were obtained from U.S. EPA publications and were based on multiple source measurements. The one exception is the selected emission factor for fast food restaurants, which came from a peer-reviewed journal and was based on data from one source test.

In conducting the updated report, we found that most of the U.S. EPA's emission factors used in the Clayton Report remain valid, though the U.S. EPA has made minor updates to numerous emission factors for continuous drum APM plants. References cited by Clayton were investigated to evaluate any updates and/or additions that may have been made since 2001. We were able to find most of the original referenced documents and validate the data used in the Clayton Report, and noted that very few of the original documents had been updated. Therefore, we performed a further investigation to determine whether any additional literature reviews or government sponsored emission studies were available that published reliable emission factor information. Relevant data were found for fast food restaurants and auto refueling. All updates and/or changes are reflected in source-specific report sections and tables.

We expanded three parts of the original investigation: 1) we considered additional source categories not evaluated in the original report; 2) we considered additional pollutants that may not have been thoroughly investigated or compared against in the original report; and 3) we conducted a screening level air quality impact assessment to evaluate the potential exposure of pollutants from an APM plant relative to typical indoor and outdoor background air quality (see Section 4.0). As a result, we added breweries as a new source to investigate as they have recently become very popular in communities and are operated and frequented throughout all seasons. Of the additional pollutants we investigated, formaldehyde was of increased interest as it has recently garnered a lot of attention from the U.S. EPA and is now a common pollutant to investigate when performing air emission evaluations. PAHs were investigated to further understand any additional impacts that they may have in a community. With these additions, additional emission estimate calculations were performed and compared to the calculated emission estimates of an APM plant.

Asphalt Pavement Mixture Plants

The Clayton Report referenced a draft AP-42 Section 11.1 for APM plants, but U.S. EPA (2004) had finalized the section by the September 2001 report date. As such, the final Clayton Report did not account for some changes in the final AP-42 Section 11.1 for APM plants. Upon review, small adjustments were necessary in the overall emission table for APM plants, and these changes are reflected in Table 1 of this updated report. Also, in late 2000, the U.S. EPA published an *Emission Assessment Report* for Hot-Mix Asphalt Plants to help characterize the emissions from the production of APM. The report included emission factor tables for an oil-fired drum mix plant, and broke emissions into two categories; drier stack emissions and several types of fugitive emissions. While the Clayton Report did not reference the U.S. EPA's Assessment Report, there was an attempt to implement the U.S. EPA's method of including fugitive emissions in the calculations for the criteria pollutants. It appears only dryer stack emissions were considered in the calculations for all other pollutants listed in the report. Evaluating the information provided by the U.S. EPA and comparing it to the information from the Clayton Report, it is clear that in most situations, the addition of the fugitive emissions does not have a large impact on the overall calculated emissions. In some cases, however, the fugitive emissions play a greater role and increase the overall calculated emission by factors of two or more.

For simplicity and consistency, we adopted the emission estimates developed by the U.S. EPA (2000) in characterizing a typical APM plant. Table 2 provides the updated APM plant emissions, and also provides overall (stack plus fugitive) emission comparisons with the original Clayton Report. The ratios of U.S. EPA: Clayton emissions reflect the degree of similarity or difference between the two sources. Many of the ratios are near unity, indicating no significant difference or change between the finalized U.S. EPA *Emission Assessment Report* and the Clayton Report. Ratios for some pollutants, however, differ substantially from one another. For a few pollutants, notably particulate matter (PM) and benzene, ratios less than one indicate that emissions in the U.S. EPA *Emission Assessment Report* are lower than those assumed in the Clayton Report. For pollutants such as toluene and most PAHs, however, the Clayton Report assumed lower emissions than presented in the U.S. EPA *Emission Assessment Report*.

We conducted a similar review and update of emission estimates for the other source categories APM plants are compared against. The text and information presented in many of the following sections came directly from the original Clayton Report, but we edited or expanded based upon new information. Additionally, a section for breweries was added due to an increase of information and relevancy found in our research.

For simplicity, use of Clayton in the following sections refers to the work of the original 2001 emissions comparison report.

Residential Fireplaces

Clayton used the AP-42 emission factor for residential fireplaces to calculate emissions from residential fireplaces and assumed an average wood use per household from a U.S. EPA-sponsored wood stove study from November 1987. We reviewed the AP-42 emission factors referenced, and agree with both the emission factor, and the assumption made on wood use, as we found no updates since 2001. However, we did make one correction in the emission factor table issued by Clayton. The PM_{10} emissions for 13 households presented by Clayton were incorrect by a factor of ten. The calculated emissions are 0.485 tons/yr based on the emission factor used. Table 3 provides a compilation of the emission estimates for residential fireplaces. Using the most recent emission estimates for a typical APM plant, we found that the corrected emission estimation comparison between an APM plant and the number of households with fireplaces should be 20, based on the revised VOC emission total for an APM plant from the U.S. EPA *Emission Assessment Report*.

We added emission comparisons for two additional pollutants to Table 3 using information from the literature we identified in 2017, which supplements U.S. EPA AP-42 data. Li (2007) reports a formaldehyde emission factor of 1.94 lb/ton wood for wood stoves (which we judge equally applicable to fireplaces). Additionally, we use an arsenic mass fraction of 6.6 mg/kg measured in wood ash (NYSERDA, 2013) in combination with the PM emission factor of 34.6 lb/ton wood to derive an arsenic emission factor of 0.000228 lb/ton wood.

Residential Wood Stoves

Similar to the references and assumptions made for emissions from a fireplace, Clayton used the same wood use per household and the appropriate AP-42 emission factor to calculate emissions from residential wood stoves. We confirm and agree with the assumptions made as the emission factors have not been updated since 2001, and we were not able to find any additional research regarding annual household wood usage. We did, however, find discussion of the improvements made on wood stoves in the past 15 years. New residential wood stoves likely release substantially less particulate matter (and possibly other pollutants) than reflected in the current AP-42 emission factors.

Notwithstanding, there have been no recent updates to AP-42, and the use of emission factors from non-catalytic wood stoves to calculate emissions for criteria pollutants, PAHs, and metals, combined with the use of emission factors from conventional wood stoves to

calculate emissions from organic pollutants, is still relevant when comparing emissions from residential wood stoves to an APM plant. Table 4 summarizes the emission factors and calculations for residential wood stoves. We added an available TOC emission factor and set the number of households in Table 4 to 19 to match emissions of benzene to those of an APM plant.

We also performed additional research to enhance the credibility of results. For example, we found a 2007 Canadian study of five conventional wood stoves citing emission factors of particulate matter (PM) and carbon monoxide (CO) similar in magnitude to the published AP-42 values. Specifically, Li (2007) found average PM and CO emission factors of 17.8 lb/ton and 204.8 lb/ton, respectively, which are quite comparable to the AP-42 emission factors of 19.6 lb/ton (PM) and 140.8 lb/ton (CO). The mean benzene emission factor of 1.660 lb/ton measured by Li (2007) is also similar to the 1.938 lb/ton AP-42 emission factor.

Emission comparisons were added to Table 4 for two additional pollutants using information from the literature to supplement AP-42 data. Li (2007) reports a formaldehyde emission factor of 1.94 lb/ton wood. Additionally, we used an arsenic mass fraction of 6.6 mg/kg measured in wood ash (NYSERDA, 2013) in combination with the PM emission factor of 19.6 lb/ton wood to derive an arsenic emission factor of 0.000129 lb/ton wood.

One caveat on both the Li (2007) study and the AP-42 emission factors is that they reflect data from older vintage wood stoves. The average measured PM emission rate in the Li (2007) study of 21 g/hr is considerably greater than the 4.5 g/hr limit that U.S. EPA set for certification on stoves sold after May 15, 2015 (U.S. EPA, 2015). Even prior to this compliance date, most wood heaters on the market were capable of meeting the 4.5 g/hr limit, based on test certification data collected after U.S. EPA established initial New Source Performance Standards (NSPS) in 1988 (U.S EPA, 2017a).).

Examining the PM emission factors from AP-42 and the Li (2007) study in contrast with the NSPS and certification data, we believe that AP-42 emission factors for wood stoves may overestimate PM emissions for most wood stoves sold in the past few decades. We thus advise caution in the use of emissions comparisons between wood stoves and asphalt pavement mixture plants with respect to PM. We are not aware of emissions data on other pollutants that can be used to evaluate the relevancy of AP-42 emission factors to current and recent wood stove models, though conjecturally, one would expect trends for PM-associated pollutants such as PAHs and arsenic to be similarly lower than in AP-42, assuming that the composition of particles generated during combustion is similar in old and new stoves.

Bakeries

Clayton developed an emission estimation comparison between an APM plant and one medium sized commercial bakery (based on annual bread production). The annual production of bread used in the calculations was 17,308 tons of bread baked per year and the emission factor was obtained from an AP-42 support document. We confirm the accuracy of the approach that was taken in the bakery comparison and agree that the emission

calculation is a conservative estimation of the VOC emissions derived from bread baking at one medium sized bread bakery. Table 5 summarizes the calculations. We caution, though, that comparisons with bakery emissions be made with clarity. The medium-sized bakery considered in the calculations is sizable and representative of a commercial enterprise that produces about 95,000 pounds of bread per day, which is considerably larger than a typical neighborhood bakery.

Barbeque Grills

Clayton's TOC emission factor for barbeque grills was obtained from a non-U.S. EPA document that we reviewed and remains valid today. We performed additional investigation to find a more relevant emission factor, but nothing applicable was found. Table 6 summarizes the emission calculations for barbecue grilling, which are based on a grill cooking time of 30 minutes and use of the grill 20 times per year. Using these two assumptions, TOC emissions from an APM plant are comparable to 336 households using barbeque grills.

Lawn Mowers

The lawn mowers used in the Clayton emission estimation are 2-stroke, gasoline powered mowers. The emission factors were obtained from a document titled "Emission Study Report for Non-Road Engines and Vehicles" (U.S. EPA, 1991) and are expressed as gram of pollutant per horsepower-hour (g/hp-hr). We concur with the reasonableness of the assumptions made in the Clayton Report regarding approximate hours of operation per year (50 hours) and the use of horsepower rating at 30% load. Emission calculations are summarized in Table 7 and are presented for 211 lawnmowers to match the emissions of TOC from a typical APM plant. We added additional emission factors for CO, NO_x, and SO_x to Table 7 (also obtained from the U.S. EPA (1991) document).

However, an important caveat regarding the calculations for lawn mowers is the lessening relevance of the emission factors. The U.S. EPA developed stringent emission limits for nonroad engines that have been phased in over time such that new lawn mowers now release roughly 50 times lower hydrocarbons, two times lower CO, and 30–100 times lower PM than the models considered by Clayton at the time of the original report. Even allowing for the gradual replacement of old lawn mowers with new ones, aggregate emissions from lawn mowers have likely decreased substantially, making the emissions comparisons for TOC and PM much less relevant than in the past. As CO emissions have only dropped by a factor of 2, the Clayton Report's comparisons for aldehydes (another product of incomplete combustion) likely remain of greater contemporary relevance.

Auto Refueling

Upon review of the Clayton Report section on auto refueling, we identified more recent information from the U.S. EPA (2008) to update emission estimates. AP-42 section 5.2, issued in June 2008, provided estimates of VOC emissions from auto refueling in its Table 5.2-7. Assuming typical Stage 1 and Stage 2 controls, VOC emissions from (i) filling the

underground storage tank, (ii) breathing and emptying of the underground tank, (iii) vehicle refueling, and (iv) spillage total 372 mg/l. Assuming the same throughput of 50,000 gal/month, we added a total VOC emission estimate equal to:

$$\text{VOC emissions} = \left(\frac{372\text{ mg}}{\text{l}}\right)\left(\frac{3.7854\text{ l}}{\text{gal}}\right)\left(\frac{50000\text{ gal}}{\text{mo}}\right)\left(\frac{12\text{ mo}}{\text{yr}}\right)\left(\frac{\text{lb}}{453600\text{ mg}}\right)\left(\frac{\text{ton}}{2000\text{ lb}}\right) = 0.93\ \frac{\text{ton}}{\text{yr}}$$

AP-42 section 5.2 states that TOC emissions are essentially the same as VOC emissions.

Recent measurements of the composition of gasoline vapors (Chin & Batterman, 2012) indicate that gasoline vapors contain 5.4% benzene, 13.5% toluene, 2.7% ethylbenzene, and 12.0% xylenes (by mass). Multiplying these percentages by the total VOC emissions estimate yields annual emissions estimates of 0.05 tons benzene, 0.13 tons toluene, 0.025 tons ethylbenzene, and 0.11 tons xylenes from a typical filling station (summarized in Table 8a).

The original emission estimates for auto refueling (filling stations) are reproduced in Table 8b based on the methodologies in the Clayton (2001) report. Table 8a estimates have been labeled as revised based on the dependence on more recent data. However, the revised estimates also depend on two sources of data, introducing some additional uncertainty. Hence, the original emission estimates in Table 8b remain valuable for comparison in gauging the level of uncertainty.

Fast Food Restaurants

Clayton constructed emissions estimates for fast food restaurants based on a published paper on emissions from meat cooking (Rogge *et al.*, 1991) and interviews of a local fast-food restaurant chain to determine an average annual meat consumption. In our review, we found emission factors from fast food restaurants were difficult to quantify as there were not a lot of available or consistent data on emission factors and emission estimation calculations. The restaurant chain Clayton contacted owned eight (8) franchise restaurants. The emission factors referenced were for TOC and various PAHs. As a result, Clayton calculated emission estimations based off an approximation of pounds of hamburger cooked in a week. We verified the calculations based on the assumptions made in this approach, and the calculations of emissions are summarized in Table 9a. We also did additional research into available fast food restaurant data. We found a document published by the U.S. EPA (Lee, 1999) that quantified emissions from Street Vendor Cooking Devices (charcoal grilling) in Mexico. The study measured levels of PM, VOCs, aldehydes, CO, NO_x, THC, and other pollutants. The study concluded that emissions of PM and organic pollutants were the result of cooking meat (charcoal did not contribute to the emissions). Using the emission factors listed in the Lee (1999) study we performed alternative calculations for comparison against the original Clayton estimates. Table 9b presents calculations based on the alternative emission factors. Despite originating from a study of charcoal cooking (in a less controlled cooking environment), the TOC and total PAH emission factors that overlap with Table 9a are within a factor of 2 of the original estimates (though 60–80% higher). Allowing for some potential overestimation by the alternative emission factor method in Table 9b, the new

estimates afford emission factors for additional pollutants not available in the original Table 9a estimates.

It is important to note that the estimations in Tables 9a and 9b may be inaccurate for at least three reasons: 1) only hamburger was considered when performing emission calculation estimations; 2) there were no control devices considered when performing these calculations; and 3) neither set of measurements from meat cooking was collected from fast food restaurant style cooking. Many restaurants may employ some sort of control (besides venting) as well as have additional food items listed on their menu. Also, the assumed amount of hamburger in the calculations may be overestimated, but this compensates for the lack of consideration of a diversified menu.[1] Based on these factors, we view the two sets of estimates as providing some information on the degree of uncertainty inherent in the calculations.

3.0 NEW EMISSION COMPARISONS

Clayton developed a comparison of air pollution emissions for various source categories based on specific pollutants or groups of pollutants. The pollutants that Clayton used for comparison include the following: TOCs, VOCs, PM, toluene, benzene, PAHs, benzo[*b*]fluoranthene, benzo[*a*]pyrene, fluoranthene, and pyrene. We added some additional pollutants to this list, as reflected in Tables 3 though 9b. We also developed an additional source category (breweries), described as follows.

Breweries

As beer brewing has become an increasingly popular endeavor, more literature and documentation have become available on emissions generated at both large- and small-scale brewing operations. In 1996, the U.S. EPA published VOC emission factors emitted during different parts of the beer brewing process. The U.S. EPA listed the numerous VOC emission sources during the beer brewing process, including but not limited to the following: mash tuns, cereal cookers, brew kettles, hot wort settling tanks, yeast storage, fermenters, grain holding tanks, and packaging operations. To obtain an overall VOC emission factor for comparison to APM plants, we added the emission factors for all the processes into one emission factor totaling 44.4 lb/1000 bbl for small-scale breweries (producing less than 60,000 barrels of beer (bbl) annually).[2] Using the VOC emission factor, we calculated emission estimations for small-scale breweries and compared those to the VOC emissions from an APM plant. We discovered that the annual VOCs from an APM plant are comparable to about four small-scale commercial breweries (assuming an annual production of 60,000 barrels of beer). In making a comparison, a small commercial brewery would emit about

[1] The Clayton Report assumes that a fast food restaurant cooks 146,692 lbs of meat (hamburger) per year. As another estimate on the amount of "meat" processed, there are reported to be 14,146 McDonald's restaurants in the U.S. (Statista, 2017)) and these restaurants use one billion lbs/yr of beef (Lubin & Badkar, 2011). So the amount of beef used by the average restaurant is 1,000,000,000 lbs / 14,146 = 70,691 lb/yr, which is about half the amount assumed in the Clayton Report. But there has been no accounting for the cooking of anything else on the menu, so the Clayton estimate might be reasonable for total food cooked.

[2] It should be noted that the definition of a "small" brewery varies widely among different trade groups, but the U.S. EPA threshold of 60,000 bbl is used in this report.

27% of the VOCs released by an APM plant (assuming the brewery produced 60,000 bbl/yr). Calculations for the brewery source category are included in Table 10.

Emissions Summary

Table 11 summarizes emission comparisons for various pollutants released from APM plants and the different selected source categories that were investigated. The table includes all the pollutants from the Clayton report and three that we added (arsenic, ethylbenzene, and toluene). As previously discussed, we have also included the "Fast Food Restaurant — Alternative" and "Gasoline Filling Stations — Revised" source categories that use different approaches to estimating emissions. In these cases, differences from the original estimates based on the Clayton (2001) methodologies are mostly thought to reflect uncertainty in the emission estimates.

4.0 EXPOSURE COMPARISONS FOR PARTICULATE MATTER, FORMALDEHYDE, PAHS AND BENZENE

Pollutant emissions that impact people to the greatest degree often occur indoors and outdoors near ground level. In both cases, dilution/dispersion processes are limited, and exposure levels can be elevated relative to other pollution sources. Several examples of typical, elevated exposures to pollutants are presented based on published measurements and information. Typical air pollutant concentrations that result under common conditions are compared to the concentrations of pollutants likely to result from emissions from a typical APM plant.

We extended emission comparisons to examine relative *exposures* to particulate matter, formaldehyde, polycyclic aromatic hydrocarbons (PAHs), and benzene, as these contaminants are commonly found in the indoor air of homes due to indoor emission sources. Particulate matter is released from many sources including household dust, cooking, and wood burning in fireplaces and wood stoves. Formaldehyde is a common component of resins used in building products such as pressed board, and off-gassing from new construction can lead to indoor air concentrations 10–100 times above typical outdoor levels. PAHs are a product of incomplete combustion and are emitted indoors through the use of wood burning stoves and cook stoves (gas or electric). Benzene is present in gasoline, and homes with attached garages have been found to have concentrations elevated above outdoor levels. All of these chemicals are also found in cigarette smoke and in the byproducts of combustion sources (such as cooking and heating sources, burning candles, *etc.*).

Screening Level Air Quality Impact Assessment

A screening-level air quality impact assessment (AQIA) was conducted to estimate worst-case air quality impacts of particulate matter, formaldehyde, PAHs, and benzene from a typical APM plant. Projected air quality impacts serve as a better estimate of air pollutant exposure than simple quantification of emissions. Although site-specific conditions for an individual APM plant may differ from the assumptions used in our analysis, the conservative assumptions built into screening-level methods tend to overestimate (bias high) projected

air quality impacts. Thus, the results are generally applicable as a conservative estimate of exposure to pollutants within close proximity to an APM plant.

Air toxics emissions data for APM plants are obtained from the U.S. EPA (2000) *Emission Assessment Report*. The emission estimates are based on a typical drum mix plant fired by natural gas producing 200,000 tons of APM per year. Emissions from loadout, yard activities, asphalt cement storage tank venting, and APM silo venting are combined as fugitive emissions. Fugitive emissions, by dint of elevated temperatures and distributed from various points, are assumed to be spread through volume source 40 feet in height and length and 150 feet in width, with an average release height of 20 feet.

Screening-level dispersion modeling using the U.S. EPA SCREEN3 model (as implemented in the Lakes Environmental (2017) SCREEN View freeware) is used to estimate worst-case 1-hour average impacts of these four air pollutants. Ground-level air quality impacts are estimated at a location 1,000 feet from the dryer stack, unless indicated otherwise. Drier stack emissions are modeled as a point source using the following parameters for a typical APM plant, as culled from stack test reports and communications with equipment vendors:

- A drier stack height of 30 feet, adjacent to a baghouse approximately 12 feet wide, 70 feet long, and 27 feet high; and
- A stack diameter of 4 feet, with effluent at a temperature of 240°F and velocity of 57 fps (feet per second).

Exposure Comparisons

Results of the air quality impact assessment were compared to average U.S. background concentrations predicted in the 2011 National Air Toxics Assessment (U.S. EPA, 2017b) and expected indoor air quality to determine the relative impact that emissions from an APM plant have on the surrounding community. The results for particulate matter, formaldehyde, PAHs, and benzene are presented below.

Particulate matter (PM) is regulated by U.S. EPA based on the particle size based on the knowledge that particles smaller than 10 µm aerodynamic diameter (PM_{10}) are "respirable" and penetrate deep into the respiratory tract, and particles smaller than 2.5 µm ($PM_{2.5}$) can reach the alveoli (air sacs) where oxygen and carbon dioxide exchange with the blood occurs. Various studies indicate greater concern over the potential adverse health effects of $PM_{2.5}$ in ambient air.

To evaluate the potential particulate matter impacts of APM plant emissions, we consider releases of PM_{10}, which both includes and overestimates $PM_{2.5}$. The screening-level air dispersion modeling predicts a PM increase of 0.3 µg/m³ in ambient air due to APM plant emissions at a distance of 1,000 feet from the dryer stack. This represents a 4% increment to the average level of $PM_{2.5}$ of 8 µg/m³ present in ambient air in the United States.[3] In the absence of indoor sources, PM levels in homes and offices tend to be lower than outdoor

[3] EPA's on-line air trends report (U.S. EPA, 2017c)indicates an average $PM_{2.5}$ concentration of 7.8 µg/m³ in the U.S. in 2016 (which rounds to 8 µg/m³).

levels. However, certain sources, such as cigarette smoking and cooking, lead to higher levels. As an example, a recent study of homes heated by wood stoves found an average $PM_{2.5}$ level of 29 µg/m³ in indoor air (Semmens *et al.*, 2015). Figure 1 compares these values.

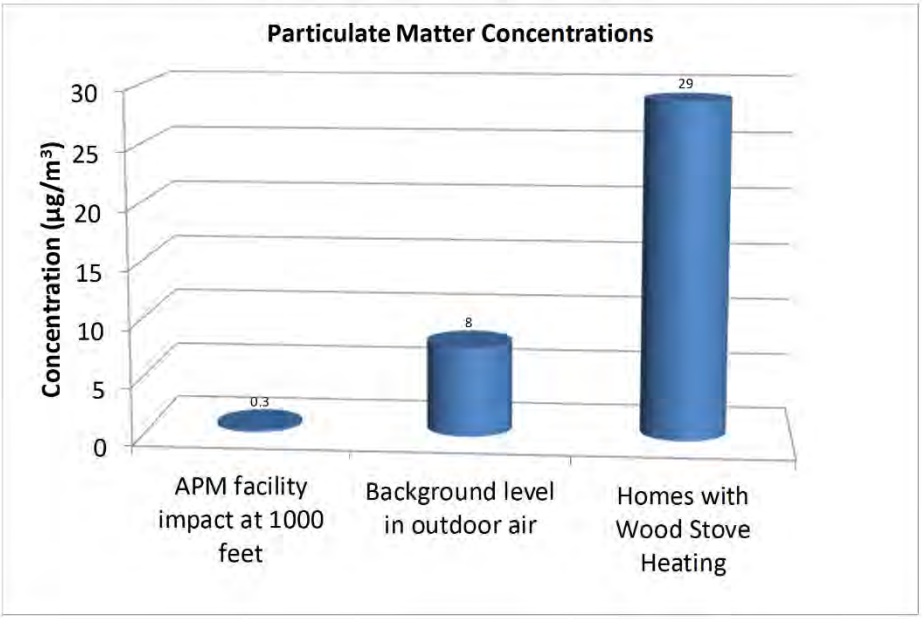

Figure 1 Comparison of sources of exposure to particulate matter

The subsequent chart (Figure 2) compares the formaldehyde concentrations that result from a typical APM facility, the background level in the United States, and the typical indoor concentration for conventional homes. The modeled formaldehyde impact at 1,000 feet from a 200,000 ton/year gas-fired drum mix APM plant (a typical size) is on the order of 0.1 µg/m³, while the typical background level measured in the United States is approximately 1.5 µg/m³. Based on a 2007 indoor air survey conducted in the United States, the 50th percentile formaldehyde concentration measured in the 234 homes was 20 µg/m³, which is approximately 200 times the impact from a typical APM (Liu *et al.*, 2007).

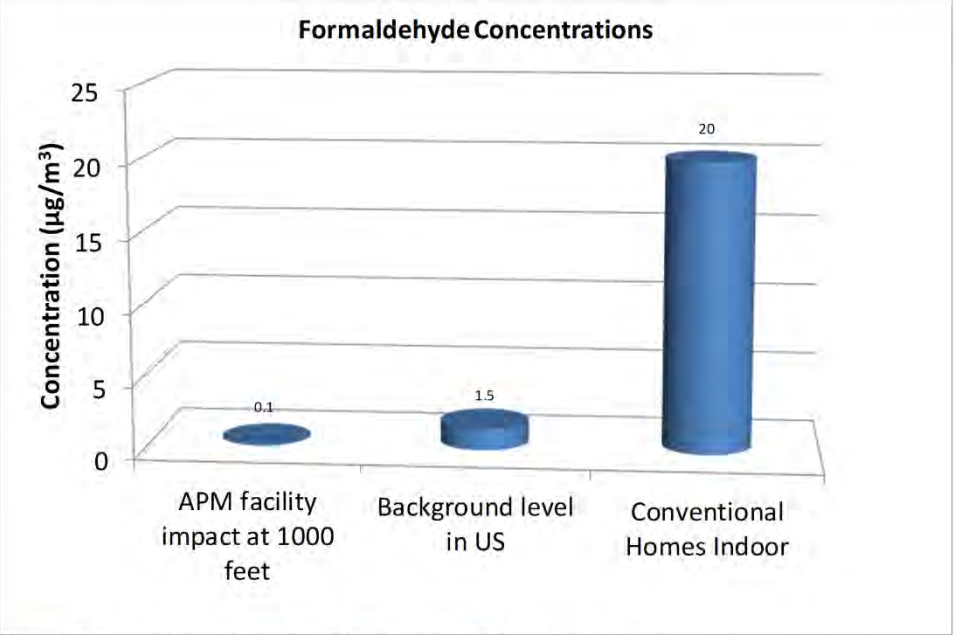

Figure 2 Comparison of sources of exposure to formaldehyde

Indoor air is also commonly contaminated by PAHs, which come not only from infiltration or intrusion of outdoor air but also from indoor emission sources such as cooking and domestic heating with fuel stoves and open fireplaces. Even in airtight stoves with a flue, elevated indoor levels of PAHs can result from intrusion of outdoor air and/or leakage from wood-burning appliances.

The following chart (Figure 3) compares the PAH concentrations from a typical APM facility to outdoor and indoor air concentrations in urban areas across the United States. Concentrations are expressed as benzo[*a*]pyrene equivalents. The modeled range of PAH impacts, 0.00009–0.0003 µg/m^3, represents distances of 250 and 3,000 feet from the typical 200,000 ton/year natural gas fired drum mix APM facility. Based on two studies that measured outdoor and indoor air quality at ten Chicago area homes and 55 residences in Los Angeles, California, Houston, Texas, and Elizabeth, New Jersey, the measured PAH concentrations ranged from 4 to 180 ng/m^3 in outdoor air and from 2 to 350 ng/m^3 in indoor air, which is approximately 10 to 2,000 times the impact from a typical APM (Li *et al.*, 2005; Naumova *et al.*, 2002).

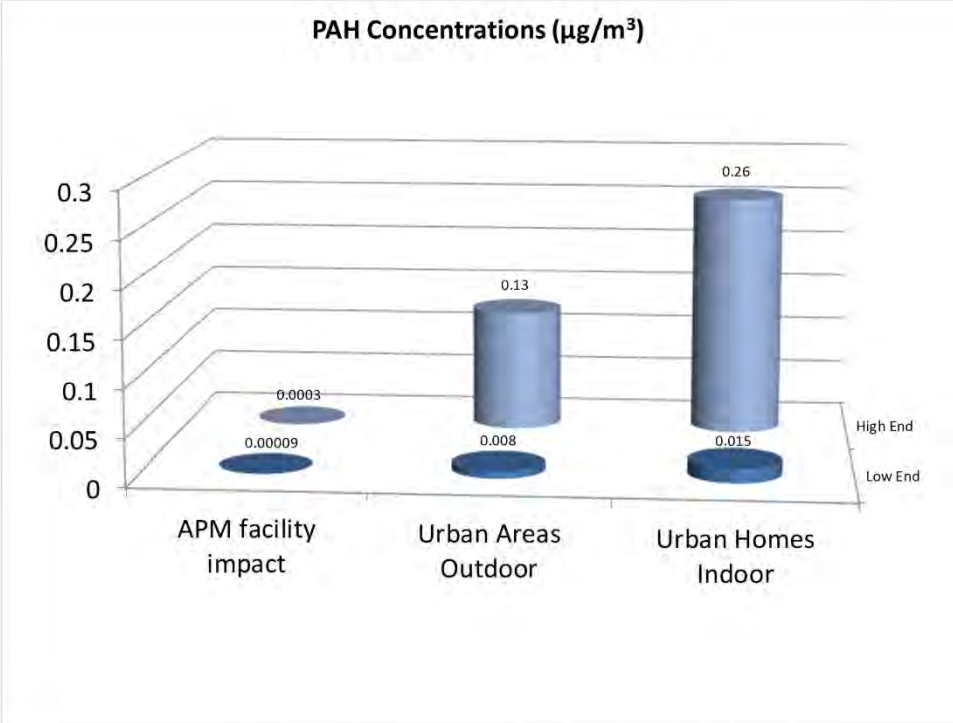

Figure 3 Comparison of sources of exposure to polycyclic aromatic hydrocarbons (PAHs)

The following chart (Figure 4) compares the benzene concentrations from a typical APM facility to outdoor and indoor air concentrations in areas across the United States. Concentrations are expressed as benzo[*a*]pyrene equivalents. The modeled range of PAH impacts, 0.005–0.02 µg/m³, represents distances of 250 and 3,000 feet from the typical 200,000 ton/year natural gas fired drum mix APM facility. The outdoor concentrations are the highest and lowest statewide averages from the U.S. EPA National Air Toxics Assessment (NATA) study, which range from 0.3 µg/m³ (Montana) to 1.4 µg/m³ (District of Columbia). Benzene concentrations in outdoor air vary with proximity to roads and traffic density — a study in New York City measured an average concentration of 0.6 µg/m³ in a low traffic area, and an average of 1.3 µg/m³ in a high traffic area (NYC Health, 2011) The National Human Exposure Assessment Survey (NHEXAS) found higher concentrations of benzene indoors than outdoor, with the median and 90th percentile indoor air concentrations measured at 1.7 µg/m³ and 18.1 µg/m³, respectively, in homes in Arizona (Robertson *et al.*, 1999) Concentrations of benzene encountered in specific microenvironments, such as gasoline filling stations, can be even higher.

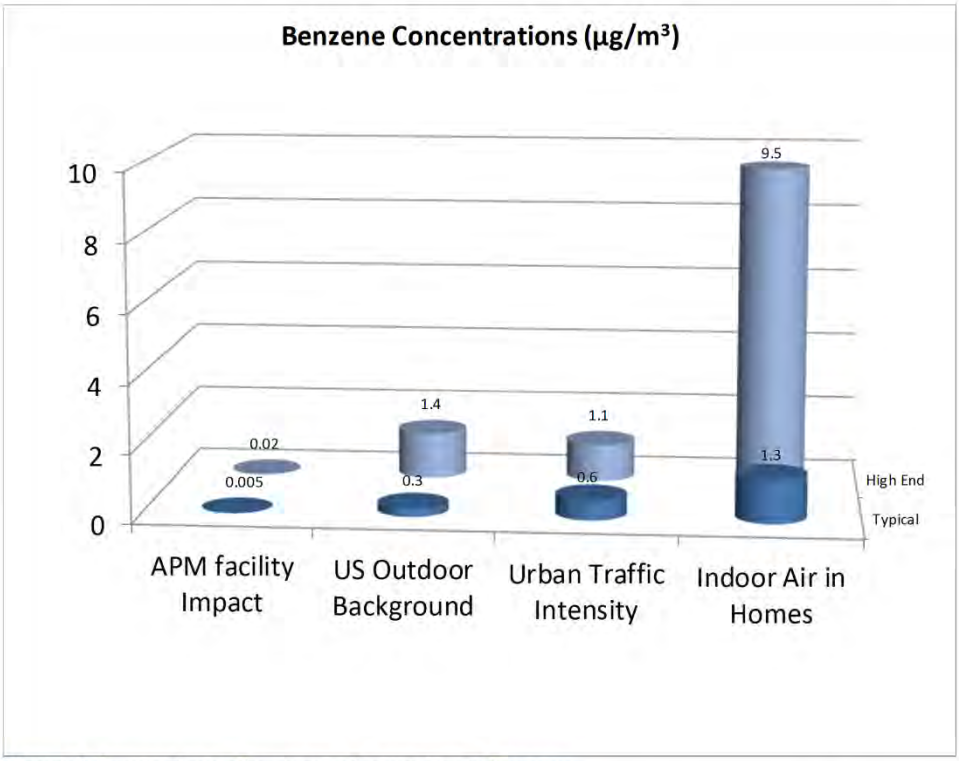

Figure 4 Comparison of sources of exposure to benzene

The overall commonalities of the comparisons of Figure 1 through Figure 4 are that the incremental concentrations of pollutants added by emissions of an APM facility are small compared to the levels typically present in outdoor air due to other sources, and that exposure levels indoors (where people spend the bulk of their time) can be many times greater and account for the majority of air pollutant exposure.

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TABLES

Table 1
Summary Update to Emission Estimates

Table # in Report	Emission Source Category	Changes and Updates from Original 2001 Clayton Report
2	Asphalt Pavement Mixture (APM) Plant	Emission factors updated for consistency with the U.S. EPA (2000) Emission Assessment Report, with most changes to fugitive emission estimates
3	Residential Fireplaces	PM10 emission estimate corrected and emission factor added for arsenic
4	Residential Wood Stoves	Emission factors developed for arsenic and formaldehyde
5	Bakeries	No updates to methodology
6	Barbeques	No updates to methodology
7	Lawn Mowers	Emission factors added for CO, NOx, and SO2
8	Auto Refueling	Methodology updated to 2008 changes to U.S. EPA AP42 emission factors and list of pollutants expanded
9a and 9b	Fast Food Restaurants	No changes to original calculations but second alternative method developed with expanded pollutant list
10	Breweries	New section/emission estimates
11	Emission Comparison Summary	Comparisons updated and expanded in response to emission updates within source categories

Table 2
Asphalt Pavement Mixture (APM) Plant
Emission Estimates and Comparison
with Previous Estimates

Pollutant	Previous Clayton 2001 Emission Estimates tons/yr	Revised APM Plant Emission Estimates			Ratio of Previous 2001 Clayton Emission Estimates to Revised Emission Estimates
		Drier Stack Emissions tons/yr	Fugitive Emissions tons/yr	Total (Drier Stack and Fugitive) tons/yr	
PM	3.4	2.3	0.1	2.4	0.72
CO	14	13	0.3	13	0.94
CO_2	3200	N/A	N/A	-	-
NOx	5.8	5.5	0	5.5	0.95
SO_2	1.1	1.1	0	1.1	1.0
TOC	4.9	4.4	1.7	6.1	1.2
CH_4	1.2	N/A	N/A	-	-
VOC	3.2	3.2	1.7	4.9	1.5
Isooctane	0.004	0.004	1.3E-05	0.0040	1.0
Benzene	0.051	0.039	6.7E-04	0.040	0.78
Ethylbenzene	0.024	0.024	0.0019	0.026	1.1
Formaldehyde	0.25	0.31	0.079	0.39	1.6
Toluene	0.015	0.29	0.0019	0.29	19
Xylenes	0.020	0.020	0.0056	0.026	1.3
2-Methylnaphthalene	0.0074	0.017	0.0022	0.019	2.6
Acenaphthene	1.4E-04	1.4E-04	2.1E-04	3.5E-04	2.5
Acenaphthylene	8.6E-04	0.0022	1.4E-05	0.0022	2.6
Anthracene	2.2E-05	3.1E-04	5.7E-05	3.7E-04	17
Benzo(a)anthracene	2.1E-05	2.1E-05	2.1E-05	4.2E-05	2.0
Benzo(a)pyrene	9.8E-07	1.0E-06	7.9E-07	1.8E-06	1.8
Benzo(b)fluoranthene	1.0E-05	1.0E-05	2.9E-06	1.3E-05	1.3
Benzo(g,h,i)perylene	1.1E-05	4.0E-06	6.5E-07	4.7E-06	0.42
Benzo(k)fluoranthene	4.1E-06	4.1E-06	7.5E-07	4.9E-06	1.2
Chrysene	1.8E-05	1.8E-05	9.0E-05	1.1E-04	6.0
Fluoranthene	6.1E-05	6.0E-05	5.5E-05	1.2E-04	1.9
Fluorene	3.8E-04	0.0011	5.2E-04	0.0016	4.3
Indeno(1,2,3-cd)pyrene	7.0E-07	7.0E-07	1.6E-07	8.6E-07	1.2
Naphthalene	0.0090	0.065	9.3E-04	0.066	7.3
Phenanthrene	7.6E-04	0.0023	7.4E-04	0.0030	4.0
Pyrene	5.4E-04	3.0E-04	1.6E-04	4.6E-04	0.85
Total PAHs	0.019	0.088	0.0050	0.093	4.9
Arsenic	5.60E-05	5.50E-05	N/A	5.5E-05	0.98
Barium	5.80E-04	N/A	N/A	-	-
Cadmium	4.10E-05	4.10E-05	N/A	4.1E-05	1.0
Chromium	5.50E-04	5.50E-04	N/A	5.5E-04	1.0
Hexavalent chromium	4.50E-05	4.50E-05	N/A	4.5E-05	1.0
Copper	3.10E-04	N/A	N/A	-	-
Lead	0.0015	0.0015	N/A	0.0015	1.0
Manganese	7.70E-04	7.50E-04	N/A	7.5E-04	0.97
Mercury	2.60E-04	2.60E-04	N/A	2.6E-04	1.0
Nickel	0.0063	0.0063	N/A	0.0063	1.0
Selenium	3.50E-05	3.50E-05	N/A	3.5E-05	1.0
Zinc	0.0061	N/A	N/A	-	-

Notes:

Emission estimates were made for an oil-fired drum-mix plant with a production of 200,000 tpy HMA.
Emission estimates based on U.S. EPA (2000) emssion assessment report.

N/A - indicates emission estimates not available in U.S. EPA (2000)

Table 3
Residential Fireplace Emission Estimates

Pollutant	Emission Factor	Units	Reference	Emissions per household (ton/yr)	Emissions for 20 households (ton/yr)
PM10	34.6	lb/ton	AP42 Section 1.9 (U.S. EPA, 1996a)	0.037	0.75
CO	252.6	lb/ton		0.27	5.5
CO_2	3400	lb/ton		3.7	73
NOx	2.6	lb/ton		0.0028	0.056
N_2O	0.3	lb/ton		3.2E-04	0.0065
SOx	0.4	lb/ton		4.3E-04	0.0086
VOC	**229**	**lb/ton**		**0.25**	**4.9**
POM	0.016	lb/ton		1.7E-05	3.5E-04
Aldehydes	2.4	lb/ton		0.0026	0.052
Arsenic	0.000228	lb/ton	NYSERDA (2013)	2.5E-07	4.9E-06

Calculations & Assumptions

Throughput of an average fireplace: Assume that the same amount of wood is burned in the average woodstove as in the average family fireplace, or approximately 1 cord of wood per year.

Arsenic emission factor based on the PM10 emission factor and an arsenic content in ash of 6.6 mg/kg (NYSERDA, 2013)

Reference: Equation from U.S. EPA (1987) is as follows:

1. Calculate an average wood use by calculating an average of the mean wood use values for all stove types using scale weighing and woodpile measurements.

Average wood use per household = (0.64+0.85+0.53+0.91+0.67+0.85+0.46+0.89)/8
Average wood use per household = 0.725 dry kg of wood/ heating degree day (HDD)

2. Convert wood use from dry kg/1000 HDD to tons dry wood use/year
(a) Convert from kg to tons dry kg/1000
0.725 HDD X 2.205 lb/kg X 1 ton/2000 lb
= 7.99E-04 dry ton wood X 2,700 HDD
(b) Convert from 1000 HDD to year

Assume that the Vermont and upstate New York region has three times as many HDD as the rest of the country. The reference reported 8,000 to 9,000 HDD/yr. Therefore, assume that there are 2,700 HDD/year.

7.99E-04 dry ton wood X 2,700 HDD

= 2.16 dry ton wood/yr

Boldface indicates pollutant with an emissions total equal to an APM plant

Table 4
Residential Wood Stove Emission Estimates

Pollutant	Emission Factor	Units	Reference	Emissions per household per year (tons/year)	Emissions for 19 households (ton/yr)
PM10	19.6	lb/ton	AP42 Section 1.10 (1996)	0.021	0.40
CO	140.8	lb/ton		0.15	2.9
SOx	0.4	lb/ton		4.3E-04	0.0082
TOC	28	lb/ton		0.030	0.57
TNMOC	12	lb/ton		0.013	0.25
CH_4	16	lb/ton		0.017	0.33
Ethane	1.47	lb/ton		0.0016	0.030
Ethylene	4.49	lb/ton		0.0048	0.092
Acetylene	1.124	lb/ton		0.0012	0.023
Propane	0.358	lb/ton		3.9E-04	0.0073
Propene	1.244	lb/ton		1.3E-03	0.026
i-Butane	0.028	lb/ton		3.0E-05	5.7E-04
n-Butane	0.056	lb/ton		6.0E-05	0.0011
Butenes	1.192	lb/ton		0.0013	0.024
Pentenes	0.616	lb/ton		6.6E-04	0.013
Benzene	**1.938**	**lb/ton**		**0.0021**	**0.040**
Furan	0.342	lb/ton		3.7E-04	0.0070
Furfural	0.486	lb/ton		5.2E-04	0.010
Methyl ethyl ketone	0.29	lb/ton		3.1E-04	0.0059
2-Methylfuran	0.656	lb/ton		7.1E-04	0.013
2,5-Dimethylfuran	0.162	lb/ton		1.7E-04	0.0033
Toluene	0.73	lb/ton		7.9E-04	0.015
o-Xylene	0.202	lb/ton		2.2E-04	0.0041
Acenaphthene	0.01	lb/ton		1.1E-05	2.1E-04
Acenaphthylene	0.032	lb/ton		3.5E-05	6.6E-04
Anthracene	0.009	lb/ton		9.7E-06	1.8E-04
Benzo(b)fluoranthene	0.004	lb/ton		4.3E-06	8.2E-05
Benzo(g,h,i)fluoranthene	0.028	lb/ton		3.0E-05	5.7E-04
Benzo(g,h,I)perylene	0.02	lb/ton		2.2E-05	4.1E-04
Benzo(a)Pyrene	0.006	lb/ton		6.5E-06	1.2E-04
Benzo(e)Pyrene	0.002	lb/ton		2.2E-06	4.1E-05
Biphenyl	0.022	lb/ton		2.4E-05	4.5E-04
Chrysene	0.01	lb/ton		1.1E-05	2.1E-04
Dibenzo(a,h)anthracene	0.004	lb/ton		4.3E-06	8.2E-05
7,12-Dimethylbenz(a)Anthracene	0.004	lb/ton		4.3E-06	8.2E-05
Fluoranthene	0.008	lb/ton		8.6E-06	1.6E-04
Fluorene	0.014	lb/ton		1.5E-05	2.9E-04
Indendo(1,2,3-cd)pyrene	0.02	lb/ton		2.2E-05	4.1E-04
9-Methylanthracene	0.004	lb/ton		4.3E-06	8.2E-05
12-Methylbenz(a)anthracene	0.002	lb/ton		2.2E-06	4.1E-05
1-Methylphenanthrene	0.03	lb/ton		3.2E-05	6.2E-04
Naphthalene	0.144	lb/ton		1.6E-04	0.0030
Perylene	0.002	lb/ton		2.2E-06	4.1E-05
Phenanthrene	0.118	lb/ton		1.3E-04	0.0024
Pyrene	0.008	lb/ton		8.6E-06	1.6E-04
Total PAHs	0.501	lb/ton	Sum from Acenapthene through Pyrene	5.4E-04	0.010
Cadmium	2.00E-05	lb/ton	AP42 Section 1.10 (U.S. EPA, 1996b)	2.2E-08	4.1E-07
Manganese	1.40E-04	lb/ton		1.5E-07	2.9E-06
Nickel	2.00E-05	lb/ton		2.2E-08	4.1E-07
Arsenic	1.29E-04	lb/ton	NYSERDA (2013)	1.4E-07	2.7E-06
Formaldehyde	1.94	lb/ton	Li (2007)	0.0021	0.040

Calculations & Assumptions:

Noncatalytic woodstove type assumed for criteria pollutants, PAHs and metals. Conventional stove type assumed for organic pollutants
Assume same wood use as calculated for fireplace calculations, which is 2.16 dry tons of wood/year

Arsenic emission factor based on the PM10 emission factor and an arsenic content in ash of 6.6 mg/kg (NYSERDA, 2013)

Boldface indicates pollutant with an emissions total equal to an APM plant

Table 5
Bakery Emission Estimates

Pollutant	Emission Factor	Units	Ref #	Emissions (ton/yr) (from equation)
VOC	6.9	lb/ton	AP42 Section 9.9.6 (1997)	60

Calculations & Assumptions:

Reference for values in equation and bread production: U.S. EPA (1992).

From the model ovens listed in the ACT, the one with medium-sized production and the largest emission factor was chosen, that is, model oven number 23. In addition to listing values for the variables in the emission factor equation, the ACT listed the emission factor and annual VOC emissions. These numbers were used.

AP-42 Equation:

VOC= 0.95Yi+0.195ti-0.51S-0.86ts+1.90

lb VOC per ton baked bread; Y i= initial baker's % of yeast; t i= total yeast action time in hours; S = final (spike) baker's % of yeast; ts = spiking time in hours

The variables for model oven no. 23 are: oven size=6X10^6 BTU/hr, Bread production = 17,308 tons /yr, Y=4.25, S=0, ti=5.15, ts=0, VOC emission factor (lbs/ton) = 6.9 and VOC Emissions (tons/yr) = 60

Emissions from bakery are 12 times greater than a typical asphalt plant

Table 6
Barbeque Emission Estimates

Pollutant	Emission Factor	Units	Ref #	Emissions per Household per year (tons/yr)	Emissions for Neighborhood of 336 Households (tons/yr)
TOC	0.0605	lb/min	Radian (1990)	0.018	6.1

Calculations & Assumptions:

Cooking time (min) on barbeque grill	30
Number of times per year using grill	20

Single household emissions

0.0605 lb/min * 30 min/event * 20 events/yr

= 36.3 lb/yr

= 0.01815 tons/yr

Table 7
Lawn Mower Emission Estimates

Pollutant	Emission Factor	Units	Reference	Emissions per Household per year (tons/yr)	Emissions for Neighborhood of 211 Households (tons/yr)
TOC	**437**	**g/hp-hr**	U.S. EPA (1991b)	**0.029**	**6.1**
PM	7.7	g/hp-hr		5.1E-04	0.11
Aldehydes	2	g/hp-hr		1.3E-04	0.028
CO	923.4	g/hp-hr		0.061	13
NOx	0.29	g/hp-hr		1.9E-05	0.0040
SO_2	0.54	g/hp-hr		3.6E-05	0.0075

Calculations & Assumptions:

Ave horsepower rating @ 30% load	1.2
Ave hours per year of operation	50

Calculation for TOC

(437 g/hp-hr * 1.2 hp * 50 hrs/yr) /(454 g/lb *2000 lb/ton)

= 0.02888 tons/yr

Boldface indicates pollutant with an emissions total equal to an APM plant

Table 8a
Auto Refueling Emission Estimates - Revised

Pollutant	Emission Factor	Units	Reference	Annual Emissions (tons/yr)
VOC	372	mg/l	AP42 Section 5.2 (U.S. EPA, 2008) with TOC = VOC	0.93
TOC	372			0.93
Benzene	5.4%	% of VOC emissions	Chin and Batterman (2012)	0.050
Toluene	13.5%			0.13
Ethylbenzene	2.7%			0.025
Xylene	12.0%			0.11

Calculations & Assumptions:

Throughput: Locating and Estimating document reported that the average filling station's throughput is 50,000 gallons per month.

$$\text{VOC emissions} = \left(\frac{372\ \text{mg}}{\text{l}}\right)\left(\frac{3.7854\ \text{l}}{\text{gal}}\right)\left(\frac{50000\ \text{gal}}{\text{mo}}\right)\left(\frac{12\ \text{mo}}{\text{yr}}\right)\left(\frac{\text{lb}}{453600\ \text{mg}}\right)\left(\frac{\text{ton}}{2000\ \text{lb}}\right) = 0.93\ \frac{\text{ton}}{\text{yr}}$$

Chin and Batterman (2012) report gasoline vapors contain 5.4% Benzene, 13.5% Toluene, 2.7% Ethylbenzene, and 12.0% Xylene

Benzene emissions = 5.4% * 0.93 tons/yr = 0.050 tons/yr

Toluene emissions = 13.5% * 0.93 tons/yr = 0.13 tons/yr

Ethylbenzene emissions = 2.7% * 0.93 tons/yr = 0.025 tons/yr

Xylene emissions = 12.0% * 0.93 tons/yr = 0.11 tons/yr

Table 8b
Auto Refueling Emission Estimates - Original

Pollutant	Emission Factor	Units	Reference	Annual Emissions (tons/yr)
Benzene	0.099	lb/1000 gal	U.S. EPA (1998a)	0.030
Toluene	139.9	mg/l	U.S. EPA (1994a)	0.35
Xylene	5.5	mg/l	U.S. EPA (1994b)	0.014
Total "VOC"			Sum of three compounds	0.39

Calculations & Assumptions:

Throughput: Locating and Estimating document reported that the average filling station's throughput is 50,000 gallons per month.

Benzene emissions = 0.099 lb/1000 gal * 50000 gal/mo * 12 mo/yr * 1 ton/2000lb

= 0.0297 tons/yr

Toluene emissions = 139.9 mg/l * 3.7854 l/gal * 50000 gal/mo * 12 mo/yr * 1 g/1000 mg * 1 lb/453.593g * 1 ton/2000 lb

= 0.350 tons/yr

Toluene emissions = 5.5 mg/l * 3.7854 l/gal * 50000 gal/mo * 12 mo/yr * 1 g/1000 mg * 1 lb/453.593g * 1 ton/2000 lb

= 0.0138 tons/yr

Table 9a
Fast-Food Restaurant Emission Estimates - Original

Pollutant	Emission Factor	Units	Reference	Emissions (tons/yr)
TOC	2,405	mg/kg	Rogge *et al* (1991)	0.18
2-Methylfuran	16.1	mg/kg		0.0012
Benzo(a)anthracene	0.29	mg/kg		2.1E-05
Benzo(b)fluoranthene	0.21	mg/kg		1.5E-05
Benzo(a)Pyrene	0.19	mg/kg		1.4E-05
Benzo(e)Pyrene	0.19	mg/kg		1.4E-05
Fluoranthene	0.35	mg/kg		2.6E-05
Pyrene	0.74	mg/kg		5.4E-05
Total PAHs				0.0013

Calculations & Assumptions:

To calculate throughput:

Clayton (2001) called Walker Holdings Group on 9/11/00. They own 8 Wendy's restaurants in the NC/southern VA area. Mr. Bert Walker reported that only data for their drive-thru sales were readily available.

Mr. Walker reported that the average (for 8 Wendy's) drive thru activity was 2,821 cars per week.

He added that the average check per car was $4.12.

Assumptions:

The same amount of sales occurred on foot (in the restaurant) as by the drive-thru.

The average sale consisted of one burger (plus fries and drink and other side dishes)

The average burger weighed 0.5 pound.

Throughput calculation:

Weekly number of sales = 2821*2 = 5642

Number of "half-pounders" sold = 5642

Weekly number of pounds of hamburger cooked = 5642 burgers/week * 0.5 lb/burger = 2821 lb/week

Annual mass of hamburger cooked at the average fast-food restaurant = weekly mass * 52

= 2821 lb/week * 52 weeks/year = 146692 lbs of hamburger cooked/yr

To calculate annual emissions:

TOC Emissions:

TOC Emissions = 2405 mg/kg * 0.4536 kg/lb * 146692 lb/yr * 1 g/1000mg * 1 lb/453.593g * 1 ton/2000lb

= 0.18 tons/year

Table 9b
Fast-Food Restaurant Emission Estimates - Alternative

Pollutant	Emission Factor	Units	Reference	Emissions (tons/yr)
TOC	4280	mg/kg	Lee (1999)	0.31
VOC	851	mg/kg		0.062
NOx	3140	mg/kg		0.23
PM10	8746	mg/kg		0.64
CO	162700	mg/kg		12
Aldehydes	874.6	mg/kg		0.064
Formaldehyde	394.1	mg/kg		0.029
Benzene	420.9	mg/kg		0.031
Toluene	160.9	mg/kg		0.012
Ethylbenzene	31.4	mg/kg		0.0023
Xylene	54.6	mg/kg		0.0040
Phenanthrene	1.12	mg/kg		8.2E-05
Fluoranthene	0.45	mg/kg		3.3E-05
Pyrene	0.34	mg/kg		2.5E-05
Naphthalene	21.1	mg/kg		0.0015
2-Methylnaphthalene	3.90	mg/kg		2.9E-04
Acenaphthylene	1.18	mg/kg		8.7E-05
Fluorene	0.43	mg/kg		3.2E-05
Total PAHs	28.5	mg/kg	Sum from Phenanthrene through Fluorene	0.0021

Calculations & Assumptions:

To calculate throughput:

Assume the same amount of meat coooked per year - 146692 lbs - estimated in the original analysis (see Table 9a)

To calculate annual emissions:

Use emission factors from grilling study by Lee (1999) as listed in table

Assume (as reported in Lee, 1999) THC = TOC, NO = NOx, and PM = PM10

TOC Emissions = 4280 mg/kg * 0.4536 kg/lb * 0 lb/yr * 1 g/1000mg * 1 lb/453.593g * 1 ton/2000lb

= 0.31 tons/year

Table 10
Brewery Emission Estimates

Pollutant	Emission Factor (lb/1000 bbl)	Units	References	Emissions (ton/yr) from a 60,000 bbl/year brewery
VOC	44.4	lb/bbl	AP42 Section 9.12.1 (U.S. EPA. 1996c); U.S. EPA (1996d); Radian (1992b)	1.3

Calculations & Assumptions:

VOC emissions from AP-42 Section 9.12.1 for Malt Beverages

Processes in Table 9.12.1-2 summed together for a sterilized bottle filling line

Volume of production (small brewery) = 60,000 barrels (bbl) per year based on AP-42 Section 9.12.1 background document (U.S. EPA, 1996d) estimate for the upper range of a small brewery

Table 11
Emission Comparison Table

Pollutant	Equivalent No. of a Selected Category	Selected Source Category
Arsenic	220	Residential Fireplaces
	390	Residential Woodstoves
Benzene	19	Residential Woodstoves
	1	Gasoline Filling Stations - Original
	1	Gasoline Filling Stations - Revised
	1	Fast Food Restaurant - Alternative
Ethylbenzene	1	Gasoline Filling Stations - Revised
	6	Fast Food Restaurant - Alternative
Formaldehyde	150	Residential Fireplaces
	190	Residential Woodstoves
	2900	Lawnmowers
	7	Fast Food Restaurant - Alternative
PM	65	Residential Fireplaces
	110	Residential Woodstoves
	4700	Lawnmowers
	2	Fast Food Restaurant - Alternative
TOC	470	Residential Woodstoves
	340	Barbecue Grills
	210	Lawnmowers
	35	Fast Food Restaurant - Original
	10	Fast Food Restaurant - Alternative
Total PAHs/POMs	5400	Residential Fireplaces
	180	Residential Woodstoves
	70	Fast Food Restaurant - Original
	21	Fast Food Restaurant - Alternative
Toluene	1700	Residential Woodstoves
	1	Gasoline Filling Stations - Original
	2	Gasoline Filling Stations - Revised
	12	Fast Food Restaurant - Alternative
VOC	20	Residential Fireplaces
	1/12	Bakery
	4	Breweries
	13	Gasoline Filling Stations - Original
	5	Gasoline Filling Stations - Revised
	39	Fast Food Restaurant - Alternative
Xylenes	120	Residential Woodstoves
	2	Gasoline Filling Stations - Original
	1/4	Gasoline Filling Stations - Revised
	3	Fast Food Restaurant - Alternative

Notes:
1. Typical emissions from an asphalt plant in tons/year (from the US EPA (2000) Emission Assessment Report):
TOC: 6.1
VOC: 4.9
PM: 2.4
Benzene: 0.03967
Toluene: 0.29187
Ethylbenzene: 0.025937
Xylenes: 0.025648
Total PAHs: 9.34E-02
Formaldehyde: 0.38896
Arsenic: 5.50E-05

Health Consultation

APAC CAROLINA INC. AND ASSOCIATED ASPHALT INC.
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SALISBURY, ROWAN COUNTY, NORTH CAROLINA 28144

EPA FACILITY ID: NCD095458204

FEBRUARY 14, 2007

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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1-800-CDC-INFO
or
Visit our Home Page at: http://www.atsdr.cdc.gov

HEALTH CONSULTATION

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Appendices

Appendix A. ATSDR'S Multi-Site Evaluation of Hot Mix Asphalt Plants and Similar Facilities

Appendix B. ATSDR's Evaluation of HMA Plants using AP-42 Parameters

Appendix C. Odors Discussion

Appendix D. Explanation of Comparison Values

Summary and Statement of Issues

Over a six year period, people living near several asphalt plants throughout the U.S., requested the Agency for Toxic Substances and Disease Registry (ATSDR) to investigate the potential health impact of asphalt emissions on their communities. Although the operations in each location varied (e.g., one community had three companies), all of the locations handled the constituent ingredients of asphalt – stone, sand, and liquid asphalt (aka asphalt cement). Community members most frequently expressed health concerns about respiratory distress and eye irritation and associated the symptoms with asphalt production because the symptoms occurred during or just following the characteristic asphalt odor. Since those symptoms may be exacerbated by the chemicals associated with asphalt, in response to the community requests, ATSDR investigated the airborne exposures at 7 locations between 1998 and 2004 in Arizona, California, Georgia, New York, North Carolina, and Utah (ATSDR 1999, 2001a, b, 2003, 2004, 2005).

One of the seven requests came from the Rowan Citizens Against Pollution. This group asked ATSDR to evaluate people living near 26 North Carolina Department of Transportation (NCDOT) asphalt company test sites. Two of the 26 sites were Associated Asphalt and APAC-CAROLINA, Inc. in Salisbury, NC. The group compiled a list of health concerns for the Salisbury location which included unexpected gastrointestinal illness, respiratory problems, cancer clusters, higher suicide rates, and death. ATSDR partially accepted the North Carolina petition request for the 26 facilities as we were already assessing some of the sites on the list and had made assessments on several others in other parts of the country.

In 2001, the Salisbury Air Quality Monitoring Study was conducted. ATSDR, the NC Division of Air Quality (NCDAQ) Mooresville Regional Office, and the city of Salisbury collaborated with the NCDAQ to complete the study. The study included ambient air monitoring and emission tests to estimate concentrations of several toxic pollutants in residential suburban areas adjacent to a liquid asphalt distribution terminal (Associated Asphalt, Inc.) and a hot mix asphalt plant (APAC-CAROLINA, Inc.). Between May and September 2001, data were collected for hydrogen sulfide (H_2S), volatile organic compounds (VOCs), and meteorological conditions. The Salisbury Air Quality Monitoring Study, Final Report was completed in August 29, 2003 (NCDAQ 2003) and the full report is available online at www.daq.state.nc.us/toxics/studies/salisbury/Salisbury_final_report.pdf.

This consultation will summarize those findings and report on ATSDR's multi-site evaluation of the seven locations referenced above. We acknowledge that this data represents a brief period in time and historical air contaminant levels are not represented.

Summary of Findings

Salisbury Specific

ATSDR determined the following from the data:

- The available data from Salisbury and near other asphalt plants suggests that

concentrations of polycyclic aromatic hydrocarbons (PAHs) and volatile organic carbons (VOCs) pose no acute (i.e., short-term) or chronic (i.e., long-term) public health hazard.
- Although limited to two days of sampling, Salisbury particulate levels for one day (respirable dust as $PM_{2.5}$) were above regulatory standards and could cause asthmatics and sensitive individuals to experience respiratory irritation. Most of both days' particulate levels (i.e., total dust, respirable dust and quartz) were higher than the background levels.
- The data from Salisbury are similar to those found at other asphalt sites.

The Salisbury Air Quality Monitoring Study determined the following:

Hydrogen Sulfide (H_2S)

- H_2S was the toxic compound emitted in the largest amount from the Associated Asphalt liquid asphalt terminal and it appears to be emitted at significant levels from hot mix asphalt plants.
- Monitoring data, process data, citizen complaints, and dispersion modeling support the conclusion that the liquid asphalt terminal is the primary contributor to H_2S levels above the odor threshold in the nearby area.
- Although measured H_2S in the residential areas surrounding the asphalt operations occasionally exceeded odor threshold levels and very likely reached or exceeded odor nuisance levels on a periodic basis, H_2S did not likely reach levels (concentrations) known to pose a long-term health hazard.

VOCs and PAHs

- Monitoring data and dispersion modeling show that ambient concentrations of benzene and VOCs in Salisbury are typical of air in similar communities with asphalt facilities.

ATSDR Multi-Site Evaluation

VOCs, PAHs, H_2S, Particulates

- ATSDR sampling from seven sites (including Salisbury) in the communities surrounding asphalt facilities showed that there do not appear to be any chemicals or compounds at levels that would pose a public health hazard. VOCs and PAHs were detected in very low concentrations, and only H_2S, and particulate matter (PM) – as respirable particulates or PM_{10} and $PM_{2.5}$ – were slightly elevated.

Sulfur dioxide (SO2), Nitrogen oxides (NOx), and Metals

- *Evaluation of Air Pollution (AP) Emission Factors*: ATSDR also reviewed the Environmental Protection Agency's (EPA's) AP-42 emission factors[1] for Hot Mix Asphalt (HMA) plants to determine if our detected sample constituents matched what was predicted. We had the following conclusions:

    - Based on both the emission rates and toxicities of the 159 chemicals reportedly emitted from asphalt plants, the compounds most capable of posing a health hazard in communities were sulfur dioxide (SO_2) and nitrogen oxides (NOx). Under some circumstances, carbon monoxide (CO), aldehydes (such as acrolein), particulates (such as quartz, dust) and some metals might also pose some concern, but they are much less likely to produce actual health effects in those exposed off-site.
    - Chemicals such as SO_2 and the aldehydes are highly reactive and at sufficiently high levels can cause irritation to the eyes and upper respiratory system. Particulates (such as quartz), which are released by HMA plants, can penetrate the lungs and cause inflammation and fibrosis if inhaled at sufficiently high levels.
    - Although scientists and regulators tend to associate H_2S as a major pollutant from asphalt facilities, SO_2, NOx, and many metals ranked higher than H_2S in their degree of toxicity, potential health risk and/or odor.

- We did not detect hazardous levels of VOCs, PAHs, or particulates at the seven asphalt sites we sampled. There remains a data gap for evaluating metals, aldehydes, SO_2, NOx, and CO. ATSDR is filling that data gap with subsequent sampling at facilities we are requested to evaluate.

Odor Responses

- Many compounds have odor thresholds that are lower than the levels thought to be hazardous. However, these warning odors may, by themselves, provoke odor-related symptoms such as fast heart rates, dizziness, nausea, sweating, and anxiety in sensitive individuals.

Background

How Are Asphalt Fumes Produced?

Liquid asphalt's composition varies each time it is made. Liquid asphalt is made in petroleum facilities; it is the distillate left over after oil is refined. Asphalt's chemical composition depends on the chemical complexity of the original crude petroleum as well as the manufacturing process.

[1] An emissions factor is a representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant. Emission factors for Hot Mix Asphalt Plants are listed in AP 42, Fifth Edition: Volume I, Compilation of Air Pollution Emission Factors, Stationary Point and Area Sources – January 1995

A full discussion on the chemical variability of asphalt can be found in the *Health Effects of Occupational Exposure to Asphalt* (CDC 2000).

For distribution and use, the liquid is loaded onto rail cars and sent to regional tank farms where the cars are heated and the liquid is pumped into the tanks (heated to 190-450^{o} F). During tank loading, condensers are used to prevent escape of vapors. From the tank farms, the heated liquid is loaded onto trucks and transported to the mix facilities where it is loaded into smaller tanks. Although fuel transfer stations are equipped with re-capture systems to prevent fumes from escaping, asphalt transfer stations are not.

The manufacturing process of asphalt can also affect its composition. Hot mix asphalt paving materials can be manufactured by the following: (1) batch mix plants, (2) continuous mix (mix outside drum) plants, (3) parallel flow drum mix plants, and (4) counterflow drum mix plants. This order of listing generally reflects the chronological order of development and use within the HMA industry (EPA 1976).

To produce the asphalt mix that is used for paving surfaces, the asphalt liquid is heated in an asphalt kettle and then poured into a mixing box where stone and sand (i.e., aggregate) are added and blended. The stone is ground in a manner that produces many surfaces for improved packing. A liquid hardener (sometimes called asphalt cement) made from petroleum distillates is also used.

Hot-mix asphalt (HMA) plants use aggregate that has been processed in a dryer to remove the moisture before it is mixed with liquid asphalt. HMA paving materials are a mixture of well-graded, high-quality aggregate (which can include reclaimed asphalt pavement (RAP)) (EPA 2004). Heating the aggregate generates fumes and the rotary drum dryer is the most significant source of emissions. The aggregate and liquid asphalt cement is heated and mixed in measured quantities to produce HMA. In most cases, the mixing plants need to be ducted and permitted as an emission source of both particulates and volatile organic compounds (VOC). Particulate emissions are reduced by a baghouse, cyclone or other emission control device. Particulate matter from other emission sources at the plant may also contribute fugitive emissions and require a permit (Ohio EPA 1996).

What Chemicals and Other Hazards are in Asphalt Fumes?

The most significant ducted source of emissions for all four types of HMA plants is the rotary drum dryer (EPA 1976, 1977, 2004). Batch mix processes have the greatest emission factors; parallel process and counter flow process plants have the same emission factors; however counter flow plants release the least VOC emissions (EPA 2004). The cleanest fuel for heating the asphalt is natural gas; between 70-90% of HMA plants use natural gas to dry and heat the aggregate (EPA 2004).

The rotary drum dryer emits the following compounds:

- water
- particulate matter (PM)
- products of combustion

- carbon dioxide (CO_2)
- nitrogen oxides (NO_x) e.g., nitrogen dioxide
- sulfur oxides (SO_x) e.g., sulfur dioxide
- carbon monoxide (CO)

- volatile organic compounds (VOCs)
- methane (CH_4)
- hazardous air pollutants (HAPs) (EPA 2004)

Specific compounds released in fumes include hydrogen sulfide (H_2S), formaldehyde, naphthalene, methylnaphthalene, toluene, hexane, and phenol (EPA 2004).

Many of these chemicals also are also emitted by other combustion sources such as exhaust from motor vehicles, fireplaces and wood stoves, wildfires, and industries.

Salisbury Site Description and History

Jake Alexander Boulevard in Salisbury, NC has many current and former industrial properties. Four of the five current or past industries involved petroleum products. The past operations included two bulk petroleum storage facilities currently undergoing soil and water remediation. The current operations include a concrete batching plant and two asphalt-related businesses – a liquid asphalt distribution terminal (Associated Asphalt, Inc.) and a hot mix asphalt plant (APAC-CAROLINA, Inc.). Residents adjacent to those businesses requested a study. The Milford Hills community was the site of an ambient air monitoring study and emission tests conducted to estimate concentrations of several toxic pollutants (NCDAQ 2003). See Figure 1.

Community Health Concerns

Community members have been and are concerned about groundwater and air pollution from the asphalt facilities in Salisbury. Community members most frequently expressed health concerns about respiratory distress and eye irritation. They also expressed concerns about gastrointestinal illness, cancer clusters, higher suicide rates, and death. (Please note that this consultation only addresses possible health effects from air pollution. The groundwater issues are addressed in another ATSDR consultation.)

Discussion

Most of the data to evaluate ambient air exposure were collected during a four month period in 2001. These data represent conditions occurring only during that timeframe. Many process changes occurred during the operational lifetimes of the facilities. For example, in the past, Associated (then Chevron) reportedly produced cut-back asphalt, a product that is made with up to 45% solvent (by volume). Additionally, the facilities' equipment and pollution controls changed over the years. Those process and equipment changes likely resulted in less releases of pollutants into the community.

ATSDR's Involvement in the Sampling at Salisbury

ATSDR conducted sampling and analysis of particulate matter (PM), polycyclic aromatic hydrocarbons (PAHs), and crystalline silica over a two-day period in 2001. That data is summarized in Appendix A. The Salisbury Air Quality Monitoring Study does not address the ATSDR effort. ATSDR also provided NCDAQ some of the air sampling equipment and comments on their sampling plan.

Salisbury Air Quality Monitoring Study – Sampling Summary

Data were collected at three monitoring sites from May through September 2001 for meteorological parameters, H_2S, and VOCs. The three monitoring sites were the Cul-de-sac site, the Access Road site, and the Remediation site denoted by A, B, and C respectively on Figure 1. Site A, the Cul-de-sac NCDAQ Monitoring Site, represented the neighborhood exposure site and was located 200 meters from the asphalt terminal. Site B, the Access Road NCDAQ Monitoring Site (Source Dominated Site), was within 30 meters of the asphalt terminal. Site C, the Remediation NCDAQ Monitoring Site, represented the upwind site was 400 meters from the asphalt terminal.

In addition, data were collected on process operations from both paving asphalt facilities, nearby road traffic, and odor complaints to characterize key parameters. These data were analyzed to evaluate relationships between each asphalt facility's process operations, remediation activities, wind direction, odor complaints and the H_2S and VOC concentrations. Direct H_2S and related odorous sulfur compounds measurements were also taken at the source of emissions at the liquid asphalt terminal (NCDAQ 2003). Finally, dispersion modeling using emission data and emission factors was performed to determine compliance with NC regulatory acceptable ambient levels (AALs) (NCDAQ 2003).

The monitoring sites and industrial sites in Figure 1 are numbered according to the following legend:

A. Cul-de-sac NCDAQ Monitoring Site [Neighborhood Exposure Site]
B. Access Road NCDAQ Monitoring Site [Source Dominated Site]
C. Remediation NCDAQ Monitoring Site [Upwind and Off-axis Site]
1. Concrete Supply Batch Concrete Plan
2. APAC-CAROLINA Hot Mix Asphalt Plant
3. Associated Asphalt, Inc. Distribution Terminal
4. Exxon/Mobil Remediation Site
5. Southern States Remediation Site
6. Southern Railway
7. Jake Alexander Boulevard

Salisbury Air Sampling Strategy and Procedures

Three monitoring sites were selected to characterize ambient air pollutant concentrations and meteorological data. Each monitoring site was configured with one meteorology station, one VOC sampling system, and one H_2S tape meter housed in a climate-controlled enclosure. The following is a list of the specific measurements:

1. Meteorological parameters included wind speed, wind direction, temperature, relative humidity, and barometric pressure;
2. Each VOC sampling system consisted of instrumentation to collect 24-hour ambient air samples in SUMMA™ canisters via XonTech™ 911A/912 equipment. The VOC sampling consisted of 24-hour periods from midnight to midnight. A total of 34 VOC samples covering 24-hour periods were collected on a random schedule and analyzed within the holding time. NCDAQ ATAST staff analyzed the ambient air samples for VOCs following EPA Method TO-14A. This method can identify and quantitate up to 40 organic compounds (NCDAQ 2003);
3. H_2S ambient air levels data were collected using Zellweger Analytics Tapemeters™ . This instrument uses a lead acetate-treated cloth tape reel to analyze for H_2S across a 2-90 parts per billion (ppb) range. After each 15-minute sample period the concentration data were stored on an attached data logger (NCDAQ 2003).

Asphalt facility process records were important for evaluating relationships with monitoring data. Process data from each asphalt facility were collected throughout the 117-day study period. Process data – collected weekly and organized into a computerized database – accounted for 90% of asphalt facility emissions. Process records and emissions for each asphalt facility varied over time.

Source testing was performed at the Associated Asphalt distribution terminal under normal operating conditions using EPA Method 15 for H_2S. In addition, NCDAQ staff collected preliminary H_2S data at the APAC hot mix asphalt plant and the two companies undergoing remediation (ExxonMobil and Southern States) performed VOC emission tests during the study (NCDAQ 2003).

The Salisbury Air Quality Monitoring Study final report contains more details on the sampling (NCDAQ 2003).

ATSDR's Multi-site Evaluation and Evaluation of HMA Plants using AP-42 Parameters

ATSDR's multi-site evaluation and evaluation of HMA plants using AP-42 parameters can be found in Appendices A and B.

Results

Salisbury Specific Results

Below is an excerpt from the Salisbury Air Quality Monitoring Study. For the August 29, 2003 complete report, access www.daq.state.nc.us/toxics/studies/salisbury/Salisbury_final_report.pdf

Hydrogen Sulfide

> H_2S Emissions: Comparison with VOC data shows that H_2S was by far the toxic compound emitted in the largest amount from this particular liquid asphalt operation. New emission test data from Associated Asphalt showing 2,400 parts per million (ppm)

H_2S from filling storage tanks with paving-grade liquid asphalt is in relative agreement with roofing asphalt data for levels up to 1,700 ppm. The derived emission factor for liquid asphalt railcar pumping operations is 0.0049 lb H_2S/ton of liquid asphalt. Facility wide emission rates for Associated were determined to be 0.41 lb/hr H_2S for normal operating conditions. Using a facility-wide emission rate of 0.41 lb/hr, the predicted H_2S 1-hour maximum impact concentration was 290 ppb, a level below the 1,500 ppb permissible acceptable ambient levels (AAL) guideline, but well above the odor threshold of 8 ppb.

Preliminary data collected using hand-held instruments at the APAC hot mix asphalt (HMA) plant suggest H_2S emission concentrations on the order of 90 ppm and 6 ppm near liquid asphalt storage tank filling and the dryer/mixer, respectively. Facility wide emission rates are estimated to be 0.76 lb/hr, a level above the toxic pollutant emission rate (TPER) guideline of 0.52 lb/hr. (Subsequent dispersion modeling showed levels at AAL; see discussion below). The derived emission factor for the dryer/mixer operations is estimated to be 0.005 lb H_2S /ton of HMA produced.

H_2S Dispersion Modeling: Dispersion modeling results showed that the ground level maximum impact for H_2S was predicted to be below its respective hourly AAL of 2.1 mg/m^3 (~ 1500 ppb) for APAC (0.006 mg/m^3 or 4.3 ppb) and for Associated (0.404 mg/m^3 or 290 ppb), individually. The H_2S isopleth analyses showed that maximum impacts are distributed close to Associated's northern property boundary near the Access Road sampling site (within 30 m) and then rapidly diminish. Ground level maximum impact concentrations above the odor threshold (0.011 mg/m^3, 8 ppb) were predicted for much of the area inside the Milford Hills subdivision. More favorable source characteristics[2] accounted for a lower and more distant (100 m from its property line) predicted maximum impact point for APAC as compared to Associated.

H_2S Ambient Monitoring: Measured 1-hour average H_2S data at the Access Road site located within 30 meters of the asphalt terminal exceeded odor threshold levels 28 times and approached or exceeded odor nuisance levels (40 ppb) only 3 times in 4 months. Measured 1-hour average H_2S data at the Cul-de-sac site located 200 meters from the asphalt terminal were above odor threshold levels only 4 times in 4 months, but did not approach odor nuisance levels. Measured 1-hour average H_2S data at the remediation site located 400 meters from the terminal neither exceeded odor threshold levels nor approached odor nuisance levels. Evaluation of the H_2S monitoring data relative to process and wind directional data revealed the following:

- H_2S ambient levels at the Access Road site were highest and occurred most frequently in the late evening hours when only the Associated Asphalt terminal was unloading railcars – its most H_2S emissive operation. The observation of peak

[2] The primary reason for APAC's lower maxima is that its emission concentration is 60-times lower than Associated. In addition, each of three factors (stack height, gas velocity, and gas temperature) also contributes to a taller effective stack height. Collectively, there is a compounding effect from these factors that cause APAC's source characteristics to produce a much lower H_2S concentration at ground level relative to Associated's plume (NCDAQ 2003).

H_2S ambient levels in the late evening is consistent with three other similar investigations performed by ATSDR. These peak H_2S levels can be explained by reduced conversion of H_2S to sulfur dioxide due to lower ozone levels and by reduced dispersion conditions, each of which is associated with late evening circumstances.

PAH and VOCs

VOC Emissions: Two of the six emission sources were found to release benzene emissions above the NCDAQ permitting threshold, or toxic pollutant exemption rate (TPER) value, of 8.1 lb/yr. These sources of benzene included the APAC hot mix asphalt plant (29 lb/yr) and the Southern States remediation site (58 lb/yr). The remaining four emission sources (Associated, Concrete Supply, Exxon/Mobil, and traffic from a one mile stretch of Jake Alexander Blvd.) combined only emit 2.5-lb/yr benzene. (VOC emissions were estimated from modeling then applying EPA Emissions Factors from AP-42)

VOC Dispersion Modeling: Dispersion modeling prediction results show that benzene from Southern States is the only Toxic Air Pollutant (TAP) in this study predicted to exceed its respective annual AAL guideline (1.2×10^{-4} mg/m^3, 0.12 ug/m^3, or 0.038 ppb). Its predicted ground level maximum impact was 1.02×10^{-3} ug/m3 (0.32 ppb), a level 850% of the NC regulatory acceptable ambient levels (AAL). However, the predicted maximum impacts are centered in the immediate vicinity (within 50 m) of the emission source and rapidly drop below AAL concentrations posing little/no long-term exposure potential to any individual. Furthermore, Southern States decided in March 2002 to discontinue operation of the air sparging system and is in the process of evaluating alternative technologies that will minimize or eliminate benzene emissions.

VOC Ambient Concentrations: Benzene, toluene, xylene and other VOC concentrations measured in the study were compared to 24-hour data from other sites similar to Salisbury and found to be in the same range. For example, the average 24-hour benzene concentration for Salisbury was 0.16 ppb, within the range of 0.13 - 0.24 ppb measured in other suburban and rural sites during 24-hour periods. NCDAQ concludes that in terms of ambient air quality, the concentrations measured in the Salisbury study indicate that the air in this area is typical of air in other similar areas.

Odors

During the study the city of Salisbury documented 38 citizen complaints. Most of the complaints occurred when only Associated was operating. Collectively, this body of results (H_2S source emission data, dispersion modeling, H_2S ambient monitoring data, process data, wind directional data, and odor complaints) point to the liquid asphalt terminal as the primary contributor largely responsible for the odor complaints and odor problem in Milford Hills.

Child Health Considerations

In communities faced with air, water, or food contamination, the many physical differences between children and adults demand special emphasis. Children could be at greater risk than are adults from certain kinds of exposure to hazardous substances. Children play outdoors and sometimes engage in hand-to-mouth behaviors that increase their exposure potential. Children are shorter than are adults; this means they breathe dust, soil, and vapors close to the ground. A child's lower body weight and higher air intake rate results in a greater dose of hazardous substance per unit of body weight. If toxic exposure levels are high enough during critical growth stages, the developing body systems of children can sustain permanent damage. Finally, children are dependent on adults for access to housing, for access to medical care, and for risk identification. Thus adults need as much information as possible to make informed decisions regarding their children's health.

ATSDR's health comparison values take children's susceptibility into account. Some of the highest values of contaminants at Salisbury may produce respiratory irritation in children and other more sensitive populations (e.g., elderly, people with pre-existing respiratory conditions, etc).

Conclusions

Salisbury Specific Conclusions

ATSDR's Conclusions

1. The available data from Salisbury and near other asphalt plants suggests that concentrations of polycyclic aromatic hydrocarbons (PAHs) and volatile organic carbons (VOCs) pose no acute (i.e., short-term) or chronic (i.e., long-term) public health hazard.

2. Although limited to two days of sampling, Salisbury particulate levels for one day (respirable dust as $PM_{2.5}$) were above regulatory standards and could cause asthmatics and sensitive individuals to experience respiratory irritation. Most of both days' particulate levels (i.e., total dust, respirable dust and quartz) were higher than the background levels.

3. Over the operational lifetime of the Salisbury asphalt plants, process and equipment changes likely resulted in less releases of pollutants into the community. If the ambient air pollutant concentrations were measured prior to those changes, they would likely have been higher.

Salisbury Air Study Conclusions

4. *Volatile Organic Carbon (VOC) and Polycyclic Aromatic Hydrocarbons (PAH) Ambient Concentrations.* Benzene, toluene, xylene and other VOC concentrations measured in the Salisbury study were compared to 24-hour data from other sites similar to Salisbury and found to be in the same range. NCDAQ concluded that in terms of ambient air quality, the concentrations measured in the Salisbury study indicate that the air in this area is typical of air in other similar areas (NCDAQ 2003). Although the VOCs and PAHs

(including Asphaltines) are not at levels known to pose a long-term health hazard, the health risk from the mixture of these and other chemicals is not well understood so it is prudent to reduce the levels where possible.

5. *H_2S Ambient Monitoring.* H_2S was the toxic compound emitted in the largest amount from the Associated Asphalt liquid asphalt terminal and appears to be emitted at significant levels from hot mix asphalt plants. Monitoring data, process data, citizen complaints, and dispersion modeling argue strongly that the liquid asphalt terminal is the primary contributor to H_2S levels above the odor threshold in the nearby area (NCDAQ 2003). Although measured H_2S in the residential areas surrounding the asphalt operations occasionally exceeded odor threshold levels and very likely reached or exceeded odor nuisance levels on a periodic basis, H_2S did not likely reach levels known to pose a long-term health hazard.

ATSDR Multi-Site Investigation Conclusions

VOCs, PAHs, H_2S, and Particulates

- ATSDR sampling from seven sites in the communities surrounding asphalt facilities showed that there does not appear to be any chemicals or compounds at levels that would pose a public health hazard. VOCs and PAHs were detected in very low concentrations and only H_2S, and particulate matter (PM) – as respirable particulates or PM_{10} and $PM_{2.5}$ – were slightly elevated. (See Table A2 in Appendix A).

- *NIOSH Asphalt Review:* In the December 2000 NIOSH report on the *Health Effects of Occupational Exposure to Asphalt*, NIOSH found no worker exposures to be hazardous in their five studies, but they encouraged more studies. Benzene soluble particulates (a.k.a. PAHs) were elevated (CDC 2000).

Sulfur dioxide (SO_2), Nitrogen oxides (NOx), and Metals

- *Evaluation of Air Pollution (AP) Emission Factors*: ATSDR also reviewed the AP-42 emission factor for Hot Mix Asphalt (HMA) plants to determine if our detected sample constituents matched what was predicted. We had the following conclusions:

    - Based on both the emission rates and toxicities of the 159 chemicals reportedly emitted from asphalt plants, the compounds most capable of posing a health hazard in communities were sulfur dioxide (SO_2) and nitrogen oxides (NOx). Under some circumstances, carbon monoxide (CO), aldehydes (such as acrolein), particulates (such as quartz, dust) and some metals might also pose some concern, but they are much less likely to produce actual health effects in those exposed off-site.
    - Chemicals such as SO_2 and the aldehydes are highly reactive and at sufficiently high levels can cause irritation to the eyes and upper respiratory system. Particulates (such as quartz), which are released by HMA plants, can

penetrate the lungs and cause inflammations and fibrosis if inhaled at sufficiently high levels.
- Although scientists and regulators tend to associate H_2S as a major pollutant from asphalt facilities, SO_2, NOx, and many metals ranked higher than H_2S in their degree of toxicity, potential health risk and/or odor.

- We did not detect hazardous levels of VOCs, PAHs, or particulates at the seven asphalt sites we sampled. There remains a data gap for evaluating metals, aldehydes, SO_2, NOx, and CO. ATSDR is filling that data gap with subsequent sampling at facilities we are requested to evaluate.

Odors

- Many compounds have odor thresholds that are lower than the levels thought to be hazardous. However, these warning odors can, by themselves, provoke odor-related symptoms such as fast heart rates, dizziness, nausea, sweating, and anxiety in sensitive individuals.

- The AP-42 compounds likely to have the highest degree of significant/sustained odor at HMA plants* would be the following:

1.	Sulfur Dioxide	6.	Xylene (m-/p-)
2.	Acetaldehyde	7.	Heptane
3.	Naphthalene	8.	Ethylene
4.	Toluene	9.	Acrolein
5.	Crotonaldehyde	10.	Acetone

*Note: Although H_2S did not rank high on this list because it did not have a significant emissions factor, it does have a low odor detection threshold of around 8 ppb in the general population and should be considered for sampling.

Recommendations

General Recommendations for Reducing Emissions from Asphalt Facilities

1. Install closed-system transfer units (likes those used at fuel transfer facilities) to reduce fugitive emissions.
2. Employ techniques to reduce particulate matter (e.g., wetting)

Salisbury-Specific Recommendations

NC Division of Air Quality (NCDAQ) Recommendations

A few recommendations from this study have already been implemented. These include the confirmed installation of carbon beds on Associated's storage tanks which reduce H_2S and VOC emissions, and use of alternative technologies to reduce benzene and other VOC emissions from the two remediation sites (NCDAQ 2003).

Note: Since the report was written, Associated Asphalt has reportedly gone out of business and is in the process of being sold.

NC Division of Air Quality (NCDAQ) Recommendations for Hot Mix Asphalt Plant Industry Action

- Determine sulfur content and H_2S content in current types of liquid asphalt in NC and evaluate the effect of these factors for hot mix asphalt plant operations (batch and drum plants) and distribution terminals.
- Identify other cost-effective H_2S emission controls for liquid asphalt operations.
- Develop pollution prevention measures to improve the environmental performance (i.e., reduce H_2S content and/or H_2S emissions) of liquid asphalt (NCDAQ 2003).

It would be useful to have more information on the behavior and fate of anti-strip additives in asphalt. There are indications from anecdotal and scientific information that odors and VOCs are emitted in asphalt facility operations using certain brands of these NC DOT required additives (NCDAQ 2003).

ATSDR General Recommendations for Evaluating Emissions from HMA Plants

3. At future asphalt facilities where an ATSDR evaluation is requested, include sampling for sulfur dioxide (SO_2), nitrogen dioxides (NOx), carbon oxides (CO, CO_2), and some metals. Continue to sample for particulates, VOCs, and PAHs.

4. Include sampling for compounds with the highest degree of significant/sustained odor at HMA plants such as sulfur dioxide, acetaldehyde, naphthalene, toluene, crotonaldehyde, xylene (m-/p-), heptane, ethylene, acrolein, acetone and hydrogen sulfide.

5. Consider how site-specific chemical mixtures may react and form other hazards such as acid gases and possibly include pH measurements where applicable.

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Acronyms

AAL	Acceptable Ambient Level
APAC	APAC-CAROLINA, Inc. Hot Mix Asphalt Plant
ATSDR	Agency for Toxic Substances and Disease Registry
CDC	Centers for Disease Control and Prevention
CH_4	Methane
CO	Carbon monoxide
CO_2	Carbon dioxide
CV	Comparison value
EPA	U.S. Environmental Protection Agency
HAP	Hazardous Air Pollutant
HMA	Hot Mix Asphalt
H_2S	Hydrogen Sulfide
NCDAQ	North Carolina Division of Air Quality
NCDOT	North Carolina Department of Transportation
NIOSH	National Institute for Occupational Safety and Health
NOx	Nitrogen Oxides
PAH	polycyclic aromatic hydrocarbons
PM	Particulate matter
$PM_{2.5}$	Particulate Matter with aerodynamic diameter less than 2.5 microns

PM_{10}	Particulate Matter with aerodynamic diameter less than 10 microns
ppb	Parts per billion
SO_2	Sulfur dioxide
SVOC	Semi-volatile organic compounds
TAP	Toxic Air Pollutant
TPER	Toxic Pollutant Exemption Rate
VOC	Volatile organic compounds

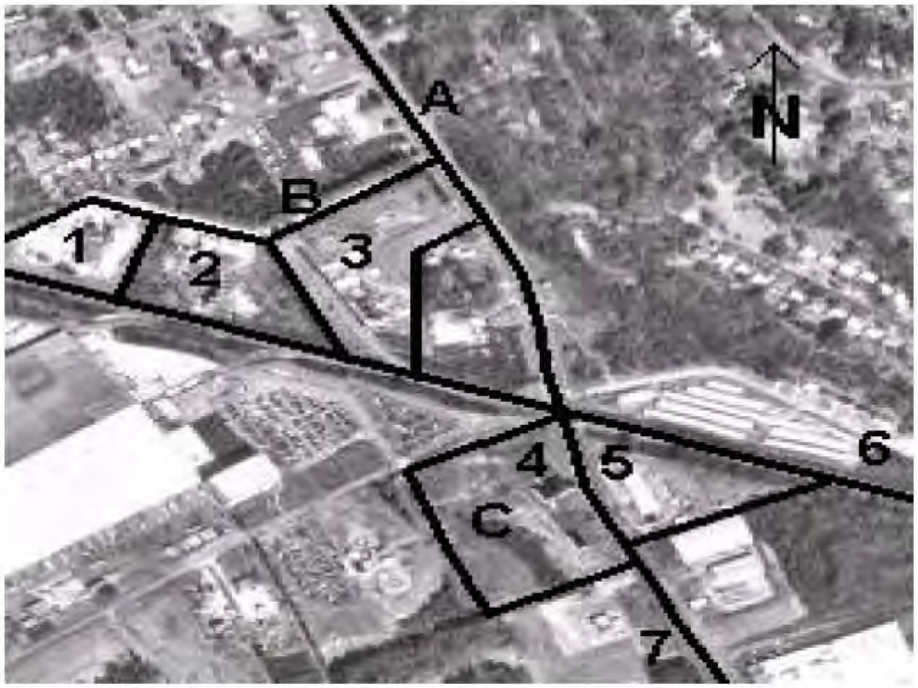

Figure 1. Salisbury Study Area. Aerial View of the Salisbury Monitoring study area showing the monitoring stations (A [Cul-de-sac], B [Access Road], C[Remediation site]), asphalt facilities (2, 3), concrete plant (1), remediation sites (4, 5), Southern Railway (6), and Jake Alexander Boulevard (7).

Appendix A

ATSDR's Multi-Site Evaluation of Hot Mix Asphalt Plants and similar facilities

ATSDR's Multi-Site Evaluation Process

In response to community requests, ATSDR has conducted sampling in different communities across the country where asphalt was being produced. Because our sampling represented a relatively short time period – days to weeks – we also conducted a more in-depth evaluation using the emission factors for Hot Mix Asphalt (HMA) plants to determine what compounds you would expect to find in communities near those facilities. That evaluation is in Appendix B.

ATSDR Sampling and Analysis Methods for Community Exposure

ATSDR evaluated seven communities where asphalt was used. Those included communities in Arizona, California, Georgia*, North Carolina, New York, and two in Utah. One control "community" was also sampled. Upwind samples were collected in each community and served at the background comparison.

The operations and sampling methodology were unique at each site. Most samples were collected downwind. There were a few upwind samples and there were occasions when the wind changed to place the sampler downwind for only a portion of the sample duration.

ATSDR sampled for compounds known to be released from the facilities and considered measurable in the community. Those included Volatile Organic Compounds (VOCs), Semi-VOCs (i.e., polycyclic aromatic hydrocarbons (PAHs)), and particulates. Particulates were sampled in six communities. PAHs and VOCs were only sampled in three communities. Hydrogen sulfide and asbestos was sampled in two communities. Carbon monoxide was sampled in one community.

Volatile Organic Compounds – VOCs

Liquid asphalt or asphalt cement is derived from petroleum distillates which contain VOCs. ATSDR chose methods proven to provide reliable results for those chemicals considered to be highly toxic and or carcinogenic by ATSDR, EPA, or NIOSH. ATSDR chose one of the following methods at each site for our VOC analysis.

VOCs were collected using three methods, as whole samples (SUMMA®), adsorbed onto charcoal tubes, or adsorbed onto compound tubes. SUMMA® samples were collected by attaching a restrictive orifice onto an evacuated stainless steel canister. The orifices maintain a constant flow rate for up to 8-hours.

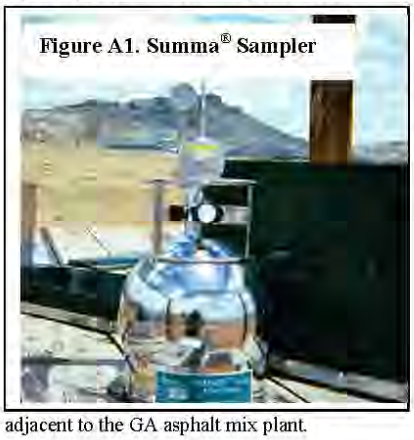

Figure A1. Summa® Sampler

* In Georgia, the creosote facility we were evaluating was adjacent to the GA asphalt mix plant.

SUMMA® samples were collected and analyzed following the EPA Method TO-14/TO-15 for VOCs. (TO-14/15). Samples were analyzed at a laboratory using gas chromatography/mass spectroscopy (GC/MS [ion trap]) with a cryogenically cooled trap to reduce the water vapor and concentrate the VOCs.

Other VOC samples were collected and analyzed according to the NIOSH Methods 1500, 1501, and 1003 for VOCs [7]. The sampling equipment consisted of a charcoal or carbon sorbent tube connected to a personal sampling pump. The sampling pumps were calibrated to collect approximately 1.5 liters of air through the sorbent tube and filter. The samples were collected over an 8-hour period (pre programmed into the samplers).

Some VOC samples were collected and analyzed following the EPA Method TO-17 for VOCs and SVOCs (TO-17).

Semi Volatile Organic Compounds – SVOCs

Figure A2. Personal pump

Asphalt cement is derived from petroleum distillates which contain SVOCs. The SVOC methods provide chemical specific analyses of PAHs. The methods chosen reliably detect chemicals considered to be highly toxic and or carcinogenic, but do not detect minimally toxic and heavy PAHs like asphaltines. NIOSH samples "benzene soluble particulates" as a group instead of individually, because NIOSH focuses on worker exposures to the spattered asphalt cement. Because community exposures occur farther downwind after the spattered asphalt (droplet) has an opportunity to either volatilize creating separate vapor-phased and particle-phased PAHs or drop out due to gravity, ATSDR uses chemical-specific analysis.

SVOCs including PAHs were collected using two methods, one that separated the particulate phase and one that did not.

Figure A3. Sorbent tube for SVOCs

SVOCs were collected and analyzed according to procedures consistent with NIOSH Method 5506 for PAHs. Samples were collected using a personal sampling pump and a filter head. The samples were collected over an 8 to 10-hour period (while the plant operations were occurring). The sampler head has two components: a polytetrafluoroethylene (PTFE) membrane to collect and retain particulate matter and a sorbent tube washed in XAD-2 resin to collect and retain gaseous phase compounds. Analytical detection procedures involved liquid chromatography and a fluorescence/ultraviolet detector.

Samples were collected and analyzed consistent with the modified NIOSH Method 5515 for PAHs. The sampling equipment consisted of an XAD-2 sorbent tube and a PTFE filter connected to a personal sampling pump. The sampling pumps were calibrated to collect approximately 1.5 liters of air through the sorbent tube and filter. The samples were collected over an 8 to 10-hour period.

Silica and Total Particulates

Asphalt mix used for paving is 95% crushed rock. Asphalt plants that have rock-crushing and sieving on-site make a lot of dust. Most of the earths crust contains silica and silica and quartz deposits are found in most bedrock. Natural weathering breaks down more of the softer minerals into dirt and dust leaving the harder minerals behind in the rock. Quartz is abundant and with a rating of 8 (of 10) on Moe's Hardness scale, it is hard to break down into small particulates (i.e., respirable) by natural weathering. However, stone crushers are strong enough to break quartz into finer particles not otherwise found naturally. Some workers exposed to fine particulate of silica-quartz experience silicosis. Most data on silicosis is found in workers who sandblast; however asphalt technology has recently changed to maximize the content of aggregate rock – which requires more crushing and sieving than before. Furthermore, local and state governments are utilizing asphalt more frequently.

Airborne particulates were collected using a sampling pump. The pump drew air through a tube connected to the specific collection device. Total suspended particulates were collected directly on a pre-weighed filter. Respirable particulates were first separated by

size with a cyclone separator. The cyclone separator captured particles that were 4.5 microns or smaller ("respirable"), and a pre-weighed filter collected the particles. Particulate measurements were made by weighing the filters (NIOSH Method 0500), and then the particulate samples were analyzed for silica using x-ray powder diffraction (NIOSH Method 7500). Samples were collected for 8-10 hours. Particulate monitors were attached to a data logger to characterize the peak particulate exposures.

Figure A4. Respirable dust sampling train

Figure A5. Assembled samplers for dusts and SVOCs

Asbestos

Natural asbestos is not abundant like quartz, but there are certain geological formations which contain high levels of asbestos. Gypsum rock has a lot of asbestos. ATSDR considers asbestos sampling near asphalt facilities because aggregate rock may be used from some regions of the county with natural asbestos formations. There are very specific methods for conducting asbestos sampling and the sampling method must match the exposure criteria. ATSDR developed a sampling criterion for communities after the World Trade Center disaster.

Asbestos fibers were collected with AirMetric miniVOL samplers. Samplers were programmed to run between nine and twelve hours with flow rates of approximately 4.2 liters per minute (lpm). Pre-loaded filter cassettes (25 mm dia, 0.45 um pore size, mixed cellulose ester (MCE)) assembled with a cowl, tapered-style for TEM analysis. Samples were submitted to EMSL Analytical Inc (Westmont, NJ) for asbestos fiber analysis by transmission electron microscopy (TEM) according to EPA Level II Method.

Carbon Monoxide (CO)

Asphalt is the waste product of petroleum distillation. It contains large amounts of carbon monoxide and carbon dioxide (CO and CO_2). The AirMetric MiniVol is standard equipment used by enforcement agencies

CO was sampled by using AirMetric MiniVOL. For scheduled run days, samplers were set to collect CO for 8- 12 hours 6:00 a.m. to 2 p.m. Samples were collected in 6-liter Tedlar bags connected to the sampler. Following sample collection, samples were analyzed using Thermo Environmental Instruments, gas-correlation CO analyzer, model 48. The analyzer was challenged with known concentrations of span and precision CO gases (percent deviation less than 4% from known concentration). Concentrations were reported in parts-per million (ppm) averaged over the 8 or 12-hr quartz near the asphalt sites.

Table A1. ATSDR Sampling Equipment and Methods

Chemical or Compounds	Sampling Equipment	Analytic Method	Accuracy
Volatile Organic Compounds (VOCs)	SUMMA® canisters	EPA TO-14 & 15	Not available
	Charcoal tubes	NIOSH 1500 NIOSH 1501 NIOSH 1003 EPA TO-17	
	Compound tubes		
Semi-Volatile Compounds (SVOCs) including PAHs	Sampler head with polytetrafluoroethylene (PTFE) membrane Sorbent tube with XAD-2 resin	NIOSH 5515 modified	Not available
Total particulates	Filter Cyclone separator (Respirable < 4.5 microns)	0500 7500 (silica)	**Range studied**: 8-28 mg/m^3 **BIAS:** 0.01% **OVERALL PRECISION (S^rT):** 0.056 [1] **ACCURACY:** ± 11.04%
Asbestos	Filter cassettes	EPA Level II Method (transmission electron microscopy (TEM))	Not available
Carbon Monoxide	Tedlar bags	Thermo Environmental Instruments, gas-correlation CO analyzer, model 48	Not available

ATSDR Multi-Site Sampling Results

Although the operations and sampling methodology were unique at each site, the results are similar –*measurable levels of contaminants were lower than those expected to cause health effects.* Table 2 displays the measured levels in the seven communities and the (composite) backgrounds.

PAHs

Acenapthene was sampled at five sites and found at three sites; however significant measurements were only measured at one site (and only in a few of the samples at that site). The highest measurement was much lower than EPA's Risk Based Concentration (RBC).

Odors

Hydrogen sulfide was only measured at two sites. It contributes a significant portion of the characteristic odor at asphalt facilities with an odor detection threshold of around 8 parts per billion (ppb) (11 ug/m^3) in the general population. From more than 2,800 hours of sampling at the two sites, H_2S was only exceeded ATSDR's health comparison value (30 ug/m^3) for 5 hours (NCDAQ 2003). H_2S samples were collected continuously throughout the day and converted to 1-hour averages at each monitoring site (NCDAQ 2003). We will discuss odors in more detail in the section on AP-42 parameters (Appendix B).

Particulates

Particulate matter measured downwind of asphalt sites averaged three times the average levels upwind of all the sites sampled.

> PM-10 (particles with an aerodynamic diameter smaller than 10 μm) particles are responsible for most adverse health effects associated with airborne contaminants because of their ability to reach the lower regions of the respiratory tract (EPA 1999a; McClellan 1997). EPA's health based national air quality standards for PM 10 is 150 μg/m^3 when measured as a daily average (EPA 1999b).
>
> Epidemiologic studies conducted in several metropolitan areas have shown adverse health effects associated with exposure to total suspended particulate (TSP) levels <100 μg/m^3 (Brunekreff et al, 1995; Neas et al, 1999).

Respirable dust averaged 1½ times more downwind of asphalt sites than upwind.

Quartz: No comparison could be made with quartz because few measurements were much higher than the detection levels. However, the total airborne quartz and respirable quartz were each found at half of the asphalt sites and not found in the background samples. This is significant in that ATSDR and EPA rarely detect quartz above the detection levels. We measured quartz in the soil near asphalt sites and found it was 6 times higher than the level in the background. The high levels of quartz in the soil

indicates deposition of quartz, therefore, the re-suspension of quartz may account for some of the airborne measurements of quartz near the asphalt sites.

Sampling Limitations

Sampling equipment

SUMMA canisters and compound sorbent tubes give very similar responses with a few exceptions. Compound tubes are best for semi-volatiles, but separate OSHA PAH samplers are needed if a wide range of PAHs (other than those we detected) are expected. Compound tubes stabilize some reactive compounds better. However, if there are compounds that do not adhere to the sorbent, the SUMMA canister must be used along with rapid analysis. In summary, although the methods give similar responses, some compounds will be captured more accurately with one method vs. the other. We found one important advantage to using the compound sorbent tubes; they detected some Tentatively Identified Compounds (TICs) that helped us identify the existence of a contributing source of PAHs at one site.

Sampling length and timeframe

ATSDR's sampling efforts are generally short-term (i.e., days to weeks). Our sampling efforts may or may not be conducted during critical times (upsets, higher production periods, worst waste stream processing). This makes the sampling a snapshot in time although we are often comparing the results to longer-term averages.

Since VOCs volatilize quickly, if they are released sporadically, they are experienced as peaks or spikes in the environment. However, if the equipment is set to capture a sample volume over a specified timeframe, the concentration detected would be averaged for the total volume analyzed thus reducing the peak concentrations. If the sample volume or timeframe is very long, VOCs are often in too low in concentration to be detected by analysis equipment.

Table A2. Summary of Concentrations measured in 7 Communities Surrounding Asphalt Sites (in µg/m³)

Chemical	CV	CV¥ Source	Averages (and Maximum) Level Detected — Sampling Locations							
			CA	NY	UT-1	UT-2	NC	GA	AZ	Back-ground
Acetone	30,000	i-EMEG	NS	NS	**8.5(22)**	ND	NS	ND	2.0(5.6)	2.4(8.0)
Benzene	20	i-EMEG	NS	NS	1.5 (3.4)	0.12(.13)	0.79 (1.7)	**2.9(14)**	0.6(1.1)	1.1(5.4)
Carbon Tetrachloride	200	i-EMEG	NS	NS	0.24 (.41)	0.18(.22)	0.63(0.79)	ND	ND	0.8(1.0)
Ethylbenzene	4000	i-EMEG	NS	NS	**0.59(2.7)**	ND	0.41 (1.9)	**12(18)**	ND	1.1(2.7)
Methylene Chloride	1000	i-EMEG	NS	NS	**0.77(2.4)**	0.26(.32)	**2.2 (3.8)**	ND	ND	0.5(2.7)
Tetrachloroethene	300	c-EMEG	NS	NS	0.054(.09)	ND	ND	**1.7(3.3)**	ND	0.5(2.4)
Toluene	300	c-EMEG	NS	NS	2.1 (3.9)	ND	1.9(4.3)	**32(38)**	1.0(1.4)	2.6(8.6)
1,1,1-Trichloroethane	4000	i-EMEG	NS	NS	**0.13(2.7)**	**0.15(.18)**	**0.28(0.38)**	ND	ND	ND
m,p-Xylene	3000***	i-EMEG	NS	NS	1.0(2.3)	ND	0.60(2.3)	**33(48)**	ND	2.2(7.1)
o-Xylene	3000***	i-EMEG	NS	NS	0.39(0.98)	ND	0.49(1.0)	**6.5(8.7)**	ND	1.2(3.6)
Carbon Disulfide	900	c-EMEG	NS	NS	**1.0(3.6)**	ND	NS	ND	**1.2(12.4)**	ND
Hydrogen Sulfide	30	i-MRL	NS	NS	NS	NS	**9(65.5)**	NS	**0.1(2)**	ND
Carbon Monoxide (ppb)	10,000	NAAQS (8 hr)	NS	NS	NS	1580(2980)	NS	NS	NS	NS
Acenaphthene	210	RBC	NS	NS	**1.3(2.9)**	**1.3**	ND	ND	**26 (70)**	ND
Benzo(a)anthracene	200	OSHA PEL	NS	NS	**0.14(0.44)**	ND	ND	ND	**0.02(.031)**	ND
Benzo(b)fluoranthene	200	OSHA PEL	NS	NS	**0.14(0.44)**	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	200	OSHA PEL	NS	NS	**0.07(0.13)**	ND	ND	ND	ND	ND
Fluoranthene	150	RBC	NS	NS	**0.30 (1.0)**	**0.08**	ND	ND	ND	ND
Fluorene	150	RBC	NS	NS	**0.11(0.24)**	**0.12**	ND	ND	**0.09(0.1)**	ND
Pyrene	110	RBC	NS	NS	**0.09(0.15)**	ND	ND	ND	ND	ND
Total Dust	150	EPA PM10 (24 hr)	**52(75)**	**18(33)**	**50(60)**	**14 (14)**	**140(150)**	NS	**22(38)**	16(21)
Respirable Dust	35	EPA PM2.5 (24 hr)	**28(49)**	**8.1(19)**	**23(30)**	**13(21)**	**30(40)**	NS	**19(30)**	13(30)
Total Quartz	200	NIOSH	**4.4(7.1)**	ND	**9.3(13)**	ND	ND	NS	**4(4.0)**	ND
Respirable Quartz	5****	NIOSH	**3.1(4.9)**	ND	ND	**4 (4)**	**2(4)**	NS	ND	ND
Soil Quartz (percent)	None	None	**19%**	**24%**	NS	NS	NS	NS	**29%**	4%
Asbestos (s/mm²)	20	AHERA	NS	**1.8(4.4)**	NS	ND	NS	NS	NS	1.5(4.3)

Measurements in **bold** are those that are higher than the background value.
Chemicals listed in *italics* are those that were higher than the background at three asphalt sites.
Background samples were collected upwind from several of the asphalt sites.
ND = Not detected. (detection levels varied)
NS = Not Sampled or Not Analyzed

¥ = For an explanation of terms used for CV Sources, see Appendix D.
§ = Half the detection limits were used to calculate the averages when an analyte was not detected in the downwind samples.
* = The CV for 1,2,4-Trimethylbenzene was adopted from that of 1,3,5-Trimethylbenzene based on NIOSH's treatment of these two chemicals as equals in terms of their Recommended Exposure Limit of 125,000 µg/m^3 for a 10-hr Time-Weighted Average (TWA).
** = m,p-xylene and o-xylene were assigned a comparison value for total xylenes due to a lack of individual comparison values.
***= NIOSH's REL is 50 ug/m^3. Since this is for occupational exposure, we divided the REL by a safety factor of 10 for community exposure.

Published documents with this air data include: ATSDR 1999, 2001a,b, 2003, 2004, 2005

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Appendix B

ATSDR's Evaluation of HMA Plants using AP-42 Parameters

B1

AP-42 and HMA Plant Emissions Factors

ATSDR reviewed the emission factors for Hot Mix Asphalt (HMA) Plants to determine if our predicted sample constituents matched what was detected in our own sampling. We also evaluated which chemicals may pose the greatest hazard.

What is potentially released from HMA plants?

EPA has estimated emissions factors for many industries, including Hot Mix Asphalt Plants. AP 42 (Volume I, Fifth Edition: Stationary Point and Area Sources – January 1995) has chapters on **External Combustion Sources, Solid Waste Disposal**, **Stationary Internal Combustion Sources**, **Evaporation Loss Sources**, **Petroleum Industry**, **Organic Chemical Process Industry**, **Liquid Storage Tanks**, **Inorganic Chemical Industry**, **Food and Agricultural Industries**, **Wood Products Industry**, **Mineral Products Industry**, **Metallurgical Industry**, **Miscellaneous Sources**, **Greenhouse Gas Biogenic Sources**, and **Ordnance Detonation**. Chapter 11, Mineral Products Industry, includes HMA plants (EPA 2004).

HMA plant emissions result from both controlled (i.e., ducted) and uncontrolled sources. Emissions are estimated for materials handling (fugitive emissions), generators (primarily diesel that are used at mobile plants for electricity), storage tanks, and process emissions (EPA 2004).

EPA defines an emissions factor as "*a representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant.*" Emissions factors are usually expressed as the weight of pollutant divided by a unit weight, volume, distance, or duration of the activity emitting the pollutant (e.g., kilograms of particulate emitted per megagram of coal burned). Such factors facilitate estimation of emissions from various sources of air pollution. In most cases, these factors are simply averages of all available data of acceptable quality, and are generally assumed to be representative of long-term averages for all facilities in the source category (i.e., a population average) (EPA 2004).

The general equation for emissions estimation is:

$$E = A \times EF \times (1-ER/100)$$

where:
E = emissions;
A = activity rate;
EF = emission factor, and
ER =overall emission reduction efficiency, %
(EPA 2004 found online at
http://www.epa.gov/ttn/chief/ap42/index.html)

B1

Compounds Potentially Emitted From HMA Plants

AP42 predicts that HMA plants could emit as many as 159 compounds. Most of the predicted 159 compounds emitted from HMA plants do not warrant further assessment for community exposure because they are insignificant from the standpoint of toxicity, quantity emitted, or odor. To narrow the list that required an in-depth evaluation, ATSDR initially sorted compounds into the following groups:

Compounds of Interest	**Factors**
Emitted in Large Quantities	Emission Factor (EF)
Possible Effects	EF and Threshold Limit Value (TLV)
Potential Risk	EF and Hazard Index or Risk
Odor Warning Properties	Odor Threshold (OT) and TLV
Significant/Sustained Odor	EF and OT

1. Asphalt-related Compounds Emitted in Large Quantities

We examined the list of compounds associated with HMA Plant Emissions and sorted them by relative quantity. We ranked the "highly emitted" compounds based on **Emission Factor (EF)** data. Table B1 lists the top 10 Emissions Factors compiled from AP-42 for compounds potentially released from HMA plants. The entries are sorted by the relative predicted quantity of emissions. These predictions are based on data for all types of HMA plants (batch, counterflow, parallel flow) using all types of fuels (e.g., natural gas, #2 fuel oil, waste oil, etc.) and pollution control devices (e.g., cyclones, scrubbers, filters, etc.). *Compounds predicted to be emitted by HMAs in the greatest quantity are at the top of this list.*

Table B1. Emissions Factor Table

Chemical	CASRN	Max EF	MW	TLV ppm
Carbon Dioxide	124-38-9	3.30E+01	4.40E+01	5.00E+03
Total PM (particulate) or TSP	7601-54-9	3.20E+01	1.64E+02	N/A
PM10 (particulate matter <10m)		6.50E+00	N/A	N/A
Particulate PM-2.5		1.50E+00	N/A	N/A
Nitrogen Oxide (NOx)	11104-93-1	5.50E-01	3.00E+01	2.50E+01
Carbon Monoxide	630-08-0	1.30E-01	2.80E+01	2.50E+01
Organic PM (particulate matter)		5.80E-02	N/A	N/A
Sulfur Dioxide	7446-09-5	5.80E-02	6.41E+01	2.00E+00
TOC as propane (or total VOC)	74-98-6	4.40E-02	4.41E+01	1.00E+03
Methane	74-82-8	1.20E-02	1.60E+01	1.00E+03

CASRN-Chemical Abstract Registry Number
Max EF- Maximum Emissions Factor
MW- Molecular Weight
TLV- Threshold Limit Value

2. *Compounds with Possible Health Effects based on Quantity and Toxicity*

ATSDR examined the list of compounds that were released in the highest quantities, but had low Threshold Limit Values (TLVs). More toxic substances have lower TLVs. The **ratio of EF/TLV** represented compounds with possible health effects. *Those compounds that ranked higher on this list are those that are released in the highest quantities and also have a low threshold limit value (TLV).* Table B2 shows the top 10 list of possible compounds released from HMA plants sorted by the relative quantity predicted to be emitted (from all types of HMA plants) divided by the TLV.

Table B2. EF/TLV ppm

Chemical	CASRN	Max EF	TLV ppm	EF/TLV
Sulfur Dioxide	7446-09-5	5.80E-02	2.00E+00	0.028999999165535
Nitrogen Oxide (NOx)	11104-93-1	5.50E-01	2.50E+01	2.19999998807907E-02
Lead	7439-92-1	5.40E-04	5.00E-02	1.07999993488193E-02
Manganese	7439-96-5	6.50E-04	8.90E-02	7.30286259204149E-03
Carbon Dioxide	124-38-9	3.30E+01	5.00E+03	6.59999996423721E-03
Carbon Monoxide	630-08-0	1.30E-01	2.50E+01	5.2000000141561E-03
Formaldehyde	50-00-0	3.10E-03	1.00E+00	3.10000008903444E-03
Barium	7440-39-3	2.50E-04	8.90E-02	2.80777108855546E-03
Quinone	106-51-4	2.70E-04	1.00E-01	2.69999983720481E-03
Copper	7440-50-8	1.70E-04	7.69E-02	2.20930459909141E-03

3. *Compounds with Greatest Health Risk Based on Quantity Released and Hazard Index or Cancer Risk*

We looked at the compounds emitted in high quantities that had either a **high Hazard Index (HI) or high cancer risk (CR) level**. This Emission Risk Index sort was ranked according to EF divided by CV (either an HI or CR). Table B3 lists the top 10 results. Since a *higher risk is indicated by* a *lower* the risk value, the *compounds at the top of the list are those released in higher quantity and also have a relatively high hazard index or cancer risk.*

Note: Safety factors will impact the actual effect levels on which the Reference Doses (RfDs) and risk levels are based. As a result, the ratios (EF/HI and EF/"risk") will be a ranking of chemicals by RfD-associated or CSF-implied safety factors, rather than by relative hazard. (For example, PCDDs, PCDFs, PCBs, and PAHs would rank well above metals on such a list, even though metals would likely pose the more realistic hazard potential for exposed populations.)

The risk levels noted in Table B3 are based on EPA ambient air reports from Regions 3 and 9.

Table B3. Emission Factor/ Hazard Index or Risk					
Chemical	CASRN	Max EF	CV (ug/m3)	CV Ref (E=EPA)	EF/CV
Nickel	7440-02-0	1.30E-03	8.00E-03	CA@E-6R (E3)	0.162499994039536
Manganese	7439-96-5	6.50E-04	5.10E-02	N=0.1HI (E3)	1.27450982108712E-02
Benzene	71-43-2	3.90E-04	2.30E-01	CA@E-6R (E3)	1.69565214309841E-03
Acetaldehyde	75-07-0	1.30E-03	8.70E-01	CA@E-6R (E3)	1.49425282143056E-03
Barium	7440-39-3	2.50E-04	5.20E-01	N=0.1HI (E3)	4.80769260320812E-04
Carbon Monoxide	630-08-0	1.30E-01	1.00E+04	NAAQS (E)	1.29999998534913E-05
Toluene	108-88-3	2.90E-03	4.00E+02	N=0.1HI (E3)	7.24999972590012E-06
Hexane	110-54-3	9.20E-04	2.10E+02	N=0.1HI (E3)	4.38095230492763E-06
Xylene (m-/p-)	1330-20-7	2.70E-03	7.30E+02	N=0.1HI (E3)	3.69863028026884E-06
Acetone	67-64-1	8.30E-04	3.70E+02	N=0.1HI (E3)	2.24324321607128E-06
N = non-cancer risk # which is 10% of the EPA hazard index **CA@e-6R** = 10 to the minus 6 cancer risk **E3** = EPA Region 3 derived CV **E9** = EPA Region 9 derived CV					

4. Compounds with Low Odor Warning Properties

ATSDR examined each chemical based on whether it is odorous at levels above the TLV. *Those compounds with odor thresholds above the TLV provide little or no warning of exposure. We ranked these compounds according to* **Odor Threshold (OT)/Threshold Limit Value (TLV)**. Table B4 ranks the top 10 chemicals in *descending* order of their warning odor effectiveness. The ranking is a ratio of Toxicity to Odor, so that the greater the toxicity, relative to the degree of odor, the *higher* it will rank. The smellier the chemical, relative to its potential toxicity, the *lower* it will rank. However, the available *numerical surrogates* for Odor and Toxicity, i.e., the odor threshold (or mean OT) and the Threshold Limit Value (TLV), are actually *inverse indicators* of odor and toxicity. The *stronger* the odor of the substance (smellier), the *lower* the odor threshold (OT). Similarly, the *more toxic* the substance, then the *lower* the threshold limit value (TLV) (generally). In order to express the desired ratio Toxicity/Odor *using the OTs and TLVs*, the ratio must be written as "OT/TLV".

OT/TLV = (1/ ODOR)/(1/ TOXICITY) = **TOXICITY/ODOR**

In a list of chemicals ranked in *descending* order of OT/TLV ratios, those chemicals with the *least* effective warning odors will rank *highest* (i.e., have the *highest* OT/TLV ratios), while those with the *most* effective warning odors will rank *lowest* (i.e., have the *lowest* OT/TLV ratios).

Where possible, ATSDR used the geometric mean odor detection threshold (see list of odor references below). Where a mean was not available, we used the minimum odor detection threshold.

Table B4. Geometric Mean Odor Threshold of Detection/TLV				
Chemical	CASRN	GM_OTd_ppm	TLV ppm	OTd/TLV
Carbon Tetrachloride	56-23-5	252	5.00E+00	50.4000015258789
Acrolein	107-02-8	1.8	1.00E-01	18
Benzene	71-43-2	61	1.00E+01	6.09999990463257
Sulfur Dioxide	7446-09-5	2.7	2.00E+00	1.35000002384186
1,1,1-Trichloroethane	71-55-6	390	3.50E+02	1.11428570747375
Methyl chloroform	71-55-6	390	3.50E+02	1.11428570747375
Xylene (m-/p-)	1330-20-7	20	2.00E+01	1
Xylene (o-)	95-47-6	20	2.00E+01	0.998143136501312
Tetrachloroethene	127-18-4	47	5.00E+01	0.939999997615814
Ammonia	7664-41-7	17	2.50E+01	0.680000007152557

5. Compounds With a High Degree of Odor

ATSDR sorted the list of potentially emitted compounds based on the "Degree of Odor" using **Emission Factor (EF)/OT**. Substances which have low odor (detection) threshold and are emitted from HMA plants at higher concentrations will be at the top of this table. In Table B5, ATSDR ranks the top 10 chemicals in *descending* order based on those which are emitted at greater quantities and can only be detected (via odor) at higher concentrations.

Table B5. Maximum EF/Geometric Mean Odor Detection Threshold				
Chemical	CASRN	Max EF	GM_OTd_ppm	EF/OT
Sulfur Dioxide	7446-09-5	5.80E-02	2.7	2.14814804494381E-02
Acetaldehyde	75-07-0	1.30E-03	0.067	1.94029845297337E-02
Naphthalene	91-20-3	6.50E-04	0.038	1.71052645891905E-02
Toluene	108-88-3	2.90E-03	1.6	1.81249994784594E-03
Crotonaldehyde	4170-30-3	8.60E-05	0.11	7.81818176619709E-04
Xylene (m-/p-)	1330-20-7	2.70E-03	20	1.35000009322539E-04
Heptane	142-82-5	9.40E-03	230	4.08695632359013E-05
Ethylene	74-85-1	7.00E-03	270	2.59259268204914E-05
Acrolein	107-02-8	2.60E-05	1.8	1.44444447869319E-05
Acetone	67-64-1	8.30E-04	62	1.33870962599758E-05

How Did ATSDR Choose Odor Thresholds?

To find information on odors and odor responses for the 159 AP-42 chemicals, ATSDR used the following publications in this order:

1. Odor Thresholds for Chemicals with Established Occupational Health Standards 1997, AIHA Review Subcommittee, The American Industrial Hygiene Association;

ATSDR chose this publication first because the AIHA did an extensive literature review and rejected numerous studies based on a rigorous list of criteria. Studies accepted were then ranked by the panel size, panel odor sensitivity, panel calibration, and several other factors. Most of the chosen and rejected thresholds were compiled from reference #2.

2. Compilations of odor threshold values in air, water and media 2003, L.J. Van Gemert, Boelens Aroma Chemical Information Service (BACIS)

3. TLVs and BEIs Based on the Documentation of the Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices 2004, The American Conference of Governmental Industrial Hygienist.

Additional odor threshold information was acquired by researching different electronic databases. The electronic databases used included ISI Web of Science, PubMed, ProQuest and Micromedex (which provides information from Medtext, Hazardtext, CHRIS (Chemical Hazard Response Information System), HSDB (Hazardous Substance Data Bank), IRIS (Integrated Risk Information System), LOLI, NIOSH Pocket Guide, OHM/TADS (Oil and Hazardous Materials/Technical Assistance Data System), RTECS (Registry of Toxic Effects of Chemical Substances), Reprotext, Reprotox and Poisindex-Toxicology Management).

The odor thresholds and other relevant information from the electronic databases and literature was stored in a database.

How Did ATSDR Use These Tables?

The EF, OT/TLV, and EF/[HI or CR] tables were used in conjunction with TLV and selected Lowest Observable Adverse Effect Levels (LOAELs) to make decisions on which chemicals to investigate further in a toxicological evaluation.

The OT/TLV and EF/OT tables are useful for selecting chemicals for further literature searches on response and adverse response levels. ATSDR and others can use this information for making nuisance odor level recommendations.

Note on ATSDR site-specific sampling: When predicting community exposures, ATSDR generally uses worst case scenarios. Although we believe that most of the 159 compounds will not be detected in nearby communities due to low concentrations or, in the case of particulates, they usually fallout before they could reach a community, we still consider them and in many instances include them in our sampling and analytical methods

Top Compounds by Category from the AP-42 HMA Plant Emissions Factors Evaluation

Of the top 10 compounds from each of the previously discussed tables, *the most toxicologically significant substances were found to be sulfur dioxide, nitrogen dioxide, carbon monoxide, aldehydes (such as acrolein), some metals, and particulates (such as quartz, dust).*

The other chemicals represented in the tables are not likely to be toxic (at the concentrations found in the atmosphere) or are likely to be found in the air at extremely low concentrations, which are not significant enough to pose concern to the area's surrounding HMA plants. However, chemicals such as sulfur dioxide and the aldehydes are highly reactive and may cause irritation to the eyes and upper respiratory system. Further, particulates (such as quartz) which are released by HMA plants are comprised of substances which accumulate in the lungs and effect lung functions once inhaled (HSDB).

Top Ten List of Substances for which ATSDR Conducted Further Toxicological Evaluations

Compounds of Interest	**Factors**
Emitted in Large Quantities	Emission Factor (EF)
Possible Effects	EF and Threshold Limit Value (TLV)
Potential Risk	EF and Hazard Index or Risk
Odor Warning Properties	Odor Threshold (OT) and TLV
Significant/Sustained Odor	EF and OT

Emission Factor (EF) - Asphalt-related Compounds Emitted in Large Quantities

- Carbon Dioxide
- Carbon Monoxide
- Total PM (Particulate) TSP
- Organic PM (Particulate Matter)
- PM (Particulate matter <10m
- Sulfur Dioxide
- Particulate PM -2.5
- TOC as propane (or total VOC)
- Nitrogen Oxide (NOx)
- Methane

EF/Threshold Limit Value (TLV) - Compounds with Possible Health Effects based on Quantity and Toxicity

- Sulfur Dioxide
- Carbon Monoxide
- Nitrogen Oxide (NOx)
- Formaldehyde
- Lead
- Barium
- Manganese
- Quinone
- Carbon Dioxide
- Copper

EF/Hazard Index or Risk - Compounds with Greatest Health Risk Based on Quantity Released and Hazard Index or Cancer Risk

- Nickel
- Manganese
- Benzene
- Acetaldehyde
- Barium
- Carbon Monoxide
- Toluene
- Hexane
- Xylene (m-/p-)
- Acetone

Top Ten List of Substances which are Nuisance Odor Evaluation Indicators

Odor Threshold (OT)/TLV - Compounds with Low Odor Warning Properties

- Carbon Tetrachloride
- Acrolein
- Benzene
- Sulfur Dioxide
- 1,1,1-Trichloroethane
- Methyl chloroform
- Xylene (m-/p-)
- Xylene (o-)
- Tetrachloroethene
- Ammonia

EF/OT - Compounds with a High Degree of Odor*

- Sulfur Dioxide
- Acetaldehyde
- Naphthalene
- Toluene
- Crotonaldehyde
- Xylene (m-/p-)
- Heptane
- Ethylene
- Acrolein
- Acetone

*Note: Although H_2S did not rank high on this list because it did not have a significant emissions factor, it does have a low odor detection threshold of around 8 ppb (11 ug/m^3) in the general population and should be considered for sampling.

What AP-42 compounds were not sampled for by ATSDR in communities?

Sampling in the seven communities did not include metals, SO_2, NOx, and aldehydes and there was limited sampling for carbon monoxide. Additionally, we may need to consider how the mixture of chemicals may react to form other hazards such as acid gases. pH measurements may also be needed.

Headaches have been reported as a symptom in many of the communities tested. At what level do the COx compounds produce headaches?

CO and CO_2 are highly emitted from HMA plants. CO produces headaches at 200 ppm (over a 2-3 hour period) and 400 ppm (over a 1-2 hour period (See CO Reference Section).

CO_2 produces headaches at 2000-5000 ppm (See CO_2 Reference Section). The typical level found in occupied spaces with good air exchange is 350 – 1,000 ppm. The levels associated with complaints of drowsiness and poor air are 1,000 – 2,000 ppm.

Using the emissions factors, a typical batch HMA plant produces 6.5 ton/yr CO and 1,650 ton/yr CO_2. A typical drum mix plant produces 13 ton/yr CO and 3,300 ton/yr CO_2. Using those output rates and modeling worst case conditions with SCREEN3[1], it is possible that people may experience headaches from CO for a little more than ½ mile from a facility and from CO_2 up to 4 miles of a facility. However, ATSDR sampling for CO at one site showed a very low downwind concentration of just over 1 ppm. At future asphalt facilities where an ATSDR evaluation is requested, we will include sampling for carbon oxides (CO, CO_2).

Overall Conclusions

As a result of this emission factors evaluation, ATSDR's future sampling at asphalt facilities will also include sulfur dioxide (SO_2), nitrogen dioxides (NOx), carbon oxides (CO, CO_2), and some metals as well as continued sampling for particulates, hydrogen sulfide, VOCs, and PAHs.

We will also include sampling for compounds with the highest degree of significant/sustained odor such as acetaldehyde, naphthalene, toluene, crotonaldehyde, xylene (m-/p-), heptane, ethylene, acrolein, and acetone.

Since chemical mixtures may react and form other hazards such as acid gases, we will include pH measurements where applicable.

[1] SCREEN3 – is a single source Gaussian plume model which provides maximum ground-level concentrations for point, area, flare, and volume sources, as well as concentrations in the cavity zone, and concentrations due to inversion break-up and shoreline fumigation. SCREEN3 is a screening version of the ISC3 model. http://www.epa.gov/scram001/dispersion_screening.htm#screen3

CO References:

Annual Review of Pharmacology
Vol. 15: 409-423 (Volume publication date April 1975)
(doi:10.1146/annurev.pa.15.040175.002205)
The Effect of Carbon Monoxide on Humans
R D Stewart
Title: Warehouse workers' headache.
Source: Journal of occupational medicine [0096-1736] Fleming yr:1992 vol:34 iss:9 pg:872 -872
http://www.ccohs.ca/oshanswers/chemicals/chem_profiles/carbon_dioxide/health_cd.htm
http://www.dhfs.state.wi.us/eh/ChemFS/fs/CarbonDioxide.htm
http://www.aerias.org/DesktopModules/ArticleDetail.aspx?articleId=138&spaceid=2&subid=13
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http://www.intox.org/databank/documents/chemical/carbmono/cie57.htm
www.ohsonline.com/Stevens/OHSPub.nsf/Articles2/8B509CAEB2CBF8B88625719A005DA18B?
http://www.osha.gov/dts/sltc/methods/inorganic/id172/id172.html#ref86
http://www.osha.gov/dts/sltc/methods/inorganic/id209/id209.html

CO_2 References:

http://dhfs.wisconsin.gov/eh/ChemFS/fs/CarbonDioxide.htm
www.abe.iastate.edu/human_house/aen125.asp
www.airproducts.com/nr/rdonlyres/ 6582611c-16c6-4660-8584-c172182fb0c2/0/safety18.pdf
www.deh.gov.au/atmosphere/airquality/ publications/sok/profiles/**carbon**monoxide.html
www.epa.gov/Ozone/snap/fire/co2/appendixb.pdf

Appendix C. Odors Discussion

In general, people have become more intolerant of environmental odors while at the same time, air quality has improved. As "background" odor levels are decreasing, people have become more sensitive and able to detect very low, transient environmental levels.

"Unpleasant odors have long been recognized as warning signs of potential risks to human health. We now know that odors from environmental sources might indeed *cause* health symptoms depending on the individual and the environmental factors" (Schiffman *et al,* 2005). Odor-related mechanisms that may result in symptoms include innate odor aversion, stress-induced illness, aversive conditioning phenomena, and aggravation of existing medical conditions, such as bronchial asthma (Shusterman 1992). After exposure to environmental odors, these processes may occur in some individuals and not in others. Smokers and the elderly may be less aware of odors and therefore at risk for prolonged exposure. In general, women are more sensitive to environmental odors than men are.

Odor-related aversive conditioning may occur when a person experiences low-level odors after an initial traumatic exposure. A common response is hyperventilation with a fast heart rate, dizziness, nausea, sweating, and anxiety. Stress-related health effects may, to some extent, be related to the degree to which an individual believes an odor is causing risk. The symptom-causing odor thresholds of some contaminants may be below levels thought to be hazardous, thus defying classic toxicological explanations. These odor-related mechanisms would help to explain why health complaints expressed by some communities often occur when contaminants are detected below levels associated with known adverse health effects (Shusterman *et al,* 1991).

References

Schiffman S, Williams, C.M. 2005. Science of Odors as a Potential Health Issue. J Environmental Quality 34:129-138

Shusterman D, Lipscomb J, Satin K, Neutra R. 1991. Symptom prevalence and odor-worry interaction near hazardous waste sites. Environ Health Perspect 94:25-30.

Shusterman D. 1992. Critical Review: The health significance of environmental odor pollution. Arch Environ Health 47:76-91.

Appendix D. Explanation of Comparison Values

AHERA – Asbestos Hazard Emergency Response Act signed by EPA

CR- Cancer Risk

c-EMEG – ATSDR's Environmental Media Evaluation Guide based on chronic exposure (>365 days)

i-EMEG – ATSDR's Environmental Media Evaluation Guide based on intermediate exposure (15-364 days)

EPA PM10 & EPA PM2.5 – PM 10 is measure of particles in the atmosphere with a diameter of less than ten or equal to a nominal 10 micrometers. PM-2.5 is a measure of smaller particles in the air. PM-10 has been the pollutant particulate level standard against which EPA has been measuring Clean Air Act compliance. On the basis of newer scientific findings, EPA is considering regulations that will make PM-2.5 the new "standard".

HI – Hazard Index

i-MRL- An ATSDR estimate of daily human exposure to a hazardous substance at or below which that substance is unlikely to pose a measurable risk of harmful (adverse), noncancerous effects. MRLs are calculated for a route of exposure (inhalation or oral) over a specified time period (acute, intermediate, or chronic). MRLs should not be used as predictors of harmful (adverse) health effects. (i stands for intermediate and represents between 15 and 364 days of exposure.)

NAAQS – National Ambient Air Quality Standards: Standards established by EPA that apply for outdoor air throughout the country.

NIOSH – National Institute for Occupational Safety and Health (NIOSH)

OSHA PEL – OSHA (Occupational Safety & Health Administration) sets permissible exposure limits (PELs) to protect workers against the health effects of exposure to hazardous substances. PELs are regulatory limits on the amount or concentration of a substance in the air. They may also contain a skin designation. PELs are enforceable. OSHA PELs are based on an 8-hour time weighted average (TWA) exposure.

RBC – The Risk Based Concentration (RBC) Table contains Reference Doses (RfDs) and Cancer Slope Factors (CSFs) for about 400 chemicals. These toxicity factors have been combined with "standard" exposure scenarios to calculate RBCs--chemical concentrations corresponding to fixed levels of risk (i.e., a Hazard Quotient (HQ) of 1, or lifetime cancer risk of 1E-6, whichever occurs at a lower concentration) in water, air, fish tissue, and soil. They can be found at the following website. http://www.epa.gov/reg3hwmd/risk/human/index.htm

TLV – Threshold Limit Values (TLVs) are not standards. They are guidelines designed for use by industrial hygienists in making decisions regarding safe levels of exposure to various chemical substances and physical agents found in the workplace. In using these guidelines, industrial hygienists are cautioned that the TLVs are only one of multiple factors to be considered in evaluating specific workplace situations and conditions.
TLVs are determinations made by a voluntary body of independent knowledgeable individuals. They represent the opinion of the scientific community that has reviewed the data described in the Documentation, that exposure at or below the level of the TLV does not create an unreasonable risk of disease or injury.

TLVs are health-based values established by committees that review existing published and peer-reviewed literature in various scientific disciplines (e.g., industrial hygiene, toxicology, occupational medicine, and epidemiology). Since TLVs are based solely on health factors, there is no consideration given to economic or technical feasibility. (http://www.acgih.org/TLV/)

D2

Exhibit I

Health Risk Assessment Evaluation

&

Powerpoint Presentation

&

Stephen G. Zemba, PhD, PE Resume

Health Risk Assessment Evaluation
Connell Resources Inc. Proposed Hot-Mix Asphalt Plant

Stephen Zemba, PhD
Wellington Planning Commission Meeting
June 5, 2023

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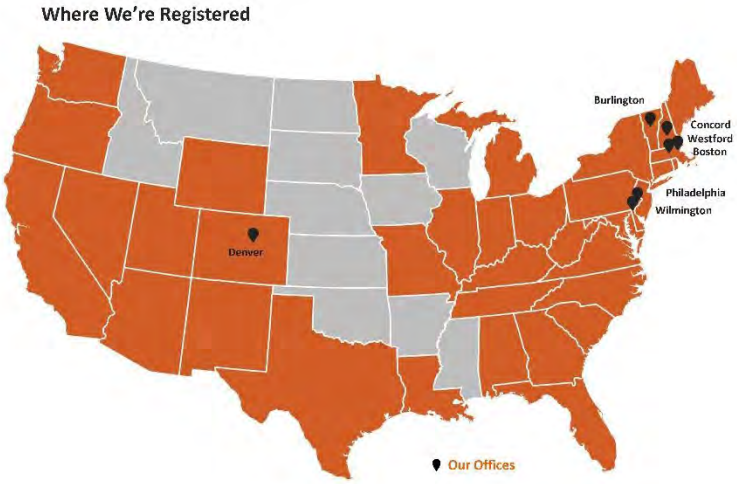
OVERVIEW

- Employee-Owned, Est. in 1993
- Multi-disciplinary:
  - solid waste
  - environmental
  - hydrogeology
  - geotechnical
  - civil
  - chemical
  - mechanical
  - electrical
  - risk assessment
- Approximately 180 employees
- Concord, NH (Headquarters)



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2

SERVICES

- Air Services and Modeling
- Brownfields Redevelopment
- Data Management & Visualization
- Due Diligence
- Geotechnical Design
- Landfill Gas Management
- Legal Support
- Natural Gas Infrastructure Design
- Permitting & Compliance
- Renewable Energy
- Site Characterization & Remediation
- Solid Waste Facility Design
- Water Resources

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3

Solid Waste

Energy

Industrial

Development

CLIENT SERVICE AREAS

4

Air Impact Assessment (Antea Group)

- Voluntary study – Not required by the Colorado Department of Public Health & Environment (CDPHE)
- Estimates changes to local air quality that will result from operation of the proposed hot-mix asphalt plant

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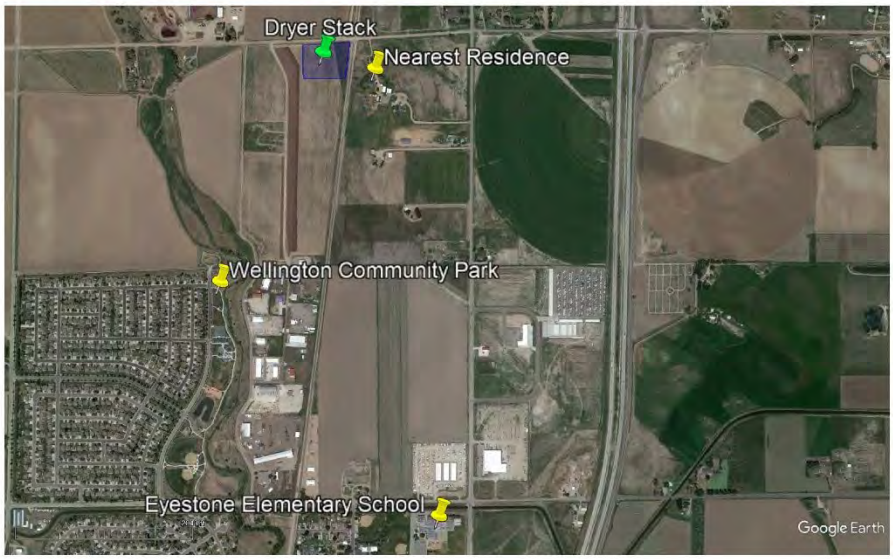
5

Key Locations Examined in the Air Quality Impact Study



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6

Air Impact Assessment -- Scope of Pollutants

Criteria Pollutants

- Particulate Matter
  - Total
  - Smaller than 10 µm (PM_{10})
  - Smaller than 2.5 µm ($PM_{2.5}$)
- Nitrogen Oxides (NO_X)
- Sulfur Dioxide (SO_2)
- Carbon Monoxide (CO)

Key Air Toxics

- Acetaldehyde
- Hexane
- Formaldehyde
- Toluene
- Quinone
- Benzene
- Ethylbenzene
- Xylenes
- Polycyclic Aromatic Hydrocarbons (PAHs)
- Hydrogen Chloride (HCl)

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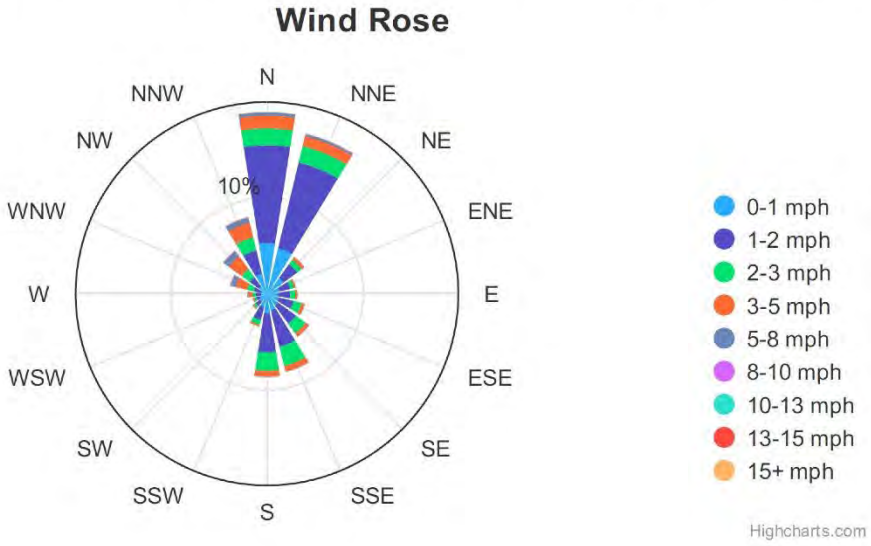
Hourly Meteorological Data (from Antea Group)



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Antea Group's Criteria Pollutant Assessment

Connell Resources
Wellington, CO
Table 3: Summary of AerMod Calculated Emissions and NAAQS

Pollutant	Averaging Period	AerMod Concentration for Wellington Location ($\mu g/m^3$)	NAAQS Primary Concentration[1] ($\mu g/m^3$)	AerMod Wellington Percent of NAAQS
PM-10	24-hour	0.15	150	0.1%
PM-2.5	24-hour	0.042	35	0.1%
	1-year	0.0025	12	0.02%
NOx	1-hour	7.1	188 ab	4%
	1-year	0.10	100 ab	0.1%
SO2	1-hour	7.5	196 a	4%
CO	1-hour	17	40,000 a	0.0%
	8-hour	10	10,000 a	0.1%

Notes
$\mu g/m^3$ = micrograms per cubic meter
1 = National Ambient Air Quality Standards (NAAQS) for public health protection, including the health of sensitive populations
a = Conversion of units from ppm provided by NAAQS to $\mu g/m^3$ provided by California Air Resource Board
b = Standard provided for NO_2

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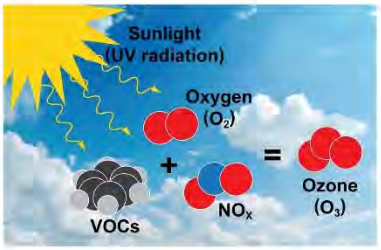
Air Quality in Larimer County – Ozone Non-Attainment

- Principal air quality issue in Larimer county is ozone (O_3)
- Ozone is created in the atmosphere from chemical reactions involving nitrogen oxides (NOx) and volatile organic compounds (VOCs)
- Ozone is a *regional* issue, and relocating the hot-mix asphalt plant will not substantially affect overall ozone production



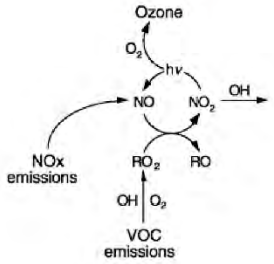


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Image Sources: U.S. Environmental Protection Agency, Oklahoma Department of Environmental Quality

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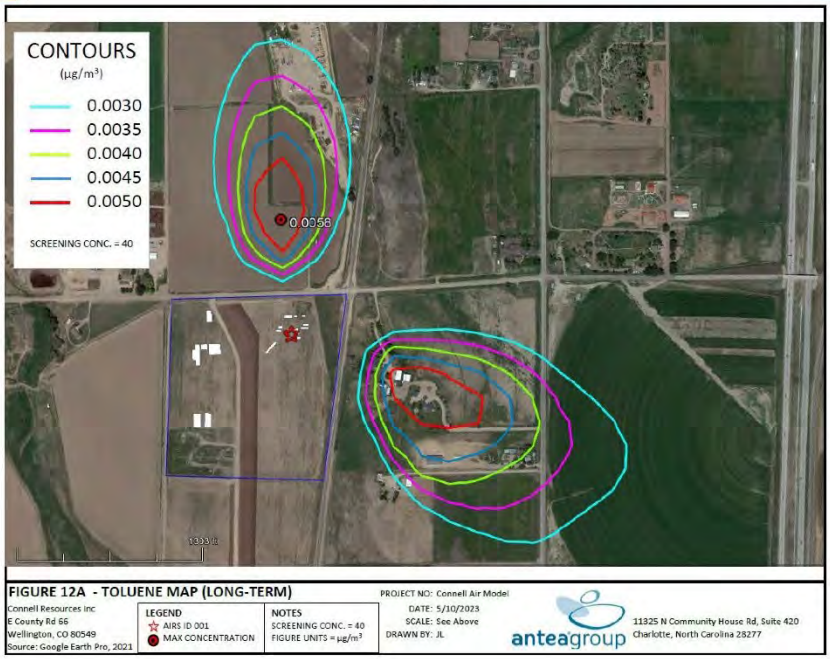
Air Modeling

- AERMOD – USEPA/CDPHE approved model
- Emission source – Aggregate dryer stack (red star)
- Results depict long-term (annual) impacts for toluene



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Health Risk Assessment

- Incremental Cancer Risk
  - Chemicals known or suspected to cause cancer
  - Estimated as: Concentration in Air × Unit Risk Factor
  - Typical acceptable levels
    - 1 to 100 per million (10^{-6} to 10^{-4})
  - Background cancer incidence risks
    - Men: 41 per 100, or 410,000 per million
    - Women: 39 per 100, or 390,000 per million

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https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2023/2023-cancer-facts-and-figures.pdf

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Health Risk Assessment

- Incremental Cancer Risk Example
  - Assume: A site/project adds a 1 in a million incremental cancer risk
  - A person's chance of getting cancer would increase by the following amounts:
    - Man: From 410,000 per million to 410,001 per million
    - Woman: From 390,000 per million to 390,001 per million

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https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2023/2023-cancer-facts-and-figures.pdf

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Incremental Cancer Risk

Chemical	Highest Modeled Concentration ($\mu g/m^3$)	Inhalation Unit Risk ($m^3/\mu g$)	Incremental Cancer Risk (per million)
Acetaldehyde	0.0024	0.0000022	0.0053
Formaldehyde	0.0013	0.000013	0.017
Benzene	0.00051	0.0000078	0.0040
Ethylbenzene	0.004	0.0000025	0.010
PAHs - Benzo(a)pyrene	0.000000058	0.0006	0.000035
Total Incremental Cancer Risk (per million)			0.036

- Assumed exposure for 70 years
- Incremental risk of 0.036 per million is less than 1 per million *de minimis* risk
- Risks at park and school 8 and 11 times lower

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Health Risk Assessment

- Hazard Quotient (HQ)
  - Address adverse health effects *other than cancer*
  - Calculated as: $$HQ = \frac{\text{Exposure Concentration}}{\text{Safe Concentration}}$$
  - Acceptable HQ = 1 if a single chemical
  - Add HQs together for multiple chemicals as a screening Hazard Index (HI)

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Non-Cancer Hazard Quotients

Chemical	Highest Modeled Concentration ($\mu g/m^3$)	Safe Concentration ($\mu g/m^3$)	Hazard Quotient (HQ)
Acetaldehyde	0.0024	9	0.00027
Hexane	0.0017	700	0.0000024
Formaldehyde	0.0013	9.8	0.00013
Toluene	0.0056	5000	0.0000011
Quinone	0.00049	1	0.00049
Benzene	0.00051	30	0.000017
Ethylbenzene	0.004	1000	0.0000040
Xylenes	0.0049	100	0.000049
PAHs - Benzo(a)pyrene	0.000000058	0.002	0.000029
PAHs - Other	0.00042	3	0.00014
HCl	0.00038	20	0.000019
		Total Hazard Index	0.0012

- Safe concentrations from U.S. EPA and state databases
- Overall Hazard Index (HI) is 800 times smaller than acceptable value of 1
- HI's at park and school 9 and 10 times lower

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Comparison to Background

Chemical	Highest Modeled Concentration (µg/m³)	NATA Background Concentration (µg/m³)	Percent of Background
Acetaldehyde	0.0024	0.64	0.4%
Formaldehyde	0.0013	0.73	0.2%
Benzene	0.00051	0.15	0.3%
Ethylbenzene	0.004	0.036	11%
PAHs (Total)	0.00042	0.0078	5.4%

- NATA = 2014 National Air Toxics Assessment (U.S. EPA)
- Background concentrations for Wellington census tract

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Conclusions

- Emissions from the hot-mix asphalt plant will not present significant risks to human health
- Highest incremental modeled concentrations will be small compared to existing background levels (from other sources)

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MEMORANDUM

To: John Warren
From: Stephen Zemba, PhD
File: 5838.00
Date: May 26, 2023
Re: Proposed Hot-Mix Asphalt Plant

Sanborn, Head and Associates, Inc. (Sanborn Head) has evaluated potential risks to human health associated with potential air pollutant emissions from the hot-mix asphalt plant (HMA) plant that Connell Resources proposes to build and operate in Wellington, Colorado. In conducting our review, we reviewed and built upon the results of the air quality assessment developed by the Antea Group (Antea) in their Refined Modeling Report dated May 18, 2023.

In summary, Sanborn Head's risk evaluation finds that pollutant emissions from the proposed hot-mix asphalt plant will not present significant health risks. The estimated incremental cancer risk is well below the 1 per million risk level considered *de minimis* by regulatory agencies. Additionally, the non-cancer hazard index is more than 800 times lower than 1, indicating no appreciable likelihood of adverse health effects. Impacts from facility emissions will in general lead to small increases to the background levels of pollutants in ambient air.

This memorandum is designed to accompany materials developed by Sanborn Head for presentation at a June 5, 2023 Community Meeting, providing notes, references, and supplemental information.

Presentation Slide #5 provides reference information for the Antea Group modeling report. An air dispersion modeling study is not typically required by the Colorado Department of Public Health and Environment (CDPHE) to obtain an air operating permit because HMA plants typically qualify as minor sources under CDPHE rules. Hence, Connell Resources voluntarily engaged Antea Group in developing the air quality assessment.

Presentation Slide #6 is a Google Earth map image that depicts the anticipated location of the dryer stack, which will be the main source of air pollutant emissions at the HMA plant. Also depicted are the locations of the three key potential receptors, locations at which Antea models pollutant concentrations in air due to HMA plant emissions. The nearest residence is located about 640 feet to the east-southeast of the proposed dryer stack. Sanborn Head understands that the Wellington Community Park and Eyestone Elementary School locations were considered based upon input from concerned citizens.

Presentation Slide #7 lists the air pollutants considered in the modeling study. Information on emissions of these pollutants is based on testing results from other HMA plants similar to that

proposed by Connell Resources, as provided in the US Environmental Protection Agency (US EPA) AP42 database and recent stack tests of HMA plants. Potential emission rates are based on HMA permitted production (300,000 tons/year); these potential emission rates will exceed actual emissions if the facility does not reach its permitted capacity. Criteria pollutants are subject to National Ambient Air Quality Standards (NAAQS), which are described and evaluated in Antea's report. Sanborn Head's risk evaluation focuses primarily on the so-called "air toxics," which are designated Hazardous Air Pollutants under the Clean Air Act. Sanborn Head understands that the list of key air toxics was provided by the Larimer County Health Department.

Presentation Slide #8 is a wind rose diagram of hourly meteorological data, as provided by Antea Group, which used the data as input to their dispersion modeling study. The petals/arms of the wind rose indicate directions from which winds originate. Winds blow from all directions, but the highest frequencies of winds in Wellington blow from north to south and north-northeast to south-southwest, in the general direction from the proposed HMA plant toward the most populated area of the Wellington community.

Presentation Slide #9 is a table from Antea's report that summarizes the highest modeled concentrations of the Criteria air pollutants in ambient air compared with their respective NAAQS. The NAAQS are issued by the US EPA as ambient concentration limits designed to protect human health. The incremental worst-case impacts from the HMA plant are small percentages of the NAAQS, and even if combined with the cumulative contributions from other sources, NAAQS are not likely to be exceeded.

Presentation Slide #10 addresses ozone (O_3), a pollutant of interest In Larimer County because monitored concentrations have shown exceedances of the USEPA's NAAQS. The proposed HMA plant will not directly emit ozone, but it will release nitrogen oxides (NOx) and volatile organic compounds (VOCs) that produce ozone from chemical reactions in the atmosphere. Ozone, however, is a pollutant that depends on regional emissions – in this case from the entire metropolitan Denver area. Since the HMA plant is being moved within the regional airshed, its NOx and VOC emissions should have no substantial impact on ambient ozone concentrations.

Presentation Slide #11 depicts Antea's air modeling results for toluene for the long-term (annual average) modeling period. The Antea Group report contains similar figures for all modeled pollutants, which principally differ in scale based on relative emissions of each pollutant. Each map of long-term averages indicates two regions of highest concentrations, one of which occurs to the north of the proposed HMA plant, and the other of which is predicted near the closest residence. Concentration predictions at the Wellington Community Park and Eyestone Elementary School (not shown on the map) are roughly ten times lower than the highest predicted concentrations.

Presentation Slides #12 and #13 discuss cancer risk, which is one of the two categories of health risks evaluated by Sanborn Head. The incremental cancer risk from exposure to an environmental project must be interpreted in the context of a person's "background" risk of

getting cancer, which is about 40% over one's lifetime (or 400,000 chances per 1,000,000). The additional risk of getting cancer from exposure to environmental pollutants is typically considered acceptable if within the range of 1 to 100 extra chances per 1,000,000 (which adds to the background risk), and is typically considered to be of de minimis concern if less than 1 per 1,000,000.

Presentation Slide #14 presents Sanborn Head's evaluation of incremental cancer risk from potential exposure to air pollutants from the proposed HMA plant. The estimates are based on the highest annual average concentrations estimated in Antea's modeling study, and exposure is assumed to occur over a period of 70 years. The portion of polycyclic aromatic hydrocarbons (PAHs) assumed to cause cancer is estimated from US EPA emission factors for benzo(a)pyrene and related compounds (https://www3.epa.gov/ttnchie1/ap42/ch11/final/c11s01.pdf). The Unit Risk factors that characterize the cancer-causing potential of the pollutants known or suspected to cause cancer are obtained from the US EPA Regional Screening Level (RSL) database (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables). The resulting cancer risk estimate, added over all pollutants, is well below the 1 per 1,000,000 *de minimis* risk level.

Presentation Slide #15 presents the calculations used to assess potential health effects other than cancer. This assessment involves the calculation of hazard quotients (HQs), which are ratios of exposure (air pollutant concentrations in air) divided by reference (safe) concentrations (RfCs). RfCs are derived by the US EPA and other regulatory authorities as concentrations that can be safely breathed over time with no appreciable risk of any adverse effects on health.

Presentation Slide #16 presents the details of the non-cancer risk evaluation. The safe concentrations are taken from the US EPA RSL database (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables), except for the value for quinone (not available from the US EPA), which is taken from the New Hampshire Department of Environmental Services (https://www.des.nh.gov/air/industrial-sources/air-toxics-compliance). PAHs are evaluated in two groups based on consideration of US EPA emission factors and similarity to benzo(a)pyrene (https://www3.epa.gov/ttnchie1/ap42/ch11/final/c11s01.pdf). The total hazard index, or sum of the hazard quotients for each pollutant, is more than 800 times smaller than the typically acceptable limit of 1.

Presentation Slide #17 compares the incremental worst-case estimates of air pollutant concentrations likely to result from emissions from the proposed HMA plant to background concentrations already present in air due to emissions from other manmade and natural sources. Background concentrations are specific to the Wellington census tract and are taken from the US EPA's National Air Toxics Assessment (https://www.epa.gov/national-air-toxics-assessment/2014-nata-assessment-results). As indicated, the proposed HMA would increase the concentrations of air toxics only by small percentages.

Presentation Slide #18 provides summary conclusions. Sanborn Head's evaluation indicates that pollutant emissions from the proposed HMA plant will not significantly contribute to adverse health effects to individuals in the Wellington community.

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STEPHEN G. ZEMBA, PHD, PE
Project Director

KEY AREAS OF PRACTICE

Health Risk Assessment

EDUCATION

Ph.D., Mechanical Engineering, Massachusetts Institute of Technology, 1989

M.S., Mechanical Engineering, Massachusetts Institute of Technology, 1985

B.S. with University Honors, Mechanical Engineering, Carnegie-Mellon University, 1983

REGISTRATIONS / CERTIFICATIONS

Professional Engineer – MA

PROFESSIONAL AFFILIATIONS

Member, Air and Waste Management Association

Environmental Business Council of New England

SANBORN HEAD

Since 2015

Steve has more than two decades of experience assessing risks of environmental chemicals. His projects include fate-and-transport modeling, exposure assessment, and both human health and ecological risk assessments. He has consulted for both private and public sector clients, and provided expert testimony at hearings and in litigation support.

Steve also teaches university-level courses on air quality management and air pollution control. He has presented projects and research at numerous conferences on topics including acid rain, dense gas plume dispersion, indoor air quality and dispersion modeling, ocean disposal of carbon dioxide, multi-pathway risk assessment, methods to estimate exposure point concentrations, vapor intrusion, landfill gas, and environmental applications of decision analysis methods.

RELEVANT EXPERIENCE

Collins & Aikman Superfund Site, Farmington, NH

As part of the Sanborn Head team, led the development of the baseline human health risk assessment for the site. While chlorinated solvents in groundwater have been the focus of the site investigation, metals and polycyclic aromatic hydrocarbons in soil have also merited consideration in the risk assessment, with differentiation of background an important component.

Technical Assistance, PFAS Air Deposition Review, NH DES

Assisted Sanborn Head's review of the investigation of a large air deposition site involving per- and polyfluoroalkyl substances (PFAS). Commented on the methods and assumptions used by the potentially responsible party for estimating emissions and deposition of PFAS to soils, and subsequent leaching to groundwater.

Four Hills Landfill Air Permitting, Risk Assessment, Nashua, NH

Designed and helped conduct a risk assessment of formaldehyde emissions from energy recovery engines operated at the landfill. Initial dispersion modeling determined exceedances of the state's ambient air limits. A site-specific risk assessment was thus conducted to derive a health-protective emission limit for formaldehyde, and subsequent engine testing was able to demonstrate compliance.

Vermont Department of Environmental Conservation, PFAS Pollution Prevention (P2) Project, VT

Sanborn Head is assisting the Vermont DEC on its PFAS Pollution Prevention Project. The project is designed to identify uses of per- and polyfluoroalkyl substances (PFAS) in metal finishing and aerospace industries and to identify opportunities to reduce releases of PFAS to the environment. Sanborn Head is involved in the development of sampling plans, process evaluation, and identification of PFAS-containing products and potential substitutes.

Ecological Evaluation of PFAS Toxicity and Bioaccumulation, Confidential Client

Prepared an ecological risk evaluation of PFAS contamination at a former military installation on behalf of a confidential client. Repeated application of aqueous film forming foam (AFFF) at a firefighting training area, as well as AFFF applications in response to specific incidents, led to PFAS contamination in soils, sediment, and groundwater. The residual contamination continues to discharge to surface water. Compared contaminant levels to ecological screening criteria to characterize potential risks to aquatic plants and animals. Also evaluated the potential for PFAS to

bioaccumulate from surface water and sediment into plants, shellfish and other macroinvertebrates, and fish. Modeled concentrations in biota were compared with site specific data as an initial evaluation of potential bioaccumulation resulting from exposure PFAS through the aquatic environment.

NEWSVT, 2018 Phase VI Expansion Permitting, Coventry, VT

Assisted with the evaluation of per- and polyfluorinated alkyl substances (PFAS) in leachate and the implications of its disposal at wastewater treatment plants.

NEWSVT, Scope of Services for 2019 PFAS Waste Source Testing, Coventry, VT

Oversaw the implementation of a phased program of sample acquisition and laboratory analysis of targeted waste streams disposed at the NEWSVT Landfill, with reporting of results to VTDEC. Presented data at the EREF PFAS symposium.

Vapor Intrusion Litigation Support, Industrial Facility, MI

Reviewed site history to determine if underground storage tank investigations were conducted according to regulatory guidance and whether data were collected to identify the potential for vapor intrusion from chlorinated solvent compounds. Helped to review co-located groundwater, soil-gas, and indoor air data to assess the degree of vapor intrusion at off-site residential locations.

Fugitive Dust Evaluation, Industrial Facility, OH

Oversaw expert technical assistance in the area of fugitive dust assessment and the relationship between fugitive dust emissions and concentrations of lead measured in ambient air. Recommended measures to mitigate dust emissions and lead exposure.

Litigation Support, Sterigenics Facility, Willowbrook, IL

Assisted the Illinois Attorney General's office in evaluating residential exposure to ethylene oxide (EtO) released from operation of a medical equipment sterilization plant. Used measurements collected by the USEPA to develop estimates of background exposure levels to distinguish impacts from facility-related EtO emissions.

PFAS White Paper, New York, NY

Assisted a confidential client in the estimation of future liabilities that might result from the mitigation of per- and polyfluorinated substances (PFAS) in the environment. The scope of the analysis included assessment of the magnitude of drinking water impacts across the nation and the potential costs of treatment, remediation, and compliance monitoring.

Multi-Pathway Risk Assessments of Waste-to-Energy and Other Facility Stack Emissions, Various Locations

Coordinated and designed multi-pathway risk assessments of stack emissions from waste-to-energy plants, cement kilns, and hazardous waste incinerators in Biddeford, Maine, Harrisburg, Pennsylvania, and Greencastle, Indiana, Harriman, New York, and the Setubal Peninsula, Portugal, as well as proposed facilities in East Bridgewater, Massachusetts and Green Island, New York. Also provided technical support for the Town of North Kingstown in evaluating the proposed waste-to energy facility at Quonset Point, Rhode Island.

ITRC PFAS Team

Assisting with the writing of the PFAS fate-and-transport fact sheet and the incorporation of information on the role of atmospheric transport and deposition of PFAS as a potential source of groundwater contamination in the vicinity of factories that used PFAS in manufacturing processes.

PFAS in Vermont Soils

Helped to design and implement a study to measure background levels of perfluoroalkyl substances (PFAS) in surface soils in Vermont. Collaborating with the University of Vermont, samples were collected from 66 locations across the state at public parks, greens, school grounds, and other areas with no known local sources of PFAS. PFNA and PFOS were found in all samples, and 6 other compounds were detected in 70% or more of all samples. The findings suggest that low levels of PFAS may be ubiquitous in soils, with the likely source due to long-range transport and atmospheric deposition.

Technical Assistance Grants (TAGs) Support, New England Superfund Sites

Assisted several citizens' groups under TAGs projects typically involve review of remedial investigation reports and feasibility studies, with specific attention to human health and ecological risk assessments, to help citizens understand the nature of potential risks and to develop comments on technical work. Continues to advise the Wilmington Environmental Restoration Committee on the investigation of the Olin Chemical Site in Wilmington, MA, focusing on dense aqueous phase contamination of groundwater and the presence of *n*-nitrosodimethylamine and numerous other chemicals. While at a previous firm, assisted the Seacoast Citizens Overseeing Pease Environment in reviewing risk assessments of groundwater and soil contamination found at the former Pease Air Force Base (Portsmouth, NH), including chlorinated solvent plumes. Provided similar TAG support to the Aberjona Study Coalition (Industri-Plex Site, Woburn, MA), Four Town Focus (former Fort Devens Annex, Sudbury, MA), and the Advocates for Rockland, Abington, Weymouth, and Hingham (former South Weymouth Naval Air Station, MA).

Fugitive Dust Evaluation, Petroleum Coke Facility, IL

Assisted the City of Chicago with the third-party evaluation of fugitive dust emissions from a petroleum coke (petcoke) storage facility and led a study of potential dust emissions from the facility that indicated the importance of control measures.

Environmental Evaluation of Omya Verpol Facility, VT

As Project Manager, led the most extensive environmental and public health evaluation of any facility in Vermont. Under intense public scrutiny, the 18-month study shed new light on the largest calcium carbonate ore-processing plant in North America. The project team reviewed existing environmental data, identified data gaps, and conducted additional investigations. Additional activities included drilling monitoring wells, identifying preferred analytical methods for detection of process chemicals in environmental samples, conducting a dust monitoring study, assessing emissions to air of potentially hazardous chemicals, surveying local aquatic systems receiving industrial or quarry discharges, developing drinking water guidelines for process chemicals, monitoring noise levels around the facility, and assessing the impacts of the plant operations on public health.

PCBs Indoor Air Assessments

As Risk Assessor, has participated in several health risk evaluations associated with polychlorinated biphenyls (PCBs) that remain present in pre-1980 building materials such as caulking compound and fluorescent light ballasts. In one study, evaluated worker exposure to airborne sawdust generated from cutting floorboards stained with PCB oils and found modeled breathing zone concentrations to be lower than occupational exposure limits. In a second study, assisted in the evaluation of PCB exposure at a daycare center. PCB concentrations in indoor air exceeded EPA's protective Public Health Levels (PHLs), but exposure was found to be many times smaller than the background level received by nursing infants, suggesting a low

probability of adverse health effects. In a third study, assisted a client in converting an industrial building for residential use. PCBs present in concrete floors cannot be removed in a cost-effective manner. Flux chamber measurements were conducted that demonstrate a low rate of PCB off-gassing, and a subsequent health risk assessment indicated that the floors can remain place and present no significant health risks to future residents.

Project Manager, Municipal Solid Waste Landfill Risk Assessments, Various New England Locations

As Project Manager, designed the scope of the risk assessment of the City of Manchester Municipal Landfill and performed fate and transport modeling of the volatilization of organic chemicals from surface waters, along with subsequent atmospheric dispersion modeling. Designed and conducted Cumulative Impact Assessment risk characterizations of landfill gas and dust emissions for solid waste management facilities in Fitchburg, Chicopee, Taunton, Bourne, Fall River, Granby, and Marion, Massachusetts. Evaluated long-term risks to human health potentially associated with the proposed expansion and development of the Crossroads Landfill in Norridgewock, Maine.

200 Presidential Way, Human Health Risk Assessment, Woburn, MA

Led and helped to develop a focused human health risk assessment of a portion of the Industri-Plex Superfund Site. U.S. EPA required a detailed risk screening of soils and groundwater as the area was slated for residential development. The focused risk assessment demonstrated no significant health risks to future residents at the site.

Proposition 65 Assessments, Green Toxicology, Brookline, MA

Conducted Proposition 65 Assessments of rubber products developed from recycled tires. The rubber products named in the Proposition 65 notice (which may be sold in California) are used for a number of purposes such as landscaping mulch, playgrounds and equestrian arena fill. Supported the client by identifying materials to be evaluated and documented similarities and differences (e.g., in coatings or additives) and evaluated the effect of any differences on the analysis. Identifying end users and product interaction was an important part of the project. Reviewed the measured chemicals in the products and compared it to the Proposition 65 list. In addition, he evaluated relevant toxicological properties and compared the results of the exposure estimates with relevant NSRLs and MADLs or equivalents and assisted legal counsel in evaluating the need for any warning labels. All parts of the assessments were documented to a standard allowing independent review and replication, suitable for submission to California authorities to demonstrate compliance with Proposition 65.

Consequence Modeling, Expert Witness Services, Town of Hopkinton, MA

Reviewed a worst-case study of dense vapor formation and dispersion due to potential spills of liquefied natural gas (LNG) from a peak shaving facility. He provided the Town with expert advice at public meetings and testified on the Town's behalf at a state Department of Public Utilities hearing on an application by the facility owner to upgrade the facility, stating that improved communication between the Town and the facility would be useful for improving emergency response planning.

MGM Springfield Casino, MCP Compliance, Springfield, MA

Provided expert risk assessment for the construction of the MGM Springfield Casino. Reviewed data and developed risk-based concentrations for workers and others in the area. Provided MCP risk calculations, developed a risk assessment report to support a comprehensive RAM Plan for the project.

88 Ames Street, Risk Assessment Services, Cambridge, MA

Provided risk assessment services for this high-rise redevelopment project in a highly urban setting. Conducted risk calculations for workers and trespassers and developed a risk assessment report addressing CVOCs in fill soil and groundwater.

Southbridge Recycling & Disposal Park, Landfill Air Permitting, Southbridge, MA

Assessed multiple phased double-lined solid waste facility expansion project. Examined formaldehyde concentrations at monitoring locations and developed an air pathway exposure model. In addition, has developed a formaldehyde risk assessment report and has been involved in reviewing the air permit protocol.

BPR Sudbury Development, Risk Assessment, Sudbury, MA

Supported the design of building additions and improvements to the proposed Wastewater Treatment Plan. Conducted risk assessments of potential contaminants in excavation trenches possible during geotechnical subsurface explorations.

Air Emission Services, Expert Witness Services, City of Haverhill, MA

Dr. Zemba a reviewed an application filed by an industrial facility seeking to increase its processing throughput. He examined the detailed calculations submitted by the applicant and the likely changes in air pollutant emissions. His report and public hearing testimony informed the Board of Health's positive determination and approval of the project.

Litigation Support

Attleboro Sand & Gravel, Concrete Batch Plant Evaluation, Expert Witness, Attleboro, MA

Evaluated the potential for the facility to cause conditions of air pollution that could be significantly hazardous, offensive, or detrimental to nearby neighbors. He developed and offered an expert opinion on the likely air quality impacts of the proposed concrete batching plant.

Air Emission Services, Litigation Support, Dupage County, IL

Reviewed data of the U.S. EPA on extensive test data from hot mix asphalt plants and health hazards. Assessed potential air quality and human health impacts of emissions from a particular plant and determined that air quality will not present significant health risks to nearby residents

Asbestos Risk Assessment, Litigation Support, St. Louis, MO

Assessed potential exposure to asbestos fibers that may have been released from the asbestos cement pipe plant. Developed an estimate of the level of exposure to asbestos received by the client due to potential emissions of asbestos fibers from the pipe manufacturing plant. Reviewed information about the St. Louis facility and the means by which asbestos may have been released to the atmosphere, building on work done in a previous case.

Passaic River Superfund Site, Litigation Support, NJ

Assisted with support to a potentially responsible party (PRP) with ongoing litigation regarding the Passaic River Superfund site. Participated in a broad review of the sediment data available and critically reviewed/critiqued the baseline risk assessment for the eight plus mile stretch of the Passaic targeted for dredging. Assisted with the evaluation of the PRP's potential releases of contaminants of concern (COCs) to the river., and also assisted with file reviews for many of the other PRP properties along the River, to assess the contributions of these other properties to the contaminants driving the need for remediation of the River

NH Dioxane Site, Litigation Support, Hampstead and Atkinson, NH

Assisted with litigation support by reviewing data regarding the 1,4-dioxane detected in several dozen residential wells that prompted an extensive NHDES groundwater investigation and a Time Critical Removal Action by the USEPA under the Superfund Program. Specifically assisted with the review of an evaluation of potential 1,4-dioxane sources other than the client's former facility and conducted an assessment of how the extent of contamination may change in the future, impacting the lowering of the 1,4-dioxane and the reasonableness of the USEPA's approximately $4 million claim against the client.

Crude Oil Loading Litigation Support, Portland, ME

Provided litigation support to the City of South Portland, Maine, regarding the air quality impacts associated with bulk petroleum loading and transport. In developing an expert report/opinion, he reviewed documents, analytical data land use maps/photos, regulatory agency files and permits and evaluated data and performance of engineering/scientific analyses or calculations. His expert report focused on short-term odor, SO_2, and NOx impacts, and provided trial testimony regarding air pollutant emissions resulting from the loading of crude petroleum oil onto marine vessels, and also from breathing and filling losses from a petroleum tank farm.

Prior to Sanborn Head

Emergency Response Planning for Oil Well Exploration

As Risk Assessor, assisted petroleum industry clients to evaluate hazards associated with potential well blowouts. Under certain circumstances, blowouts can release substantial quantities of oil and gas, and result in heavier-than-air mixtures with toxic levels of hydrogen sulfide (H_2S).

Releases in mountainous terrain can channel the heavy gas, potentially endangering inhabitants over distances of several miles. Recognizing the limitations of standard heavy gas models, applied computational fluid dynamics (CFD) software to simulate the behavior of well blowout releases. Predicted H_2S concentrations have been used by clients to develop contingency measures for responding to inadvertent blowout releases.

Environmental Risk Assessment and Decision-Making Support for the U.S. Army Corps of Engineers, MS

As Project Manager, coordinated the development of a prototype decision support tool that integrated environmental models with decision analysis methods to formally and transparently evaluate tradeoffs and uncertainties regarding environmental resource management. The prototype decision support tool integrated Army Corps of Engineers and U.S. Environmental Protection Agency (EPA) environmental models within a Geographic Information System (GIS) framework to provide a powerful system of models for assessing the impacts of multi-media environmental contamination over varying spatial and temporal scales, with a direct linkage to a decision support module.

Risk Assessments of Hazardous Waste Disposal Sites, MA

As Project Manager, conducted numerous risk assessments of hazardous waste disposal sites in accordance with the Massachusetts Contingency Plan and federal Superfund guidance. The contamination at one site — a former jewelry manufacturing facility — included many heavy metals and several volatile organic compounds associated with solvent use. The assessment of a petroleum tank farm required consideration of the ecological consequences of potential discharges to an adjacent

river. Another large site required a detailed exposure assessment involving eight age groups (infants through senior citizens) and seven hypothetical receptors (residents, workers, and visitors/trespassers).

Technical Assistance, Massachusetts Communities Monitoring Superfund Site Cleanups

As Project Manager, provides ongoing technical assistance to three citizen groups – the Aberjona Study Coalition, the Wilmington Environmental Restoration Committee, and the Advocates for Rockland, Abington, Weymouth, and Hingham – who monitor the cleanup of Superfund sites in Massachusetts. The projects are funded by citizens groups who have received Technical Assistance Grants (TAGs) from the U.S. Environmental Protection Agency (EPA). The projects involve reviews of remedial investigations, feasibility studies, human health and ecological risk assessments, proposed plans, records of decision, and other related documents. Works to communicate technical findings to the citizens groups and the interested public through meetings and presentations and assists the groups to develop and submit comments to EPA.

Instructor, Universities and Professional Organizations

In addition to environmental consulting, teaches courses in air pollution and air dispersion modeling at Tufts University, the University of Massachusetts Lowell, and (formerly) the Massachusetts Institute of Technology. Since 1992 has mentored more than 200 students in over 20 courses, has co-taught numerous risk assessment and risk management courses for the Massachusetts Licensed Site Professional Association, and has conducted workshops in multi-pathway risk assessment at conferences sponsored by the Society for Risk Analysis and International Society of Exposure Science.

Deep Ocean Disposal of Carbon Dioxide, U.S. Department of Energy

Research Engineer for a research team that performed one of the first evaluations of the physical and environmental consequences of ocean disposal of carbon dioxide (CO_2). Developed mass transfer calculations to demonstrate that bubbles formed by the injection of CO_2 into the deep ocean could dissolve and remain sequestered. Potential formation of hydrates, however, could blanket the ocean bottom and adversely affect deep ocean ecology.

Atmosphere to Ocean Deposition of Contaminants, Massachusetts Bays Program

As Research Engineer, participated in a University of Massachusetts Lowell research study to evaluate contaminant deposition from the atmosphere to the Massachusetts Bays and developed estimates of atmospheric deposition of nitrogen containing compounds, mercury, and polycyclic aromatic hydrocarbons to the Massachusetts Bay.

Vapor Intrusion Evaluation, Raritan Arsenal, NJ

As Project Manager, evaluated the potential migration of contaminants from groundwater to indoor air at the Former Raritan Arsenal in New Jersey. Also reviewed indoor air data, applied modeling algorithms to evaluate vapor transport from groundwater to indoor air, and developed groundwater and soil-gas screening levels that would be protective of indoor air. The work supported the U.S. Army Corps of Engineers' proposed approach for evaluating potential indoor air quality impacts at the Former Raritan Arsenal due to vapor intrusion.

MATES-II Review, Federal Highway Administration (FHWA)

As Risk Assessor, team evaluated the Multiple Air Toxics Exposure Study (MATES-II) and found uncertainties ranging over many orders of magnitude uncertainty in its risk

estimates. A second bias typical of air toxics risk assessments is the assumption that current air quality will remain similar indefinitely (e.g., for a period of 70 years) despite projections that air quality will continue to improve. The findings afforded FHWA a more thorough understanding of the risks associated with highway vehicle emissions, which is expected to enable better informed decisions regarding the development of the nation's transportation infrastructure.

Health Risks Due to Transportation Emissions, Transportation Research Board (TRB)

As Project Manager, contributed to two research studies funded by the TRB. In one project, developed metrics to allow for more meaningful comparisons of the health benefits of proposed transit projects, expanding the typical quantification of changes in project emissions to include population and meteorological variables. In a second project, applied the U.S. EPA's AERMOD system to estimate ambient impacts from a proposed consolidation and renovation of an Intermodal Freight Terminal. AERMOD's area source algorithms were found to be advantageous for representing intermodal emission sources, but less convenient than traditional line source models for simulating roadway emissions.

Third-Party Review of a Proposed Hot-Mix Asphalt Plant, Uxbridge, MA

As Project Manager, coordinated and performed portions of an in-depth evaluation of hazard, nuisance, and danger issues associated with the operation of a hot mix asphalt production facility proposed for Uxbridge, Massachusetts. The final results study found that, as with any industrial facility, the potential for hazard, danger, and nuisance conditions does exist with the proposed facility; however, it should be possible to build and operate a plant such that hazards and dangers are minimal, and nuisance conditions are infrequent, although some issues, such as noise, may require substantial mitigation measures. The evaluation concluded that if the plant was built, several safeguards and protocols should be made conditions of approval (such as formal limits on the hours of operation to eliminate concerns about nuisance noise after the normal workday). It was determined that the best chance for a successful plant would be a mediated and/or negotiated approach in which stakeholders — the proponent, the Town, neighbors, and citizens' groups — work cooperatively during planning, construction, and operational phases (including ongoing efforts beyond startup).

RCRA Hazardous Waste Listing, BASF Corporation

As Project Manager, performed fate-and-transport modeling to predict evaporation rates of volatile chemicals from surface water impoundments at chemical manufacturing facilities in New York and West Virginia, with subsequent modeling to predict potential exposure point concentrations in ambient air. The analyses supported the demonstration that certain dye wastes proposed for listing as hazardous wastes under the Resource Conservation Recovery Act did not present significant health risks.

Record of Decision Review, Sullivan's Ledge Landfill Superfund Site, New Bedford, MA

As Project Manager, evaluated the remedial investigations and feasibility studies of the Sullivan's Ledge site and the Middle Marsh operable unit and proposed alternative interpretation of the data collected during the field studies. The analysis included in-depth analysis of proposed sediment quality criteria designed to protect mink from excessive exposure to polychlorinated biphenyls (PCBs). Absence of a sustainable fish population indicated the assumed principal means of the mink's exposure to PCBs was unfounded, and hence proposed cleanup criteria were overly protective.

Asbestos Cement Pipe Manufacturing in Riverside and Santa Clara, CA

As Project Manager and Expert Witness, conducted retrospective exposure studies to evaluate claims that a former manufacturer of cement pipe exposed neighbors to excessive levels of asbestos (used as a component of the pipes). Developed emissions and dispersion analyses to estimate concentrations of airborne asbestos at locations in communities surrounding the manufacturing facilities and testified as an expert witness in several cases related to these matters.

Facility Siting Hearings, Various Cities and Towns in MA

As Project Manager, testified at public meetings and hearings on findings of the likely environmental impacts of proposed solid waste landfills, recycling facilities, biomass-to energy plants, and hot-mix asphalt plants. Conducted studies of the chemicals likely to be released from these facilities and evaluated potential health risks to people living and working nearby.

Development of Risk-Based Standards for Compost, Nantucket, MA

As Senior Engineer, participated in the development of standards for compost produced from advanced processing of municipal solid waste (MSW). State regulatory authorities demanded extensive testing of the MSW derived compost, including analysis for a wide range of organic and inorganic contaminants. Worked interactively with the project team, client, and regulators and helped to develop acceptable risk-based standards for a wide variety of chemicals identified in the compost.

Chattanooga Air Toxics Study, Tennessee

As Project Manager, designed and coordinated the human health risk assessment for the Chattanooga Air Toxics Study (CATS), a year-long monitoring study of potentially hazardous air pollutants in mixed-use Chattanooga neighborhoods. The project team worked closely with the U.S. EPA Region 4 Project Manager to develop and execute the protocol for the risk assessment in the absence of definitive regulatory guidance, while simultaneously meeting stringent budget, time, and quality assurance constraints. The project team processed and analyzed an extensive database of ambient air toxics measurements involving hundreds of samples and chemicals. A distinguishing factor of the Study was its incorporation of Superfund risk methodologies, a novel application in air toxics risk assessment that compensated for a void in established risk assessment guidance.

Plainville Landfill Comprehensive Site Assessment Risk Evaluation, MA

As Project Manager, designed, managed, and conducted portions of a complex human health and ecological risk assessments for the Plainville Landfill in Massachusetts. Under considerable public pressure and scrutiny, Allied Waste Systems asked project staff to evaluate health risks associated with intense odors experienced by nearby residents due to emissions from its landfill. The project team helped the landfill owner establish a novel monitoring system capable of real-time measurements of hydrogen sulfide (a marker for landfill gas) and develop an approved plan to collect additional data for the health evaluation. Data was collected while the landfill worked to mitigate the source of its odors and was subsequently used to develop an acute health risk evaluation. This effort served as the first of several tasks needed to satisfy regulatory requirements.

The project developed into a large, multi-task project of complicated scope. The project team developed a comprehensive risk characterization focusing on both human health and the environment, working with third-party contractors to ensure collection of proper data to assess contaminant releases to air, groundwater, and surface water/sediment. The work required frequent interaction with stakeholders,

including careful development of protocols to bridge gaps in regulatory guidance and effective communication with concerned citizens. Methods for the assessment of health risks from landfill gas emissions were later used in part as a model by the Massachusetts Department of Environmental Protection to develop Cumulative Impact Assessment guidance for solid waste facilities.

PUBLICATIONS AND PRESENTATIONS

Zemba, S., Abell, R., and Ashton, A., Invited presentation to the Ohio Utilitied Group, Columbus, OH, December 2022.

Zemba, S. and Roakes, H., "PFAS Cycling Between Landfills and Wastewater Treatment Plants," Sanborn Head & Associates sponsored webinar (RCEP credit), November 30, 2022.

Zemba, S., "PFAS in Landfills (and elted topics), Environmental Business Council of New England webinar, November 15, 2022.

Zemba, S. and Snay, T., "PCBs – Re-Emerging Contaminants," AEHS 38th Annual International Conference on Soils, Sediments, Water, and Energy, Amherst, MA, October 18, 2022.

Morzuch, B., Roakes, H., and Zemba, S., "Environmental Data Analysis and MCP Risk Assessment Statistics with ProUCL," Licensed Site Professional Association course, November 1, 2022.

Zemba, S., "PFAS at Brownfields Sites," Northeast Sustainable Communities Workshop, September 13, 2022.

Zemba, S., "Perspectives on PFAS Health Effects," New England Water Works Association (NEWWA) Annual Conference, Newport, RI, September 21, 2022.

Zhu, W., Khan, K., Roakes, H., Maker, E., Underwood, K., Zemba, S., and Badireddy, A., "Vermont-wide assessment of anthropogenic background concentrations of perfluoroalkyl substances in surface soil," *J Haz Materials* **438**:129479, September 2022.

Abell, R., Thurlow, M., Zemba, S., "PFAS: State Regulation, Private Litigation, Updated Scientific Analysis, Risks and Liabilities," Strafford CLE Webinar, August 17, 2022.

Damiano, L. and Zemba, S., "Renewable Natural Gas: The Future of Landfill Gas Energy Recovery?," Air & Waste Management Annual Conference and Exhibition, San Francisco, CA, June 29, 2022.

Zemba, S., "PFAS Emissions to Ambient Air from Landfills," Air & Waste Management Annual Conference and Exhibition, San Francisco, CA, June 29, 2022.

Zemba, S., "PFAS Issues Facing Landfills," Invited presentation to the New Hampshire Solid Waste Working Group, May 27, 2022.

Zemba, S., "How Significant are PFAS Emissions to Ambient Air from Landfills?," Federation of New York Solid Waste Associations Conference May 23, 2022.

Zemba, S., "PFAS at Brownfields: The Role of Risk Communication,", Northeast Waste Management Officials' Association, Revitalizing New England: Brownfields Summit 2022, May 18, 2022.

Brown, L. and Zemba, S., "PFAS: Responding to Orders to Investigate and Increasing State and Federal Scrutiny," Strafford CLE Webinar, April 12, 2022.

Zemba, S., "PFAS: Trends and Issues for the Oil & Gas Industry", Moderator, 4C Conference, April 7, 2022.

Zemba, S., "PFAS and Brownfields," Moderator of Workshop sponsored by the Brownfields Coalition of the Northeast, Lebanon, NH, March 31, 2022.

Roakes, H. and Zemba, S., "PFAS and the Environment: Importance of Mass Fluxes and Balances," ASCE New Hampshire Section Webinar, March 22, 2022.

Zemba, S., "PFAS Issues Facing Landfills," Global Waste Management Symposium, Indian Wells, CA, February 15, 2022.

Zemba, S., "PFAS Developments", Invited Speaker, Brownfield Coalition of the Northeast Regulatory Update, November 16, 2021.

Zemba, S., "PFAS Update – Impact on Redevelopment Projects", Invited Speaker, Brownfield Coalition of the Northeast 2021 Sustainable Communities Workshop, October 26-27, 2021.

Zemba, S., "Perspectives on PFAS – Importance of Mass Fluxes and Balances", 37th Annual International Conference on Soils, Sediments, Water, and Energy (virtual), October 2021.

Zemba, S. & Shea, D., "PFAS Vapor Intrusion: Really a Concern", Air & Waste Management Association's Advancements in VI and Emerging Contaminant Air Quality Issues Virtual Conference, September 2021.

Zemba, S., Delude Roy, N., and Cooper, Ivan A., "Episode 102: Beyond the Basics of PFAS", Waste360's NothingWasted! Podcast, April 5, 2021.

Zemba, S., "Introductions to Short Forms for Human Health Risk Assessment", Licensed Site Professionals Association webinar, March 2021.

Zemba, S., "The Basis of PFAS Standards," Invited Speaker, Vermont Environmental Consortium (VEC) 9th Annual Conference (virtual), October 27, 2020.

Zemba, S., Pope, S., Badireddy, A., "Ecological Risk and Bioremediation of Per- and Polyfluoroalkyl Substances", Scientific Journal of Biology & Life Sciences, October 20, 2020.

Zemba, S., "Surface Water Standards: The Next PFAS Challenge?", AEHS 36th Annual International Conference on Soils, Sediments, Water, and Energy, Amherst, MA, October 2020.

Estabrooks, M., and Zemba., S., "PFAS Study of Solid Waste Materials," Federation of NY Solid Waste Associations Virtual Conference, October 15, 2020.

Zemba, S., "PCBs in Building Materials and Indoor Air Exposure/Health Risks." PCBs in Building Products: Implications for Brownfields (webinar), Northeast Waste Management Officials' Association (NEWMOA), October 14, 2020.

Zemba., S., "PFAS Sequestration and Retention for Landfill Leachate." The Science of PFAS: Chemistry, Health, and Multimedia Measurements, Virtual Conference, Air & Waste Management Association, September 16, 2020.

Zemba, S., and Roy, N., "Beyond the Basics of PFAS," WasteExpo Together Online Conference Session, September 16, 2020.

Zemba, S., Air Emissions/Deposition as a Potential Pathway to Groundwater Contamination. PFAS and Related Compounds Workshop, American Groundwater Trust, New Jersey/Maryland/Delaware PFAS Webinar, September 2, 2020.

Roakes, H. and Zemba, S., "PFAS Updates: PFAS Fate & Transport Characteristics and Remediation Alternatives", RCEP Presentation for ACEC-NH, August 28, 2020.

Zemba, S., Air Emissions/Deposition as a Potential Pathway to Groundwater Contamination. PFAS and Related Compounds Workshop, American Groundwater Trust, Georgia-Florida PFAS Webinar, August 10, 2020.

Zemba, S., "PFAS in New Hampshire: The Latest Developments", Alpha Analytical Webinar, July 28, 2020.

Abell, R., Brown, M., Thurlow, M., Zemba, S., "PFAS: State Regulation, Private Litigation, Recent Science, and Risks and Liabilities," Strafford CLE Webinar, July 15, 2020.

Zemba, S., "PFAS Emissions from Air to Landfills," EBC Solid Waste Management Webinar, Update to the Solid Waste Industry, Environmental Business Council of New England, July 14, 2020.

Zemba, S., "Technology Overview: Methods for Assessing Health and Environmental Risks of Organic Micropollutants in Biosolids", Mid-Atlantic Biosolids Association Webinar, July 9, 2020.

Zemba, S., Air Emissions/Deposition as a Potential Pathway to Groundwater Contamination. PFAS and Related Compounds Workshop, American Groundwater Trust, Northwest PFAS Webinar, June 24, 2020.

Roakes, H. and Zemba, S., "PFAS Exchange between Landfills and Wastewater Treatment Plants – The PFAS Cycle?", EM – The Magazine for Environmental Managers, May 2020.

Zemba, S., "PFAS: Responding to Orders to Investigate and Increasing State and Federal Scrutiny", Strafford CLE Webinar, April 8, 2020.

Zemba, S., "PFAS Cycling Between Landfills and WWTPS", EBC Emerging Contaminants Seminar, Framingham, MA, February 25, 2020.

Zemba, S., "PFAS: Treading Dark Waters," presented at The Remediation Managers Roundtable Group, Bowling Green, FL, February 2020.

Zemba, S., Air Emissions/Deposition as a Potential Pathway to Groundwater Contamination. PFAS and Related Compounds Workshop, American Groundwater Trust, Tallahassee, FL, January 8, 2020.

Roakes, H. and Zemba, S., "PFAS Cycling Between Landfills and Wastewater Treatment Plants," presented at the Solid Waste Association of North America - Southern New England Chapter membership meeting, Raynham, MA, December 18, 2019.

Abell R., Kray J., Thurlow, M., Zemba, S., "PFAS Contamination: Evolving State and Federal Regulatory Landscape, Science, Litigation, and Due Diligence in Transactions," Strafford Webinar, October 31, 2019.

Badireddy A., Zhu W., Roakes H., Zemba S., "PFAS Background in Vermont Shallow Soils," The 35th Annual International Conference on Soils, Sediments, Water, and Energy, Amherst, MA, October 23, 2019.

Zemba S., Roakes H., "PFAS Cycling Between Landfills and Wastewater Treatment Plants," The 35th Annual International Conference on Soils, Sediments, Water, and Energy, Amherst, MA, October 23, 2019.

Roakes H., Zemba S., and Beecher N., "PFAS Leachability from Soils: Principles, Regulatory Review, and Considerations for Site Investigations," The 35th Annual International Conference on Soils, Sediments, Water, and Energy, Amherst, MA, October 23, 2019.

Corenthal L., Roakes H., Sheehan A., and Zemba S., "Light Non-Aqueous Phase Liquid (LNAPL) Site Closure Using Non-Traditional Field Data and Analysis," (Poster Presentation) The 35th Annual International Conference on Soils, Sediments, Water, and Energy, Amherst, MA, October 22, 2019.

Zemba, S., PFAS – Here, There, and Everywhere. Presentation at the ACEC of Vermont 4th Annual Environmental Protection Technical Workshop, Burlington, Vermont, October 17, 2019.

Zemba, S., PFAS Cycling Between Landfills and WWTPs. Presentation at the Colorado SWANA 2019 Annual Conference, Rocky Mountain Chapter, Colorado Springs, Colorado, October 1-2, 2019.

Zemba, S. (2019). Air Emissions/Deposition as a Potential Pathway to Groundwater Contamination. New England PFAS Workshop, American Groundwater Trust, Westford, MA, September 18, 2019

Zemba, S. and Steinhauser, E. (2019). PFAS and Landfills: Science, Policy and Risk Management. Presentation at the 21st Annual Joint Fall Conference, SWANA Keystone Chapter & PA Waste Industries Association, Harrisburg, Pennsylvania, September 4-5, 2019.

Zemba, S. (2019). PFAS Cycling Between Landfills and WWTPs. Presentation at the EREF Summit on PFAS in Leachate, Ypsilanti, Michigan, August 14-15, 2019.

Zemba, S. (2019). Air Emissions/Deposition as a Potential Pathway to Groundwater Contamination. PFAS and Other Emerging Contaminants, American Groundwater Trust, Albuquerque, NM, July 24, 2019

Abell, R., Thurlow, M., and Zemba, S. (2019). PFAS: State Regulation, Litigation, Recent. Strafford webinar, July 16, 2019.

Mittleman, A., and Zemba, S. (2019). Atmospheric Deposition as a Source of Contamination at PFAS-Impacted Sites. Transportation Research Board, Sustainable Resource Conservation & Recovery in Transportation, Washington, DC, July 15, 2019.

Roakes, H. and Zemba, S. (2019). PFOA Fate and Transport: Considering Soil as a Potential Reservoir for PFOA in the Environment. Presentation at the Air & Waste Management Association's 112th Annual Conference & Exhibition, Québec City, Québec; June 25-28, 2019, Abstract #601867

Roakes, H. and Zemba, S. (2019). PFOA Fate and Transport: Considering Soil as a Potential Reservoir for PFOA in the Environment. Presentation at the Air & Waste Management Association's 112th Annual Conference & Exhibition, Québec City, Québec; June 25-28, 2019, Abstract #601867.

Damiano L. and Zemba, S. (2019). Comparison of Greenhouse Gas Emissions: Waste-to-Energy vs. Landfilling. Presentation at the Air & Waste Management Association's 112th Annual Conference & Exhibition, Québec City, Québec; June 25-28, 2019, Abstract #602309.

Zemba, S. and Roakes, H. (2019). PFAS Cycling Between Landfills and WWTPs. Presentation at the Air & Waste Management Association's 112th Annual Conference & Exhibition, Québec City, Québec; June 25-28, 2019, Abstract #601793.

Zemba, S (2019). Air Emissions/Deposition as a Potential Pathway to PFAS Soil and Groundwater Contamination. Panel Session Per and Polyfluoroalkyl Substances (PFAS): Specific Technical Challenges, Litigation, and Solutions. Presentation at the Air & Waste Management Association's 112th Annual Conference & Exhibition, Québec City, Québec; June 25-28, 2019, Abstract #601793.

Zemba, S., and Roakes, H. (2019). PFAS Cycling Between Landfills and WWTPs. NY Federation of Solid Waste & Recycling Conference. Bolton Landing, NY, May 19-22, 2019.

Damiano, L. and Zemba, S. (2019). Comparison of Greenhouse Gas Emissions: Waste-to-Energy vs. Landfilling. NY Federation of Solid Waste & Recycling Conference. Bolton Landing, NY, May 19-22, 2019.

Abell, R., Thurlow, M., and Zemba, S. (2019). PFAS: State Regulation, Litigation, Recent. Strafford webinar, May 16, 2019.

Zemba, S. (2019). A Primer on PFAS: A Contaminant Emerged. Presentation to the Ohio Utility Group, Columbus, OH, May 9, 2019.

Zemba, S., and Zevitas, C. (2019). Atmospheric deposition as a source of contamination at PFAS-impacted Sites. ACEC-NC, PFAS and Other Emerging Contaminants Conference, Raleigh, NC, April 23, 2019.

Estabrooks, M., and Zemba, S. (2019), *Siloxanes in the Waste Stream – Environmental and Financial Impacts*. A&WMA EM Magazine, March 2019.

Little, H., and Zemba, S. (2019), *Landfill Gas-to-Energy – Evaluating Level of Risk from Formaldehyde Emissions*. A&WMA EM Magazine, March 2019.

Zemba, S., Abell, R., and Roakes, H. (2019), *Landfills—Be Aware of Emerging Contaminants!*. A&WMA EM Magazine, March 2019.

Zemba, S. (2019). Air Emissions/Deposition as a Potential Pathway to Groundwater Contamination. Perfluorochemicals Groundwater Contamination Conference, American Groundwater Trust, Mount Laurel, NJ, March 6, 2019.

Zemba, S. (2019). Air Emissions/Deposition as a Potential Pathway to Groundwater Contamination. Pittsburgh, PA PFAS Workshop., American Groundwater Trust, Canonsburg, PA, March 4, 2019.

Zemba, S. (2019). A Primer on PFAS: A Contaminant Emerged. Presentation at the 4C HSE Conference, Austin, TX, February 6-8, 2019.

Zemba, S., *et al.* (2018), Health Risk Assessment Perspectives on PCBs in Building Materials and Indoor Air. Environmental Business Council of New England PCB Management Program – Emerging Issues in PCB Management for Buildings and the Environment, Providence, RI, September 6, 2018.

Zemba, S. and Abell, R. (2018). Comments on the June 23, 2018 draft *Toxicological Profile for Perfluoroalkyls*. Submitted to the Agency for Toxic Substances Registry, August 20, 2018. Docket ATSDR-2015-0004.

Abell, R., Kray, J., Thurlow, M., and Zemba, S. (2018). PFAS Contamination: Evolving State and Federal Regulatory Landscape, Litigation, and Due Diligence in Transactions. Strafford webinar, August 7, 2018.

Beecher, N., Zemba, S., and Lee, L. (2018). PFAS, Wastewater, and Biosolids Management, Water Environment Federation webcast, August 1, 2018.

Zemba, S., *et al.* (2018). Air Emissions/Deposition as a Potential Pathway to Groundwater Contamination. Perfluorochemicals Groundwater Contamination Conference, American Groundwater Trust, Grand Rapids, MI, July 26, 2018.

Zemba, S., *et al.* (2018). Health Risk Assessment Perspectives on PCBs in Building Materials and Indoor Air. Environmental Business Council of New England PCB Management Program – Managing PCB Impacted Building Materials, Boston, MA, July 17, 2018.

Zemba, S. (2018). Comments on the June 22-23, 2018 Per- and Polyfluoroalkyl Substances New England Community Engagement meeting, submitted to the U.S. Environmental Protection Agency, July 10, 2018. Docket EPA-OW-2018-0270.

Little, H, Zemba, S, and Damiano, L. (2018). Derivation of Risk-based Emission Limits for Formaldehyde from Landfill Gas-to-Energy Engine Emissions. A&WMA's 111th Annual Conference and Exhibition, Hartford, CT, June 25-28, 2018.

Zemba, S. and Muniz, P. (2018). Case Study of Residential Redevelopment and PCB Encapsulation. A&WMA's 111th Annual Conference and Exhibition, Hartford, CT, June 25-28, 2018.

Zemba, S. and Muniz, P. (2018). Assessing Risks of Using Soils in Landfills as Cover. A&WMA's 111th Annual Conference and Exhibition, Hartford, CT, June 25-28, 2018.

Roakes, H., Zemba, S. and Abell, R. (2018). PFAS and the Solid Waste Industry. A&WMA's 111th Annual Conference and Exhibition, Hartford, CT, June 25-28, 2018.

Estabrooks, M. and Zemba, S. (2018). Siloxanes: Impact on Landfill Gas Engine-Generator Air Emissions. A&WMA's 111th Annual Conference and Exhibition, Hartford, CT, June 25-28, 2018.

Damiano, L. and Zemba, S. (2018). Management of Mildly-Contaminated Soil Outside of Landfills. A&WMA's 111th Annual Conference and Exhibition, Hartford, CT, June 25-28, 2018.

Zemba, S. (2018). A Primer on PFAS: A Contaminant Emerged. 4C HSE Conference, San Antonio, TX, April 3, 2018.

Zemba, S. (2018). Formaldehyde: A New Concern for Air Permitting? 4C HSE Conference, San Antonio, TX, April 3, 2018.

Zemba, S., D. Adams, *Reuse of Contaminated Soils as Alternate Daily Cover at Landfills*. A&WMA EM Magazine, March 2018.

Zemba, S., I. Cooper, M. Thurlow, F.Boodoo, J. Matthis, P. Stanford,, S. Koenigsberg, Emerging Contaminants Found in Landfill Leachate Panel, International Solid Waste Conference, Annapolis (Washington, D.C.), March 12, 2018

Thurlow, M., R. Abell and S. Zemba, *PFAS Contamination Remains a Hot-Button Issue: Overview of Recent Regulatory, Litigation, and Technical Developments*. American Bar Association, Section of Environment, Energy, and Resources, Committee Articles, December 15, 2017.

Zemba, S. (2017). PFAS and Landfills. Norwich University, Northfield, VT, SWANA Northern New England Chapter meeting, October 24, 2017.

Roakes, H., and Zemba, S., "PFAS Fate and Transport – A Heuristic Model for Understanding PFAS in the Environment." presented at the AEHS Foundation East Coast Conference, Amherst, MA, October 18, 2017.

Damiano, L., and Zemba, S. (2017). Environmental Benefits and Impacts of Recovering Energy from Biogas. Southern New England SWANA Fall Breakfast, Amherst, MA, October 16, 2017.

Zemba, S.G. (2017). Air Emissions/Deposition as a Potential Pathway to Groundwater Contamination. Perfluorochemicals Groundwater Contamination Conference, American Ground Water Trust, Cincinnati, OH, September 13, 2017.

Zemba, S.G. (2017). Air Quality Impacts and Health Risks from Hot Mix Asphalt Plant Emissions. National Asphalt Pavement Association, Midyear Meeting, Chicago, IL, July 18, 2017.

Thurlow, M., R. Abell and S. Zemba, *Emergence of PFAS: A Public Health Concern?* Webinar, American Bar Association, July 11, 2017.

Zemba, S.G. (2017). Energy from Waste: Many Types, Many Challenges, Future Strategies. A&WMA's 110th Annual Conference and Exhibition, Pittsburgh, PA, June 5-8, 2017.

Zemba, S.G. and Damiano, L.L. (2017). PFAS Contamination of Groundwater by Airborne Transport and Deposition. A&WMA's 110th Annual Conference and Exhibition, Pittsburgh, PA, June 5-8, 2017.

Zemba, S.G., and Saikaly, R. (2017). Health Risks from Fugitive Petcoke Dust Emissions. A&WMA's 110th Annual Conference and Exhibition, Pittsburgh, PA, June 5-8, 2017.

Roakes, H., and Zemba, S., "The Emergence of PFAS," presented at the Suzanne D. LaLonde Institute session of the Federation of New York Solid Waste Associations Solid Waste/Recycling Conference and Trade Show, Bolton Landing, NY, May 23, 2017.

Damiano, L., and Zemba, S. (2017). What's the Best Way to Manage Landfill Gas? *EM – The Magazine for Environmental Managers*, Air & Waste Management Association, March 2017.

Zemba, S.G. (2016). Background on PFC Composition, Sources, Transport & Fate, and Toxicity. Environmental Business Council of New England, New Hampshire Chapter Program: Update on Management of PFCs, November 18, 2016.

Zemba, S., and Roakes, H. (2016). The Emergence of PFCs. NEWWA - 2016 Water Resources and Sustainability Symposium, Devens, MA, October 27, 2016.

Zemba, S., and Estabrooks, M. (2016). Air Emissions from Landfill-Gas-to-Energy Engines: A Health Risk? A&WMA's 109th Annual Conference and Exhibition, New Orleans, LA, June 20-23, 2016.

Zemba, S.G. (2016). Can Air Pollution Sources Adversely Affect Soil and Vegetation? A&WMA's 109th Annual Conference and Exhibition, New Orleans, LA, June 20-23, 2016.

Zemba, S., and Damiano, L. (2016). Air Emissions from Landfill-Gas-to-Energy Engines: A Health Risk? Federation of New York Solid Waste Association Solid Waste & Recycling Conference, May 18, 2016.

Estabrooks, M.E., and Zemba, S.G.(2016). Siloxanes: Impact on LFG Engine-Generator Air Emissions. Webinar sponsored by the Solid Waste Association of North America (SWANA), March 30, 2016.

Zemba, S.G. (2013). Global, Synoptic, and Local Scale Circulation. Guest Lecture at the 1.725 Chemicals in the Environment: Fate and Transport, Massachusetts Institute of Technology, Cambridge, MA, November 12.

Zemba, S.G. and Lester, R. R. (2013). Application of USACE Dredged Material Management Decisions (D2M2) Model to Manage Contaminated Sediments. Podium presentation at the AEHS Annual Conference on Soils, Sediments, Water and Energy, Amherst, MA, October 21-24.

Zemba, S., Green, L., and Peters, N. (2013). Landfill Gas Combustion: Evaluating Health Risks and Neighborhood Concerns. Podium presentations at the Annual Conference, New York Federation of Solid Waste Associations, Bolton Landing, NY, May 5-8 and Solid Waste Association of North America Wastecon Conference, Long Beach, CA, September 17-19.

Zemba, S. and Green, L. (2012). PCBs in the indoor environment. Poster presentation at the Annual Meeting, Society for Risk Analysis, San Francisco, CA, December 9-12.

Zemba, S.G. (2012). Implications of the 1-Hour National Ambient Air Quality Standard for NO2. Podium presentation at the Annual Conference, New York Federation of Solid Waste Associations, Bolton Landing, NY, May 20-23.

Zemba, S.G. (2012). Health Risk Assessment Perspectives on PCBs in Building Materials and Indoor Air. Invited presentation at the meetings *Managing PCB Contaminated Caulking in Older Buildings*, organized by the New England Environmental Business Council, and held at E.L. Harvey & Sons, Westborough, MA, March 2, Northeast Utilities, Berlin, CT, May 1, Adler Pollock & Sheehan, Providence, RI, October 23, and PSNH Energy Park, Manchester, NH, November 28.

Zemba, S.G. (2011). Global, Synoptic, and Local Scale Circulation. Guest Lecture at the *1.725 Chemicals in the Environment: Fate and Transport*, Massachusetts Institute of Technology, Cambridge, MA, November 15.

Zemba, S. (2011). Relative Risk of Radionuclide Releases: Nuclear vs. Coal-Fired Power Pants. Podium presentation at the *SETAC North America 32nd Annual Meeting*, Hynes, Convention Center, Boston, MA, November 13-17.

Zemba, S.G., Ames, M.A., and Sullivan, D.M. (2011). PCBs Exposure via Indoor Air. Poster presentation at the *21st Annual Meeting of The International Society of Exposure Science, Advances Exposure Science for Environmental Health*, Baltimore, MD, October 23-27.

Zemba, S.G. and Lester, R.R. (2011). Vegetable Ingestion Pathway at Contaminated Waste Sites. Podium presentation at *the 21st Annual Meeting of The International Society of Exposure Science, Advances Exposure Science for Environmental Health*, Baltimore, MD, October 23-27.

Zemba, S.G. and Matthews, B. (2011). Multipathway Exposure Assessment of Hazardous Air Pollutants Emissions Workshop. *21st Annual Meeting of The International Society of Exposure Science, Advances Exposure Science for Environmental Health*, Baltimore, MD, October 23-27.

Zemba, S.G. (2011). Relevance of the Vegetable Ingestion Pathway in Contaminated Soil Risk Assessment. Podium presentation at the *27th Annual International Conference on Soils, Sediments, Water and Energy*, University of Massachusetts, Amherst, MA, October 17-20.

Zemba, S., Green, L., Ames, M., Hunt, G., and Sullivan, D. (2011). PCBs in Indoor Environments. Poster presented at *Sustainable Remediation 2011*, Amherst, MA, June 1-3.

von Stackelberg, K., Zemba, S., Lester, R., Yatsalo, B., and Didenko, V. (2011). Use of a Spatial Decision Support System to Integrate GIS, Environmental Models, Decision Analysis Tools, and Stakeholder Preferences. Poster presented at *Sustainable Remediation 2011*, Amherst, MA, June 1-3.

Zemba, S. and Ames, M. (2010). Considering potential health risks in the design of novel solid waste management facilities. Poster presentation, Annual Meeting, Society for Risk Analysis, Salt Lake City, UT, December 5–8.

Zemba, S., Ames, M., Linkov, I., and Palma, J. (2010). Can dioxin sources be differentiated by congener profiles, and does it matter? Poster presentation, Annual Meeting, Society for Risk Analysis, Salt Lake City, UT, December 5–8.

Zemba, S.G., Ames, M.R., and Green, L.C. (2010). Determining whether landfill gas poses risks to health. In: *Proceedings of the WASTECON 2010 conference*, Solid Waste Association of North America, Boston, MA, August 15-18.

Green, L., Zemba, S., and Ames, M. (2010). Waste-to-Energy Facilities: MSW and Woodwaste Health Risk Assessments. Environmental Business Council, Westborough, MA, July 21.

Zemba, S.G. (2010). Air Quality Issues: Beyond the Fenceline. Presentation at the Environmental Breakfast Club meeting hosted by Young Sommer LLC, Albany, NY, March 5.

Zemba, S. (2009). Symposium: Risk Management Application in the Cement Manufacturing Industry. Annual Meeting, Society for Risk Analysis. Baltimore, MD, December 6–9.

Zemba, S., Ames, M, Bennett, E., and Palma, J. (2009). Risk assessment of hazardous air pollutants from cement kilns: case study of a facility with extensive emission data. Annual Meeting, Society for Risk Analysis, Baltimore, MD, December 6–9.

Zemba, S., Ames, M., and Green, L. (2009). What's in landfill gas; why does it smell; is it hazardous to breathe? Annual Meeting, Society for Risk Analysis, Baltimore, MD, December 6–9.

Zemba, S., Crouch, E., and Lester, R. (2009). *Perspectives on Vapor Intrusion*, Brown Bag Seminar Series, Army Corps of Engineers, New England District, Concord, MA, November 6.

Zemba, S. (2009). Invited panelist, Trends and the Relevancy of Risk Assessment Today. Joint Conference: International Thermal Treatment Technologies (IT3) & Hazardous Waste Combustors (HWC), Air & Waste Management Association, Cincinnati, OH, May 18-21.

Ames, M.R. and Zemba, S.G. (2009). Landfill Gas Combustion and a Possible 1-hour NAAQS for SO2. New York Federation of Solid Waste Associations Conference, Bolton Landing, NY, May 3-6.

Zemba, S.G. and Green, L.C. (2009). What's in Landfill Gas? Why Does it Smell? How Do We Model its Impacts? New York Federation of Solid Waste Associations Conference, Bolton Landing, NY, May 3-6.

Zemba, S.G. (2008). Symposium: Vapor Intrusion: Challenges, Risks, and Uncertainties. Annual Meeting, Society for Risk Analysis, Boston, MA, December 7–10.

Zemba, S.G. (2008). Data and decision analysis in the context of vapor intrusion. Annual Meeting, Society for Risk Analysis, Boston, MA, December 7–10.

Zemba, S.G. (2008). Health risk assessment perspectives on waste-to-energy. Paper presented at the 101st Annual Meeting of the Air & Waste Management Association, Portland, OR, June 24-27.

Zemba, S., Ames, M., and Hendrix, S. (2008). Recent Observations on Risk Assessments of Combustor Stack Emissions. Air & Waste Management Association International Thermal Treatment Technologies Specialty Conference, Montreal, Quebec, Canada, May 12-16.

Linkov, I. and Zemba, S. (2008). Nanotechnology & Risk Assessment. New York Federation of Solid Waste Associations Conference, Bolton Landing, NY, May 4-7.

Zemba, S., Linkov, I., Satterstrom, S., Bullister, E., and DiNardi, S. (2007). Health and Environmental Simulation. American Industrial Hygiene Association Conference (AIHce 2007), June 2-7.

Zemba, S.G. (2005). Indoor Air Pathway: Risk Management and Characterization Issues. Meeting of the Massachusetts Licensed Site Professional Association, March 8.

Zemba, S.G. (2004). Context-Based Benchmarks for Indoor Air Evaluation. 20th Annual International Conference on Soils, Sediments, and Water, Amherst, MA, October 18-21.

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PROFESSIONAL COURSE AND WORKSHOP INSTRUCTION

Multi-Pathway Exposure Assessment, Full-day workshop co-taught at the International Society of Exposure Science Annual Meeting, Baltimore, MD, October 23, 2011.

Multi-Pathway Risk Assessment, Half-day workshop taught at the Society for Risk Analysis Meeting, Salt Lake City, UT, December 5, 2010.

MCP Risk Management, Full-day workshop (co-taught) sponsored by the MA Licensed Site Professional Association, given each of October 13, 2009, March 15, 2010, and February 16, 2012.

MCP ShortForm Short Course, Half-day-day workshop (co-taught) sponsored by the MA Licensed Site Professional Association, given each of May 7, 2008, November 4, 2008, December 17, 2009, September 8, 2011, and May 21, 2013.

Method 3 Risk Characterization, Full-day workshop (co-taught) sponsored by the MA Licensed Site Professional Association, given each of December 15, 2004 and April 6, 2006.

Refined Modeling Report

Connell Resources
Wellington, CO

Antea®Group

Understanding today.
Improving tomorrow.

PREPARED FOR
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PREPARED BY
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May 18, 2023

Project # 2023-01-504091

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Appendix A - Emission Calculations and Supporting Documentation
Appendix B - AerMod Model Output

Refined Modeling Report

Wellington, Colorado

1.0 INTRODUCTION

1.1 EXECUTIVE SUMMARY

Antea Group was retained to complete refined air modeling for Connell Resources to assist with their planned construction of a new asphalt facility in Wellington, Colorado. Antea Group completed AERMOD modeling based on information provided by Connell Resources for their proposed facility. Antea Group modeled the following pollutants as requested by Connell Resources: Particulate Matter, Nitrogen Oxide, Sulfur Dioxide, Carbon Monoxide, Acetaldehyde, Hexane, Formaldehyde, Toluene, Quinone, Benzene, Ethylbenzene, Xylene, Total PAH, and Hydrochloric Acid.

1.2 PLANT DESCRIPTION

The facility site is located at 40°43'32.63" N and 105°00'33.98" W along E County Rd 66 in Wellington, Colorado. **Figure 1** denotes the site location. **Figures 2 and 3** show the site property with the emission points and building locations.

2.0 MODELING PREPARATION

Building location, and emission point details are provided in **Figure 2**. Emission point details (i.e. emission rate, distance to property line, stack height, flow rate, etc.) were provided by Connell Resources.

2.1 AIR DISPERSION MODELING OPTIONS

As required by AERMOD, all coordinates were entered into the model as Universal Transverse Mercator (UTM) North American Datum (NAD) 83.

2.2 SOURCE INFORMATION

There is one point source emission stack at Connell Resources. **Table 1** shows the location in UTM Coordinates, emission rates, and release parameters.

2.3 BUILDING INFORMATION

A good engineering practice (GEP) stack height/building wake effect analysis was conducted to identify which proposed building structures would influence plume dispersion from each emission source. Based on the formula GEP stack height and region of influence, the BPIP-Prime program was run for the proposed stacks, cullet storage areas, and related building structures. **Figure 2** shows the facility layout, building structures, stack locations, and tank locations. The BPIP-Prime (version 04274) program was used to calculate the GEP height and wind direction specific building dimensions for input to the AERMOD model.

The GEP analysis is used to identify critical buildings and to determine wind direction specific building dimensions for use in the modeling analysis. GEP is also used to demonstrate compliance with all state and federal stack height regulations. Following the EPA's "Guideline for Determination of Good Engineering Practice Stack Height", GEP height is calculated using the following equation:

$H_g = H + 1.5 L$

where:

H_g = good engineering practice stack height
H = height of the structure or nearby structure
L = lesser dimension (height or projected width of the structure or nearby building)

In a situation where a nearby structure consists of multiple tiers, or there are several structures nearby, the GEP height is calculated for each tier or structure, and the one resulting in the greatest calculated GEP height determines both the GEP height and the wind direction specific building dimension to be used when modeling a stack that is lower than the GEP height.

If the height of the tallest tier or structure is less than the projected width, the height will be the determining factor of this tier and will determine the GEP height. If the height is greater than the projected width, the tallest tier may determine the GEP height.

The current site layout, including building parameters and storage tank locations, was provided by Connell Resources and was incorporated into the model. **Table 2** includes the building parameters.

2.4 RECEPTOR INFORMATION

A single Cartesian receptor grid was generated for use in the AERMOD refined modeling. Tight receptors, spaced 10 meters apart, are placed along the fence line. Receptors are placed 50 meters from the fence line to 1,000 meters from the fence line. Fine receptors, spaced 100 meters apart, are placed from 1,000 meters to 2,000 kilometers of the subject property. In addition, three discrete receptors were placed at nearby properties. Receptor elevations default to surface elevation following input of the local terrain details processed through AERMAP (see Section 2.5 for Terrain details).

2.5 TERRAIN

AERMOD does not distinguish between simple and complex terrain. The National Elevation Dataset provided by Multi-Resolution Land Characteristics Consortium (MRLC), indicated that the terrain was relatively flat. To ensure that the terrain was accurately captured, a terrain pre-processor (AERMAP) was utilized to calculate receptor elevations and hilltop heights.

2.6 METEOROLOGICAL DATA

Colorado Department of Public Health and Environment (CPDHE) provided Regional Meteorological Data for the Wellington, CO area. Per a conversation with Devondria Reynolds of CPDHE, the division has not made a determination that the surface meteorology data processed with any upper air is adequately representative of dispersion conditions at the site. Therefore, if the modeling report were to be submitted to the State of Colorado for air permitting purposes, the meteorological data and modeling protocol would need to be submitted to CPDHE for approval per their Modeling Procedure, before the model is repeated for air permitting.

3.0 AERMOD RESULTS

The AERMOD modeling run demonstrated that the Screening Levels would not be exceeded for chronic long-term and acute short-term. A summary of modeled emissions and NAAQS is presented in **Table 3**. A summary of screening modeled emissions and chronic/acute screening values is presented in **Table 4**. Discrete receptor HAP concentrations for acute and chronic screening values are presented in **Table 5** and **Table 6**, respectively. Pollutant concentration contour maps are provided for general NAAQS pollutant time durations, and HAP Long-Term and Short-Term averaging exposure periods. Concentration contours were drawn at the

receptor elevations provided through the Terrain map processing. The contour maps are present in **Figures 4 through Figure 18**.

4.0 REMARKS

The recommendations contained in this report represent Antea USA, Inc.'s professional opinions based upon the currently available information and are arrived at in accordance with currently accepted professional standards. This report is based upon a specific scope of work requested by the client. The contract between Antea USA, Inc. and its client outlines the scope of work, and only those tasks specifically authorized by that contract or outlined in this report were performed. This report is intended only for the use of Antea USA, Inc.'s client and anyone else specifically identified in writing by Antea USA, Inc. as a user of this report. Antea USA, Inc. will not and cannot be liable for unauthorized reliance by any other third party. Other than as contained in this paragraph, Antea USA, Inc. makes no express or implied warranty as to the contents of this report.

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Connell Resources
Wellington, CO
Table 1: Emission Source Information

Emission Point ID	Description	Location	Elevation (ft)	Height (ft)	Termination Orientation	Temperature (F)	Equivalent Exit Diameter (ft)	Flow Rate (cfm)	Easting (m)	Northing (m)
AIRS_ID_001	Main Emission Point	Wellington	5258	45	Vertical	218.93	6.00	85,000	499457.266	4508236.216

Pollutant	Emission Rate (ton/yr)
PM	2.7
PM10	0.7
PM2_5	0.2
NOX	8.3
SO2	8.7
CO	19.5
Acetaldehyde	0.195
Hexane	0.138
Formaldehyde	0.103
Toluene	0.465
Quinone	0.0405
Benzene	0.042
Ethylbenzene	0.33
Xylene	0.405
Total_PAH	0.0345
HCl	0.0315
VOC	4.8

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Table 2: Building Information

Building ID	Elevation (ft)	Tier Height (ft)	Easting (m)	Northing (m)
Asphalt	5258	14	499428.373	4508275.569
PCR_1	5259	16	499440.772	4508287.410
PCR_2	5260	12	499458.147	4508287.922
ABP_3	5257	20.5	499428.192	4508254.557
ABP_5	5258	26.4	499448.104	4508243.280
Office	5255	14	499260.168	4508275.882
TW_1	5254	10	499235.319	4508220.844
TW_2	5253	10	499230.147	4508184.114
FP	5254	10	499247.353	4508221.502
FS	5254	10	499262.192	4508221.708
WS	5250	10	499230.641	4508027.037
WG	5250	10	499253.366	4508027.502
ALB	5255	17.7	499378.442	4508201.725
Storshed	5258	10	499411.400	4508290.734
QCLab	5258	14	499423.707	4508282.246
WT1	5257	9.8	499397.849	4508256.301
WT2	5256	9.8	499386.231	4508253.964
D1	5254	9	499259.783	4508194.664
D2	5254	9	499269.843	4508203.302
D3	5254	9	499281.862	4508203.510
D4	5260	8.5	499480.488	4508282.821
Gas_AST	5254	9	499294.275	4508204.457
GEN	5260	9.5	499467.318	4508284.895
ACT	5258	10.2	499459.383	4508244.054

Vertical Storage Tanks

Tank Name	Elevation (ft)	Easting (m)	Northing (m)	Height (ft)	Diameter (ft)
T1	5258	499422.699	4508265.557	44.4	12
T2	5258	499434.251	4508265.622	44.4	12
T3	5259	499446.062	4508265.365	44.4	12

Connell Resources
Wellington, CO
Table 3: Summary of AerMod Calculated Emissions and NAAQS

Pollutant	Averaging Period	AerMod Concentration for Wellington Location ($\mu g/m^3$)	NAAQS Primary Concentration[1] ($\mu g/m^3$)	AerMod Wellington Percent of NAAQS
PM-10	24-hour	0.15	150	0.1%
PM-2.5	24-hour	0.042	35	0.1%
	1-year	0.0025	12	0.02%
NOx	1-hour	7.1	188 ab	4%
	1-year	0.10	100 ab	0.1%
SO2	1-hour	7.5	196 a	4%
CO	1-hour	17	40,000 a	0.0%
	8-hour	10	10,000 a	0.1%

Notes
$\mu g/m^3$ = micrograms per cubic meter
1 = National Ambient Air Quality Standards (NAAQS) for public health protection, including the health of sensitive populations
a = Conversion of units from ppm provided by NAAQS to $\mu g/m^3$ provided by California Air Resource Board
b = Standard provided for NO_2

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Wellington, CO
Table 4: Summary of Screening Analysis for AerMod Calculated HAP Emissions

Pollutant (CAS Number)	Emission Rate (ton/yr)	AerMod Long-Term[1] Average Concentration; ($\mu g/m^3$)	AerMod Short-Term[2] Average Concentration; ($\mu g/m^3$)	Chronic Screening Value[3] ($\mu g/m^3$)	Acute Screening Value[4] ($\mu g/m^3$)	AerMod Long-Term Percent of Acute NAAQS[5] (%)	AerMod Short-Term Percent of Acute NAAQS[5] (%)	Maximum Concentration is Greater than Chronic Screening Value (Yes/No)	Maximum Concentration is Greater than Acute Screening Value (Yes/No)
Acetaldehyde (75-07-0)	0.195	0.0024	0.17	0.45	470 a	5.4E-01	3.6E-02	No	No
Hexane (110-54-3)	0.143	0.0017	0.12	70	390,000 b	2.5E-03	3.0E-05	No	No
Formaldehyde (50-00-0)	0.103	0.0013	0.088	0.077	55 a	1.7E+00	1.6E-01	No	No
Toluene (108-88-3)	0.435	0.0058	0.40	40	37,000 a	1.5E-02	1.1E-03	No	No
Quinone (106-51-4)	0.0405	0.00051	0.035	--	10,000 b	--	3.5E-04	--	No
Benzene (71-43-2)	0.0420	0.00052	0.036	0.13	1,300 a	4.0E-01	2.8E-03	No	No
Ethylbenzene (100-41-4)	0.330	0.0041	0.28	0.40	140,000 c	1.0E+00	2.0E-04	No	No
Xylene (1330-20-7)	0.405	0.0051	0.35	10	8,700 d	5.1E-02	4.0E-03	No	No
Total PAH[6]	0.0345	0.00043	0.030	0.11 e	0.75 f	3.9E-01	4.0E+00	No	No
HCl (7647-01-0)	0.0315	0.00039	0.027	2	--	2.0E-02	--	No	--

Notes
ton/yr = ton per year
$\mu g/m^3$ = micrograms per cubic meter
-- = No value provided
1 = Averaging period of 1-year
2 = Averaging period of 1-hour
3 = Chronic screening values provided by EPA's Appendix A of the Preliminary Risk-Based Screening Approach for Air Toxics Moniotring Data Sets
4 = Acute screening values provided by EPA's Appendix B of the Preliminary Risk-Based Screening Approach for Air Toxics Moniotring Data Sets
5 = Percent calculated as (AerMod Concentration) / (NAAQS Screening Value) * 100
6 = All relavent PAHs accounted for to calculate emission rate
a = Reference Exposure Level (REL) screening value developed by CalEPA
b = Immediately Dangerous to Life or Health divided by 10 (IDLH/10) screening value developed by NIOSH
c = Acute Exposure Guideline Levels (AEGL) screening value developed by NAC
d = Minimum Risk Levels (MRL) screening value developed by ATSDR
e = Average screening value for all PAHs provided in EPA's Appendix A of the Preliminary Risk-Based Screening Approach for Air Toxics Moniotring Data Sets
f = Temporary Emergency Exposure Limits with no effects (TEEL-0) screening value provided by DOE for the PAH Carbazole. The Carbazole screening value is used, because the average PAH chronic screening value most closely matched the chronic Carbazole screening value.

Connell Resources
Wellington, CO
Table 5: AerMod Calculated HAP Emissions and Discrete Receptors - Acute Values

Pollutant (CAS No.)	Emission Rate (ton/yr)	Acute Screening Value ($\mu g/m^3$)	Calculated 1-Hour Average HAP Exposure (µg/m3)					
			Receptor 1: Residential[1]	Receptor 1 Above Screening Value (Yes/No)	Receptor 2: Park[2]	Receptor 2 Above Screening Value (Yes/No)	Receptor 3: School[3]	Receptor 3 Above Screening Value (Yes/No)
Acetaldehyde (75-07-0)	0.195	470 a	0.17	No	0.241	No	0.030	No
Hexane (110-54-3)	0.143	390,000 b	0.12	No	0.017	No	0.021	No
Formaldehyde (50-00-0)	0.103	55 a	0.09	No	0.013	No	0.016	No
Toluene (108-88-3)	0.435	37,000 a	0.40	No	0.057	No	0.072	No
Quinone (106-51-4)	0.0405	10,000 b	0.035	No	0.0050	No	0.0063	No
Benzene (71-43-2)	0.0420	1,300 a	0.036	No	0.0052	No	0.0065	No
Ethylbenzene (100-41-4)	0.330	140,000 c	0.28	No	0.041	No	0.051	No
Xylene (1330-20-7)	0.405	8,700 d	0.35	No	0.050	No	0.063	No
Total PAH	0.0345	0.75 e	0.030	No	0.0043	No	0.0054	No
HCl (7647-01-0)	0.0315	--	0.027	--	0.0039	--	0.0049	--

Notes
ton/yr = ton per year
$\mu g/m^3$ = micrograms per cubic meter
-- = No value provided
1 = Address is 9581 Brome Ct, Wellington, CO 80549
2 = Address is 8760 Buffalo Creek Pky Wellington, CO 80549
3 = Address is 4000 Wilson Avenue Wellington, CO 80549
a = Reference Exposure Level (REL) screening value developed by CalEPA
b = Immediately Dangerous to Life or Health (IDLH) divided by 10 screening value developed by NIOSH
c = Acute Exposure Guideline Levels (AEGL) screening value developed by NAC
d = Minimum Risk Levels (MRL) screening value developed by ATSDR
e = Temporary Emergency Exposure Limits with no effects (TEEL-0) screening value provided by DOE for the PAH Carbazole. The Carbazole screening value is used, because the average PAH chronic screening value most closely matched the chronic Carbazole screening value.

Connell Resources
Wellington, CO
Table 6: AerMod Calculated HAP Emissions and Discrete Receptors - Chronic Values

Pollutant (CAS No.)	Emission Rate (ton/yr)	Chronic Screening Value ($\mu g/m^3$)	Calculated Annual Average HAP Exposure (µg/m3)					
			Receptor 1: Residential[1]	Receptor 1 Above Screening Value (Yes/No)	Receptor 2: Park[2]	Receptor 2 Above Screening Value (Yes/No)	Receptor 3: School[3]	Receptor 3 Above Screening Value (Yes/No)
Acetaldehyde (75-07-0)	0.195	0.45	0.0024	No	0.00026	No	0.00022	No
Hexane (110-54-3)	0.143	70	0.0017	No	0.00019	No	0.00016	No
Formaldehyde (50-00-0)	0.103	0.077	0.0013	No	0.00014	No	0.00012	No
Toluene (108-88-3)	0.435	40	0.0056	No	0.00062	No	0.00053	No
Quinone (106-51-4)	0.0405	--	0.00049	--	0.000050	--	0.000050	--
Benzene (71-43-2)	0.0420	0.13	0.00051	No	0.000060	No	0.000050	No
Ethylbenzene (100-41-4)	0.330	0.40	0.0040	No	0.00044	No	0.00038	No
Xylene (1330-20-7)	0.405	10	0.0049	No	0.00054	No	0.00047	No
Total PAH	0.0345	0.11 a	0.00042	No	0.000050	No	0.000040	No
HCl (7647-01-0)	0.0315	2	0.00038	No	0.000040	No	0.000040	No

Notes
ton/yr = ton per year
$\mu g/m^3$ = micrograms per cubic meter
-- = No value provided
1 = Address is 9581 Brome Ct, Wellington, CO 80549
2 = Address is 8760 Buffalo Creek Pky Wellington, CO 80549
3 = Address is 4000 Wilson Avenue Wellington, CO 80549
a = Average screening value for all PAHs provided in EPA's Appendix A of the Preliminary Risk-Based Screening Approach for Air Toxics Moniotring Data Sets

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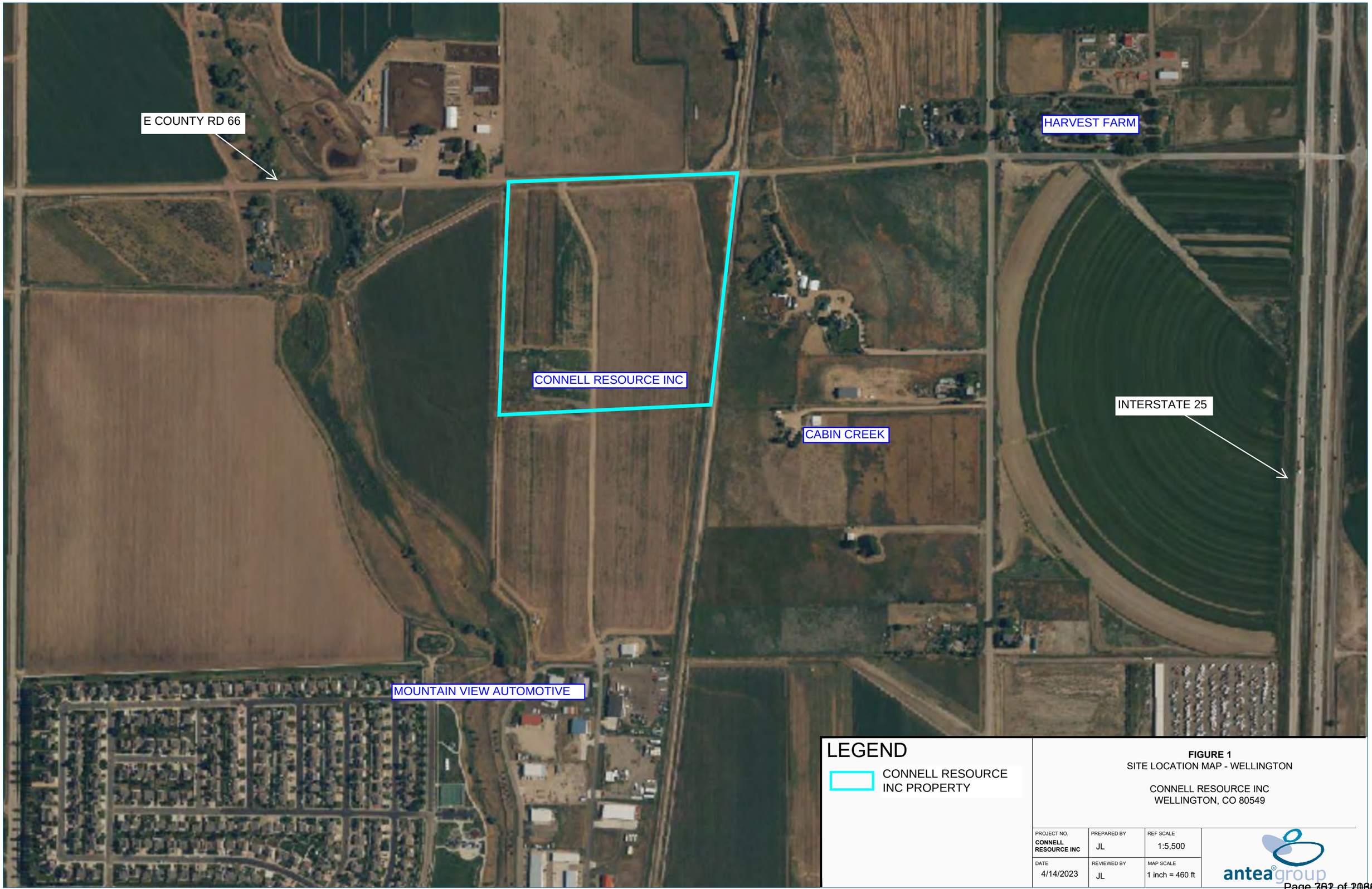


LEGEND

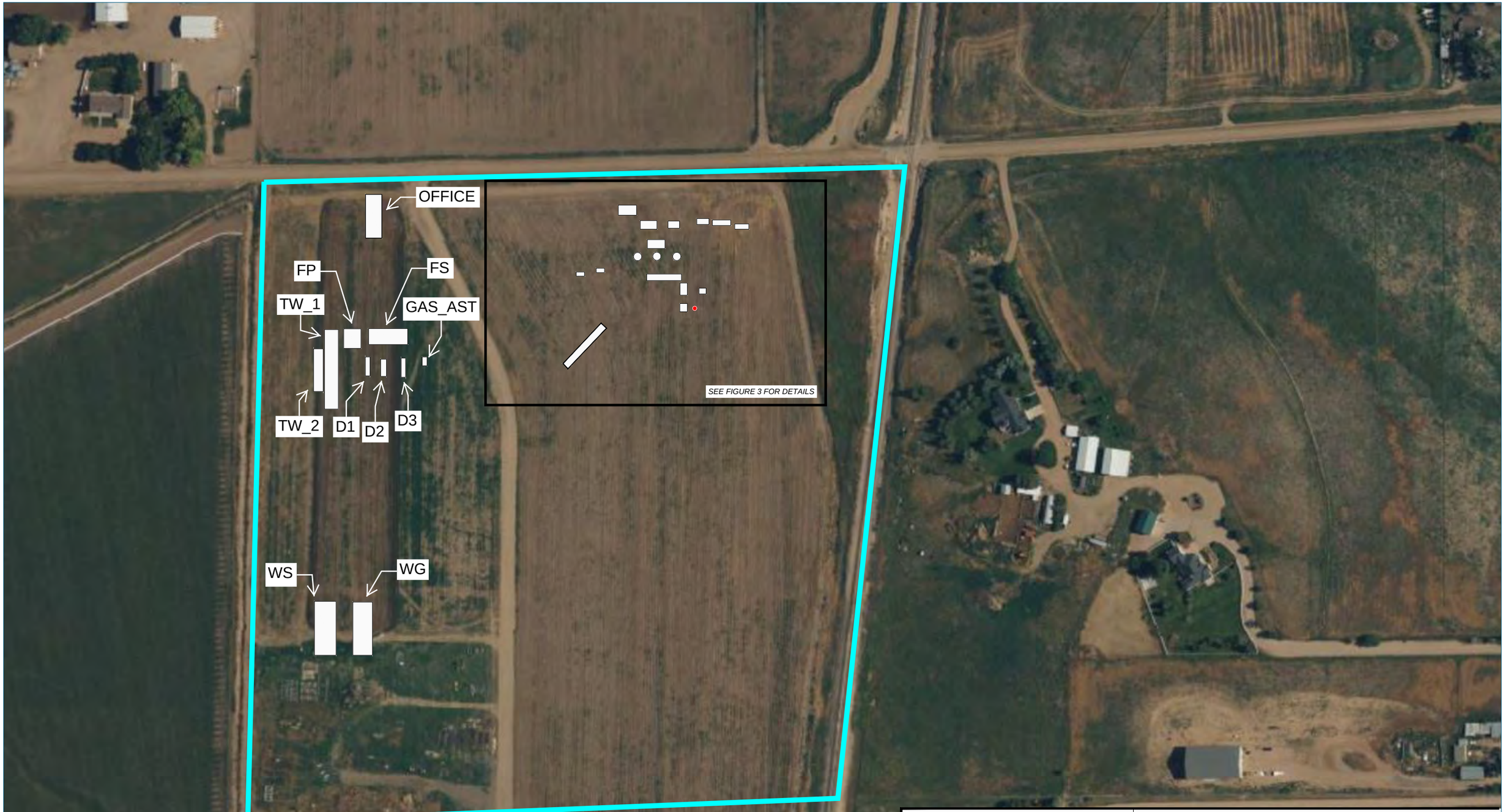
CONNELL RESOURCE INC PROPERTY

FIGURE 1
SITE LOCATION MAP - WELLINGTON

CONNELL RESOURCE INC
WELLINGTON, CO 80549

PROJECT NO.	PREPARED BY	REF SCALE
CONNELL RESOURCE INC	JL	1:5,500
DATE	REVIEWED BY	MAP SCALE
4/14/2023	JL	1 inch = 460 ft

antea group



LEGEND

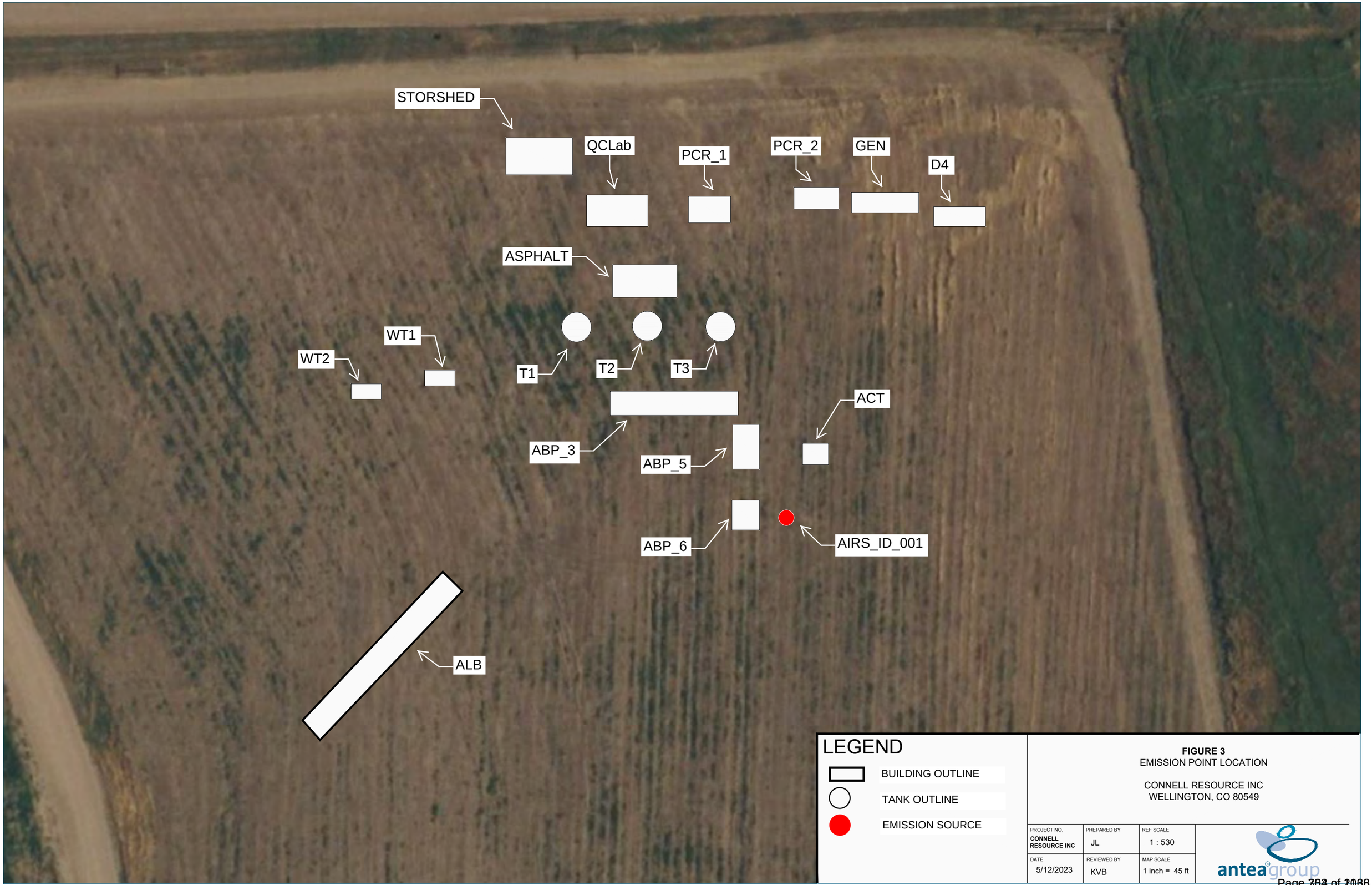
- BUILDING OUTLINE
- CONNELL RESOURCE INC PROPERTY

FIGURE 2
SITE GENERAL MAP

CONNELL RESOURCE INC
WELLINGTON, CO 80549

PROJECT NO.	PREPARED BY	REF SCALE
CONNELL RESOURCE INC	JL	1 : 2,200
DATE	REVIEWED BY	MAP SCALE
5/12/2023	KVB	1 inch = 185 ft

antea group



LEGEND

- BUILDING OUTLINE
- TANK OUTLINE
- EMISSION SOURCE

FIGURE 3
EMISSION POINT LOCATION

CONNELL RESOURCE INC
WELLINGTON, CO 80549

PROJECT NO.	PREPARED BY	REF SCALE
CONNELL RESOURCE INC	JL	1 : 530
DATE	REVIEWED BY	MAP SCALE
5/12/2023	KVB	1 inch = 45 ft

antea group

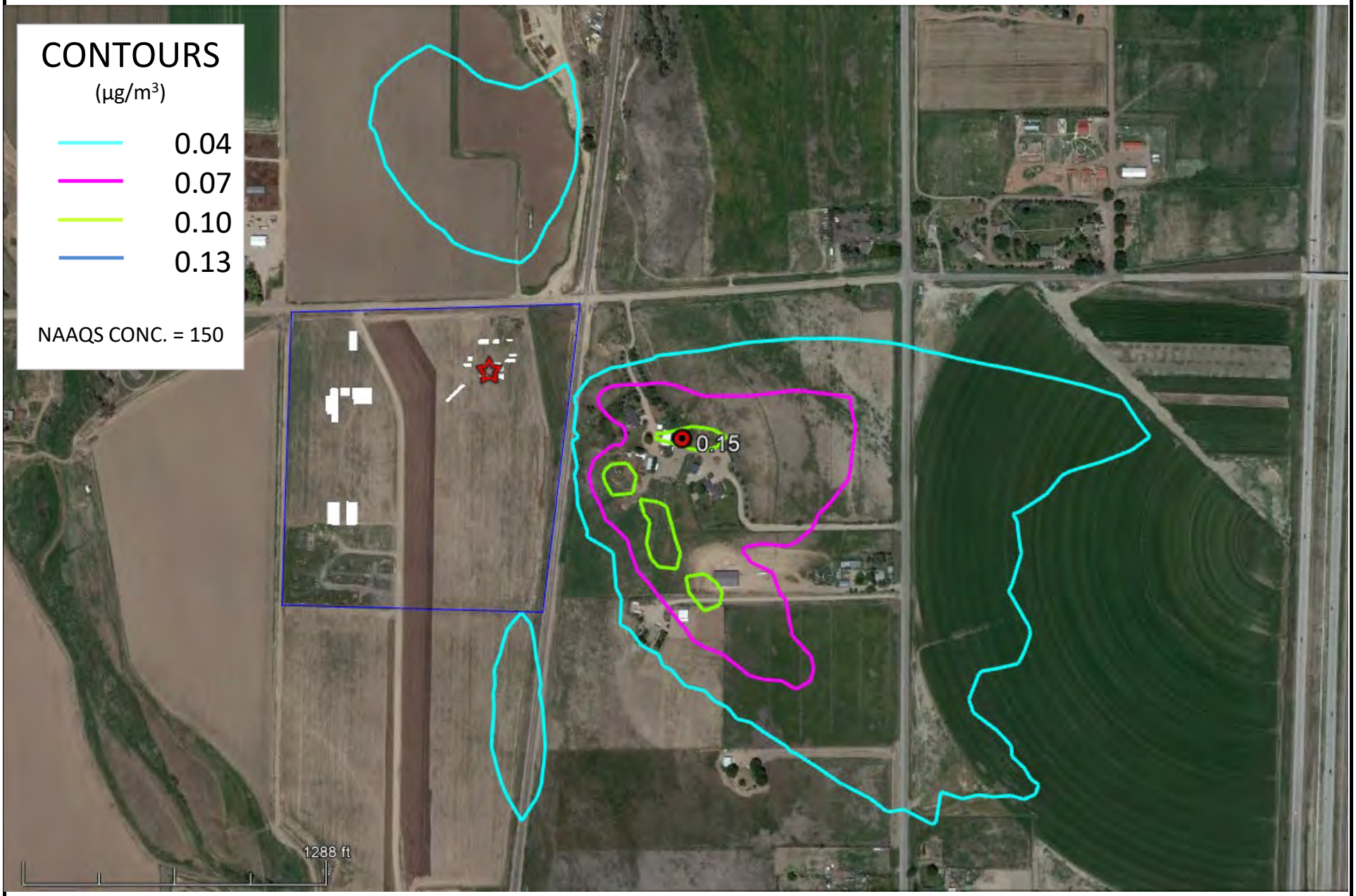


FIGURE 4 - PM 10 MAP (24-HOUR)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
AIRS ID 001
MAX CONCENTRATION

NOTES
NAAQS CONC. = 150 FIGURE
UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

anteagroup
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Charlotte, North Carolina 28277

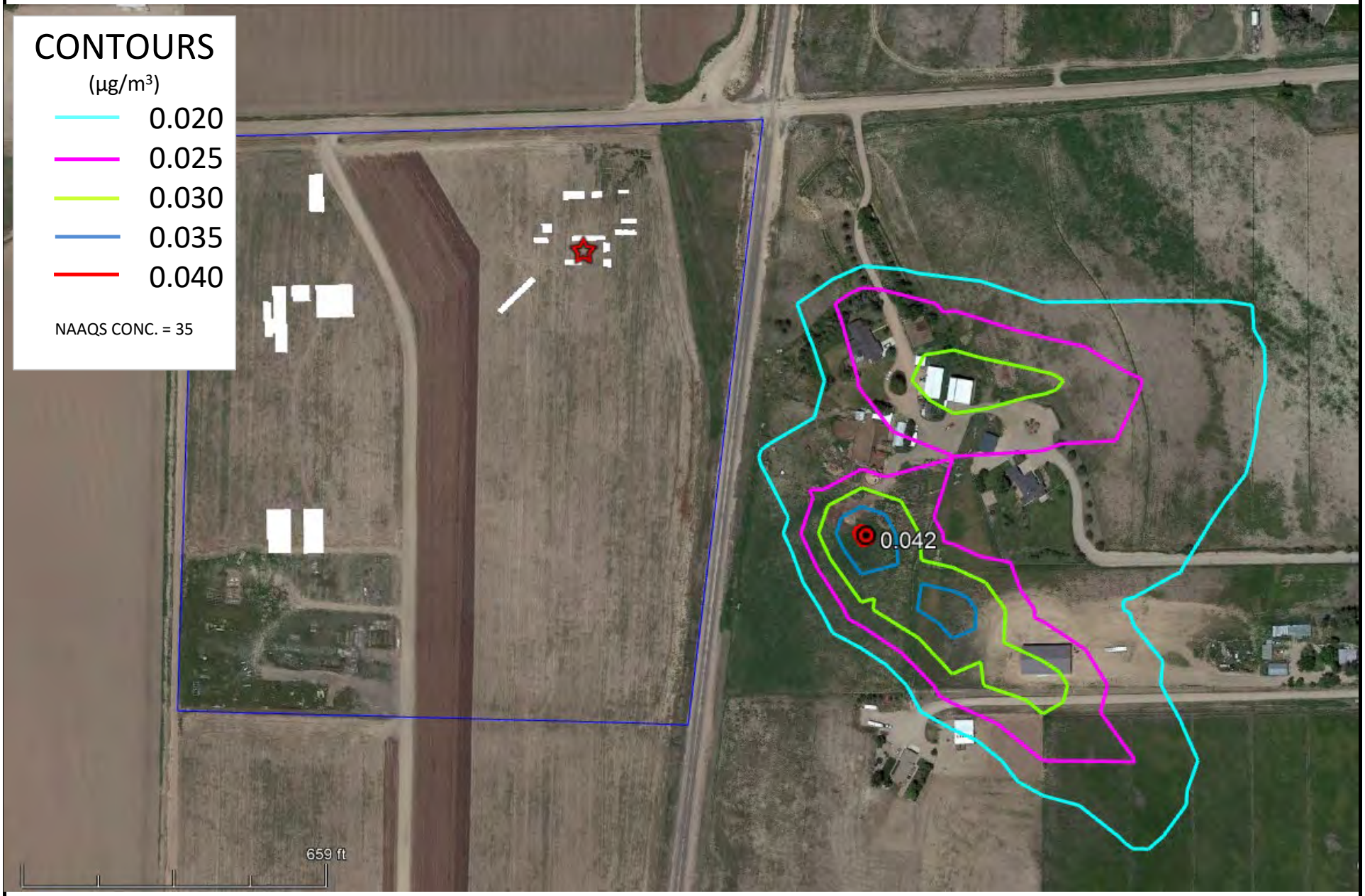

FIGURE 5A - PM 2.5 MAP (24-HOUR)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
AIRS ID 001
MAX CONCENTRATION

NOTES
NAAQS CONC. = 35
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

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Charlotte, North Carolina 28277

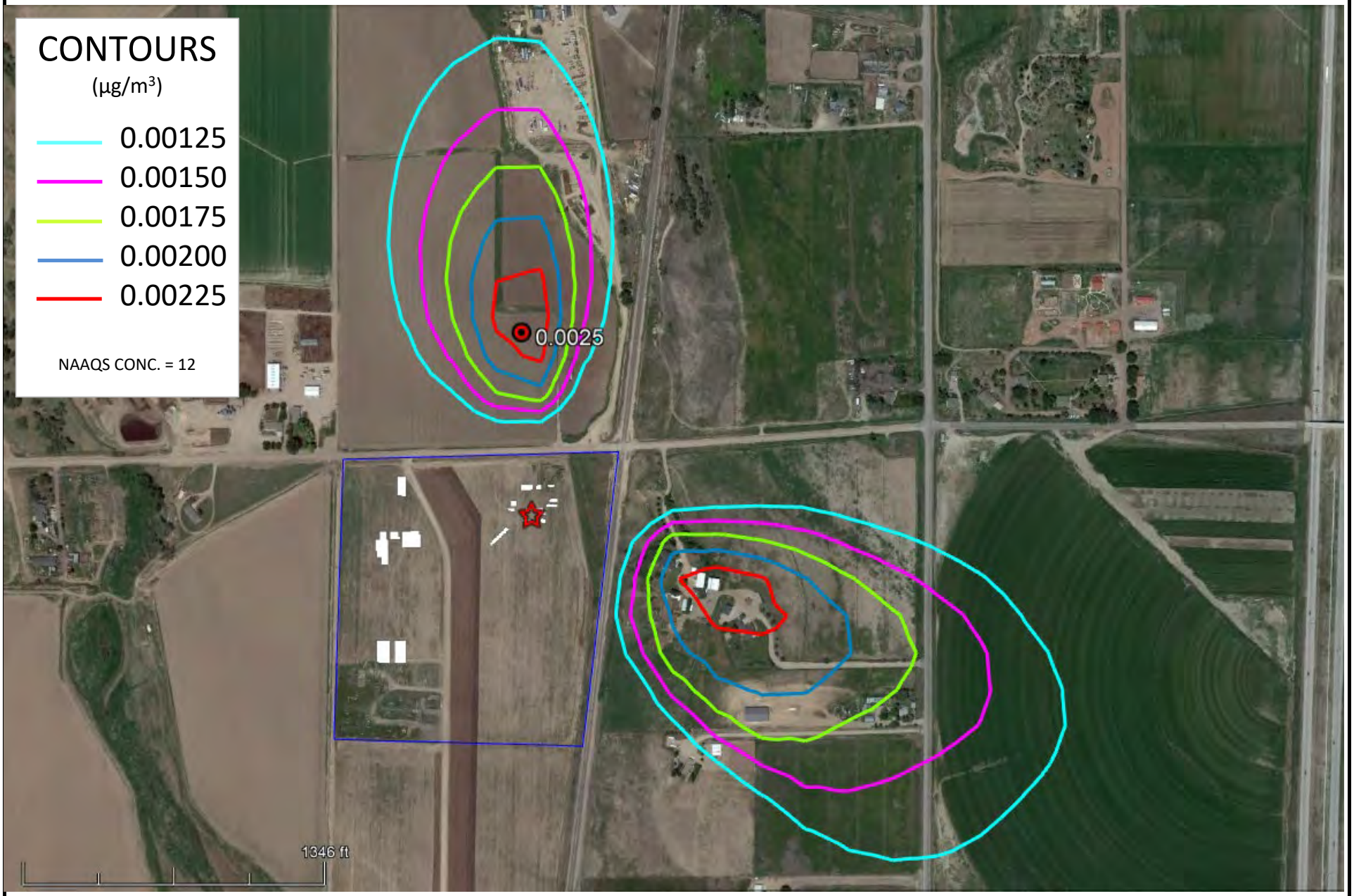

FIGURE 5B - PM 2.5 MAP (1-YEAR)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
- AIRS ID 001
- MAX CONCENTRATION

NOTES
NAAQS CONC. = 12
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

antea group
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Charlotte, North Carolina 28277

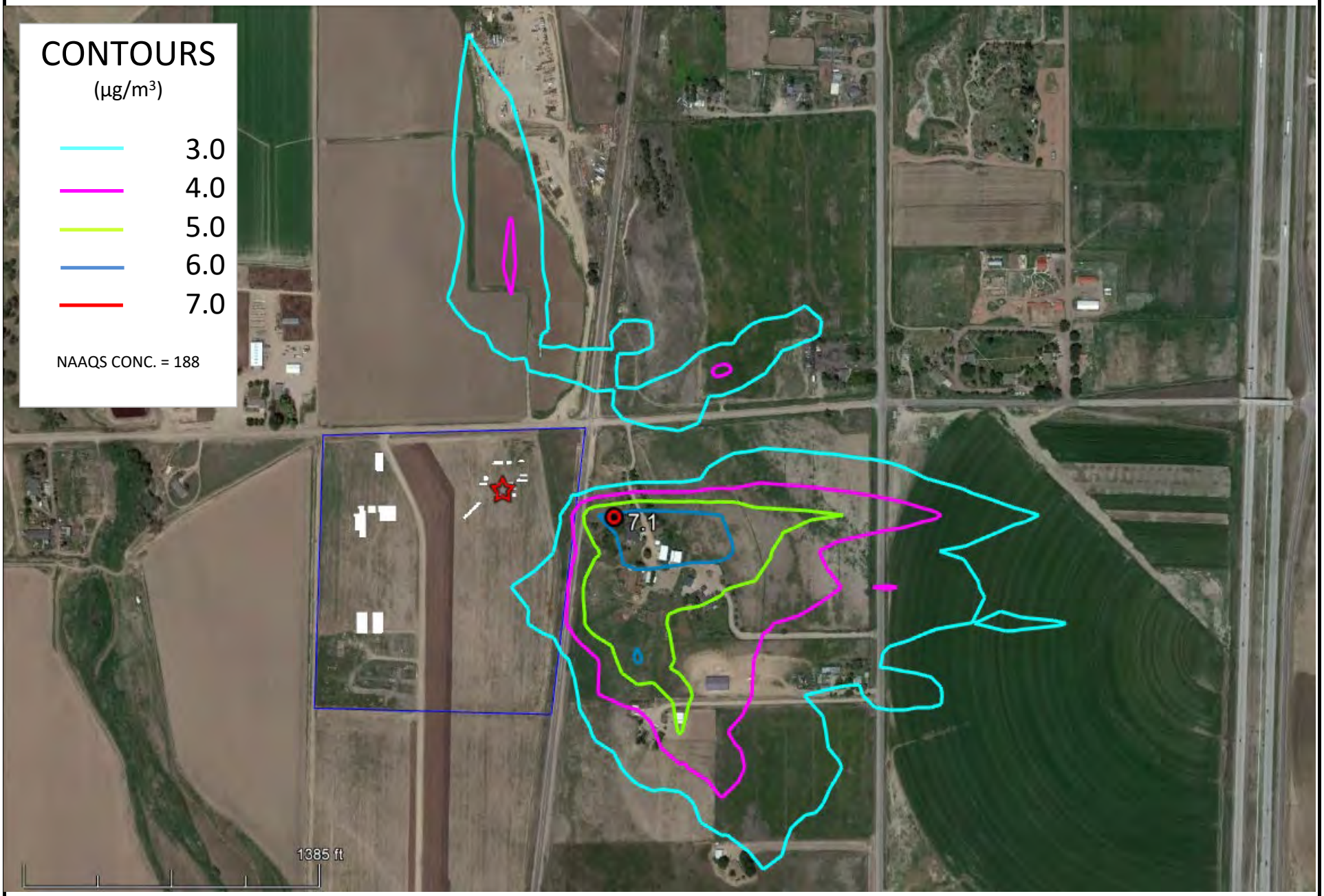

FIGURE 6A - NO2 MAP (1-HOUR)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
AIRS ID 001
MAX CONCENTRATION

NOTES
NAAQS CONC. = 188
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

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Charlotte, North Carolina 28277

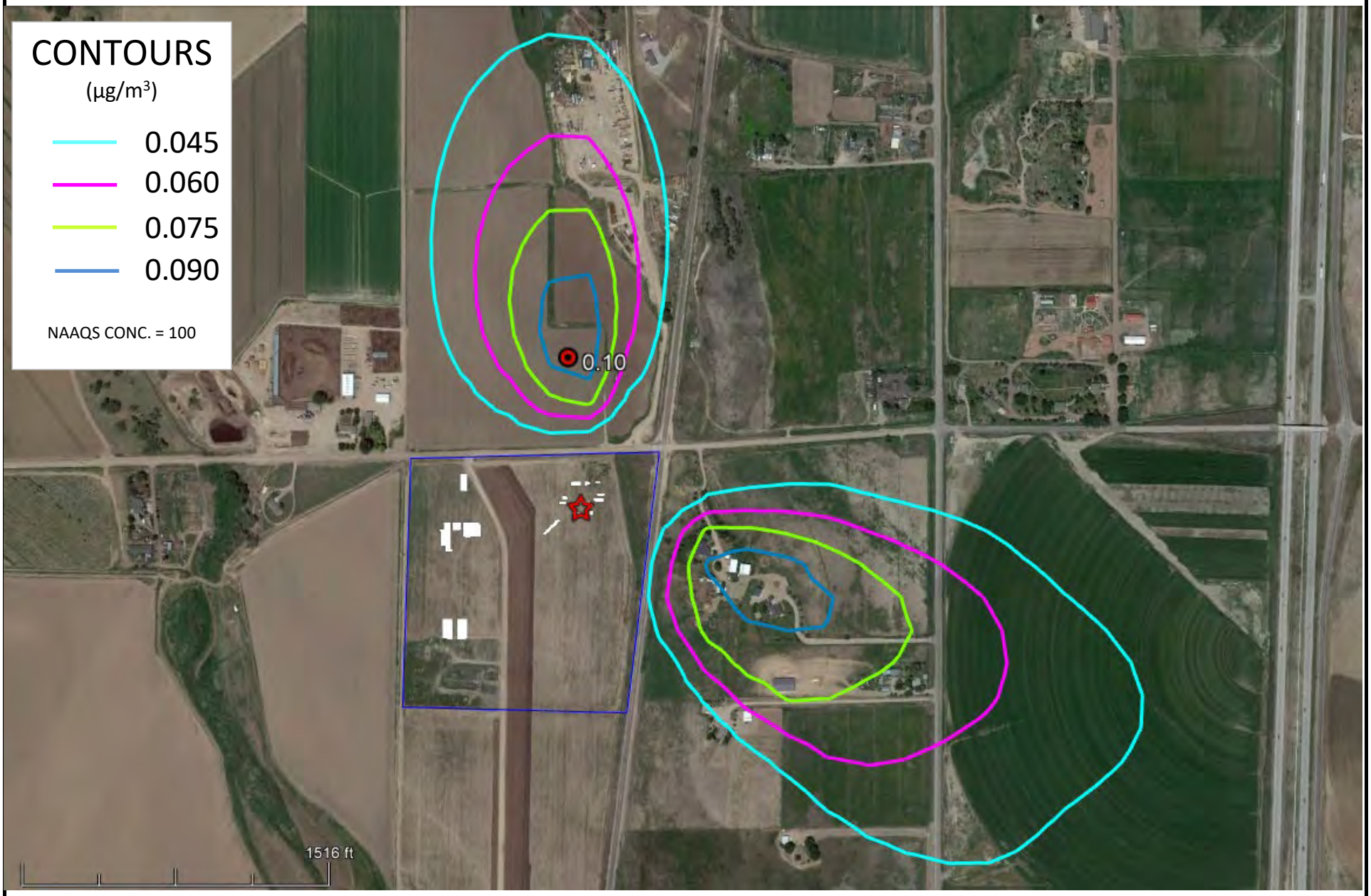

FIGURE 6B - NO2 MAP (1-YEAR)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
- AIRS ID 001
- MAX CONCENTRATION

NOTES
NAAQS CONC. = 100
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

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Charlotte, North Carolina 28277

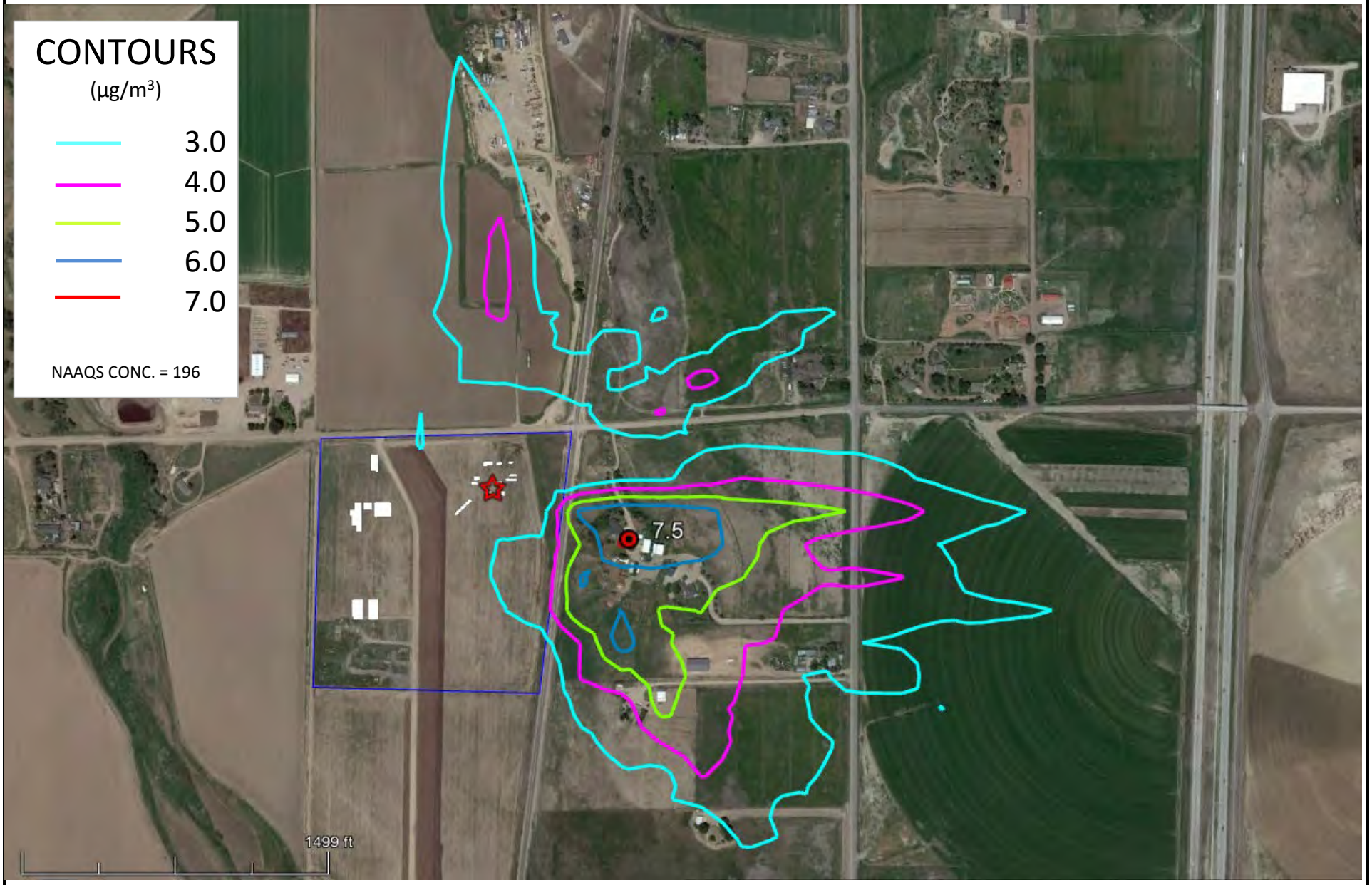

FIGURE 7 - SO2 MAP (1-HOUR)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
AIRS ID 001
MAX CONCENTRATION

NOTES
NAAQS CONC. = 196
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

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Charlotte, North Carolina 28277

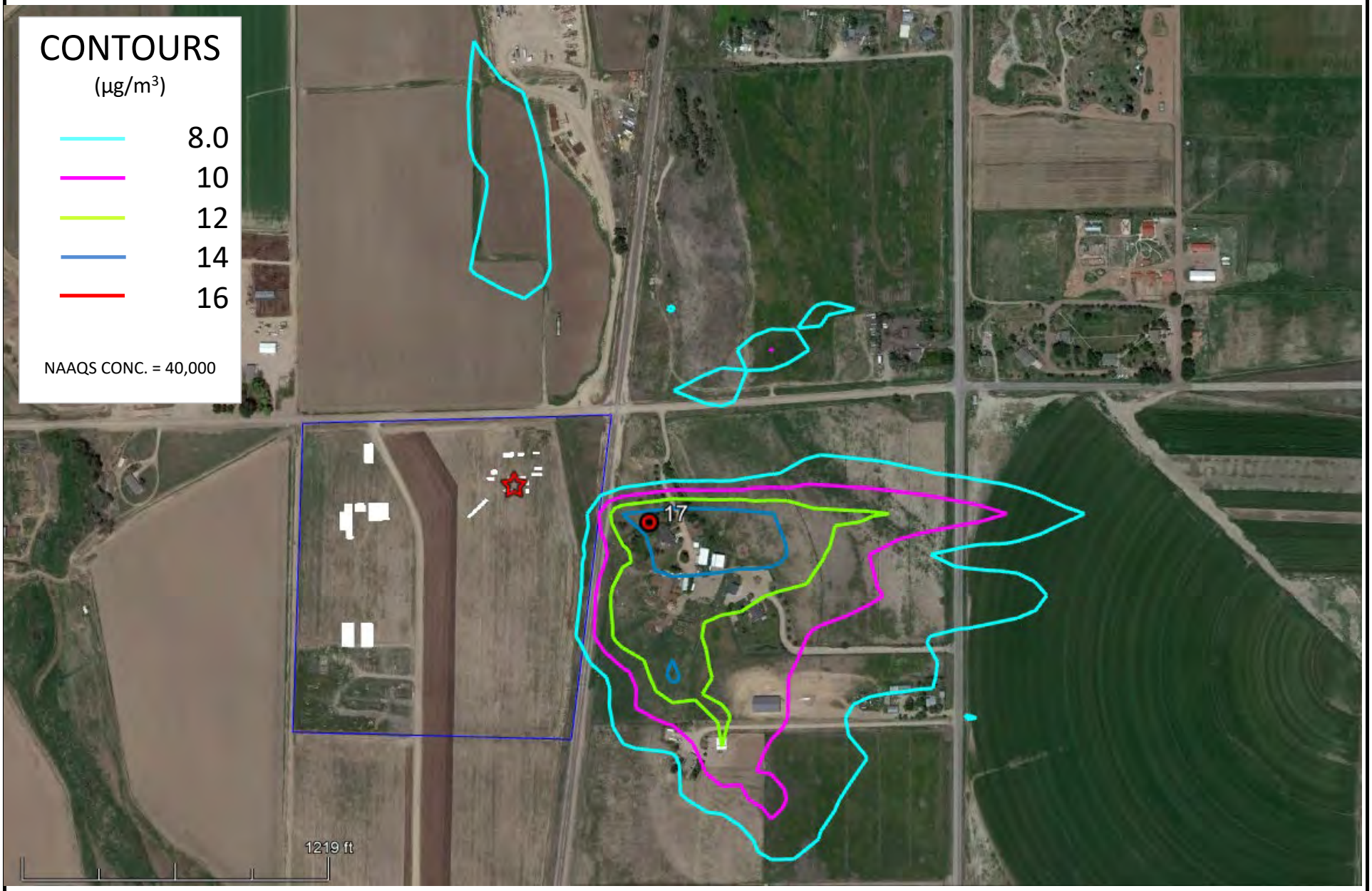

FIGURE 8A - CO MAP (1-HOUR)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
AIRS ID 001
MAX CONCENTRATION

NOTES
NAAQS CONC. = 40,000
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

antea group
11325 N Community House Rd, Suite 420
Charlotte, North Carolina 28277

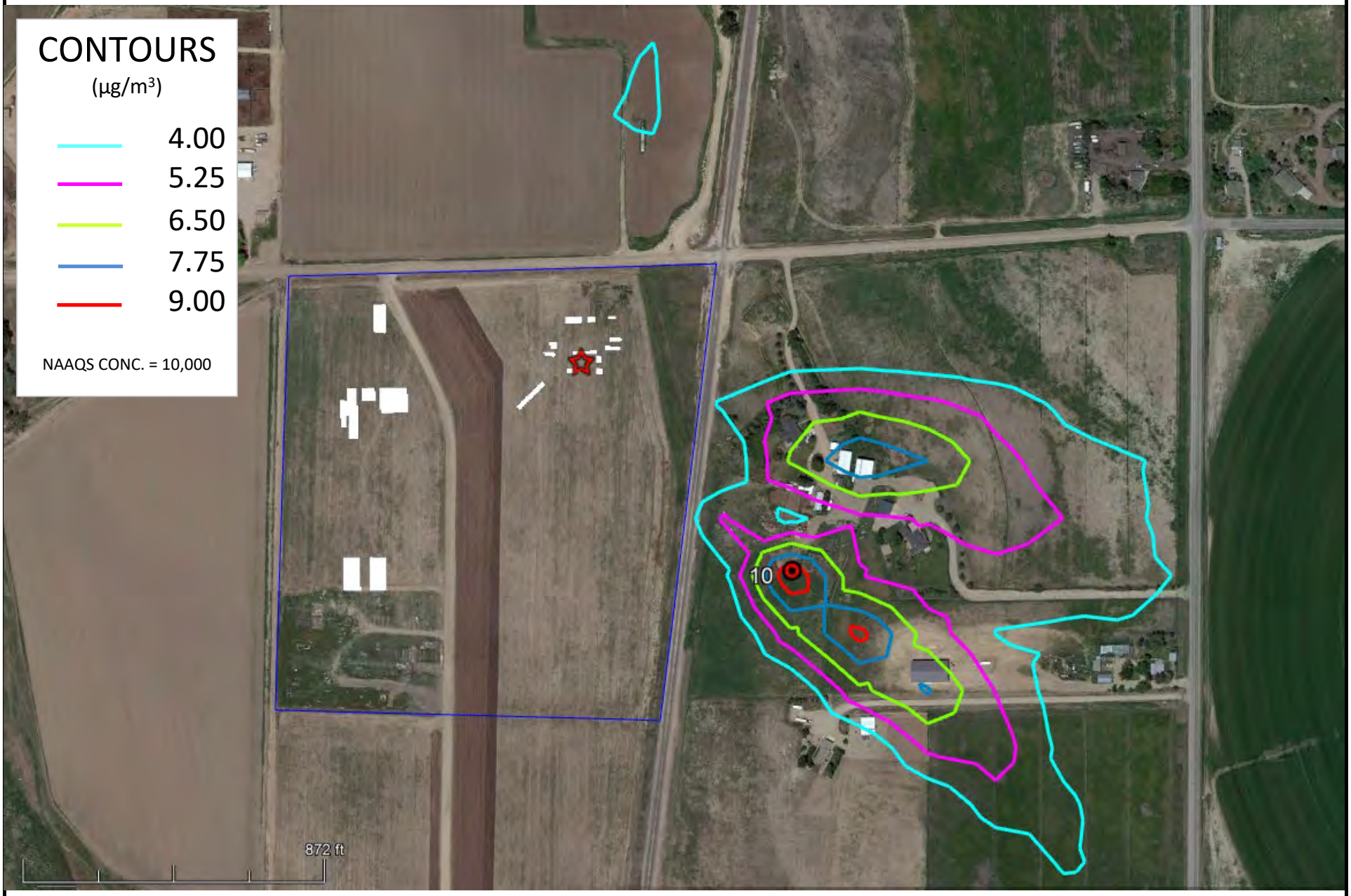

FIGURE 8B - CO MAP (8-HOUR)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
AIRS ID 001
MAX CONCENTRATION

NOTES
NAAQS CONC. = 10,000
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

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Charlotte, North Carolina 28277

FIGURE 9A - ACETALDEHYDE MAP (LONG-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
- AIRS ID 001
- MAX CONCENTRATION

NOTES
SCREENING CONC. = 0.45
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

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Charlotte, North Carolina 28277

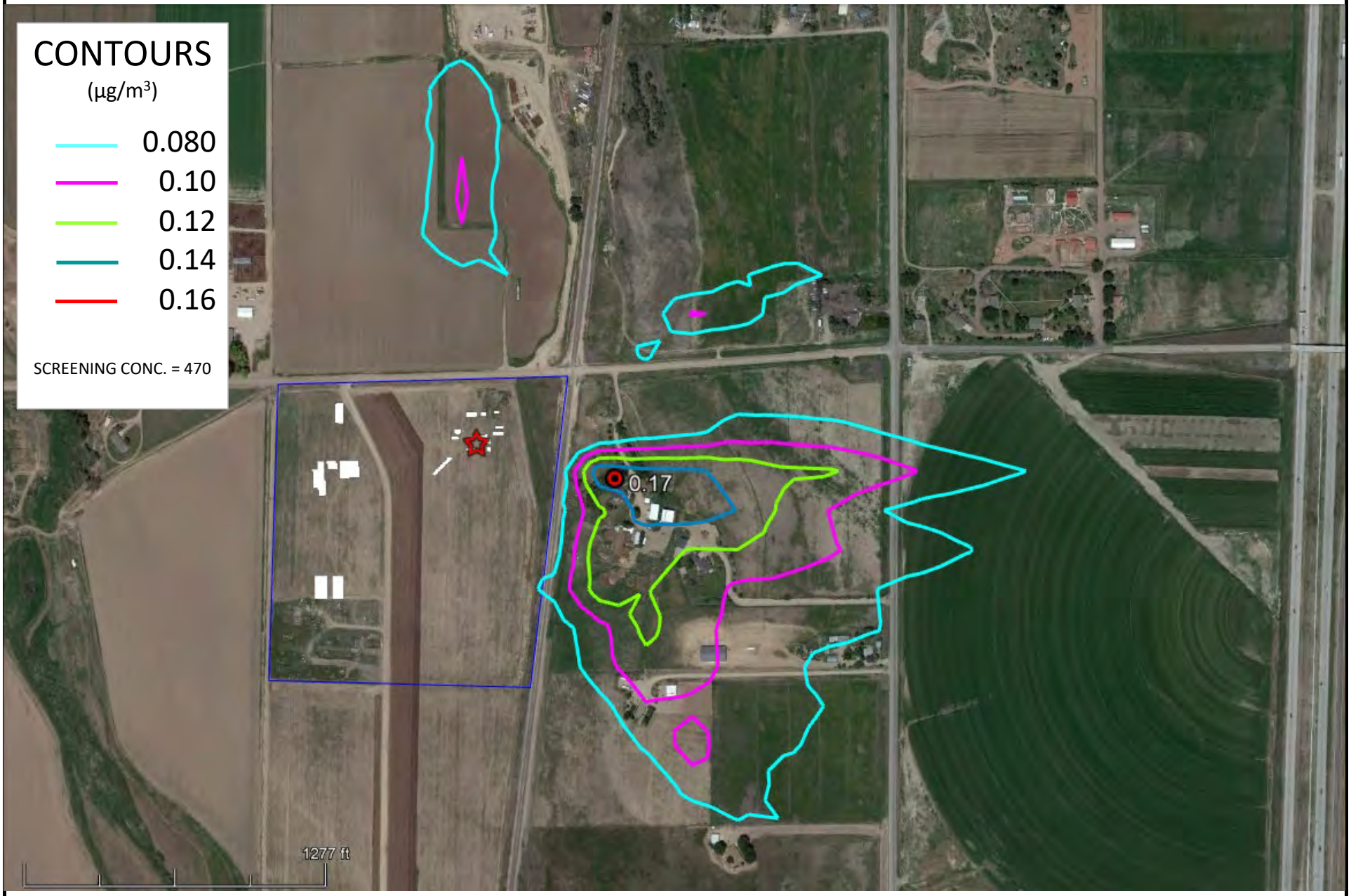

FIGURE 9B - ACETALDEHYDE MAP (SHORT-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
AIRS ID 001
MAX CONCENTRATION

NOTES
SCREENING CONC. = 470
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

antea group
11325 N Community House Rd, Suite 420
Charlotte, North Carolina 28277

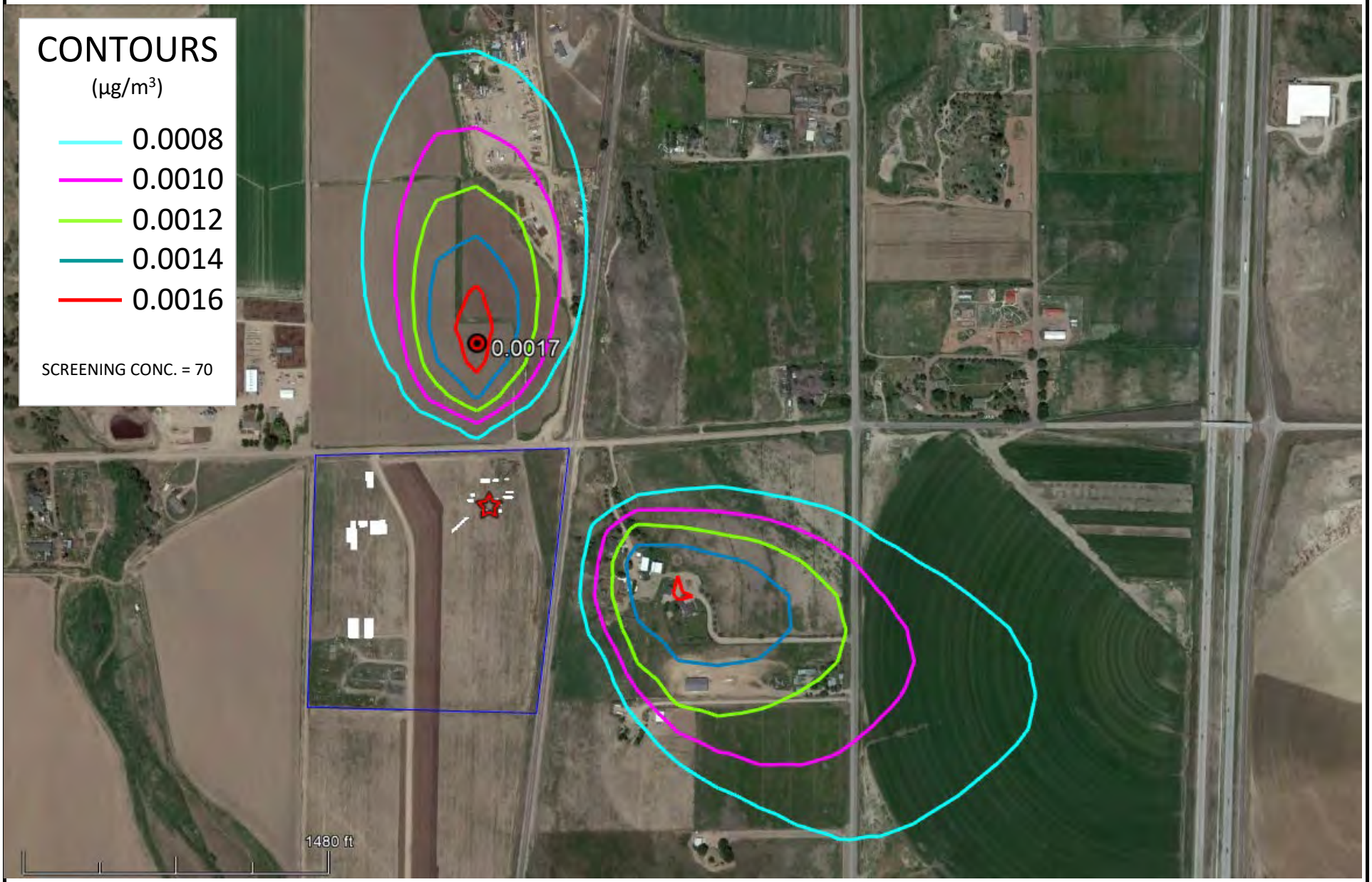

FIGURE 10A - HEXANE MAP (LONG-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
AIRS ID 001
MAX CONCENTRATION

NOTES
SCREENING CONC. = 70
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

antea group
11325 N Community House Rd, Suite 420
Charlotte, North Carolina 28277

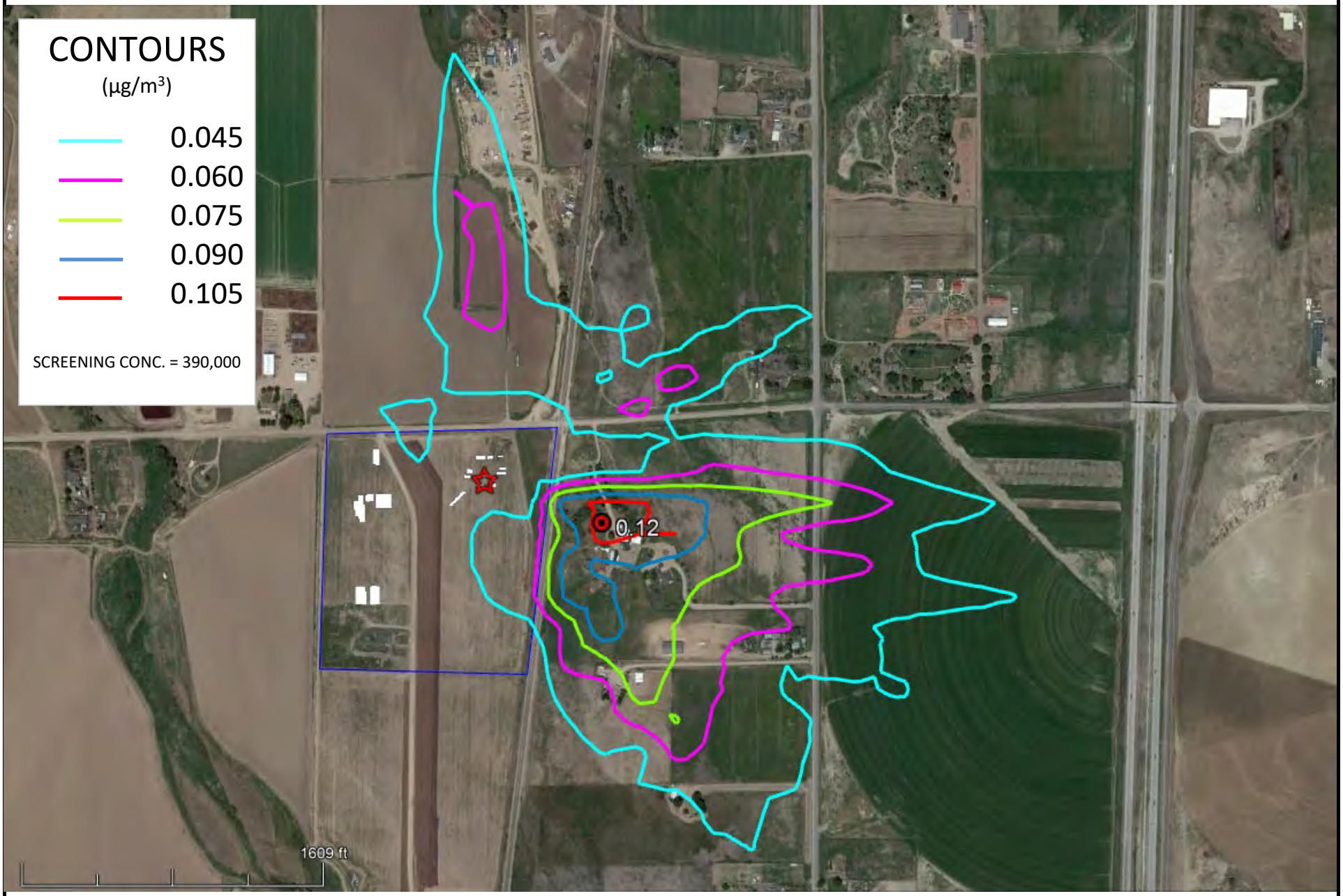

FIGURE 10B - HEXANE MAP (SHORT-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
AIRS ID 001
MAX CONCENTRATION

NOTES
SCREENING CONC. = 390,000
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

antea group
11325 N Community House Rd, Suite 420
Charlotte, North Carolina 28277

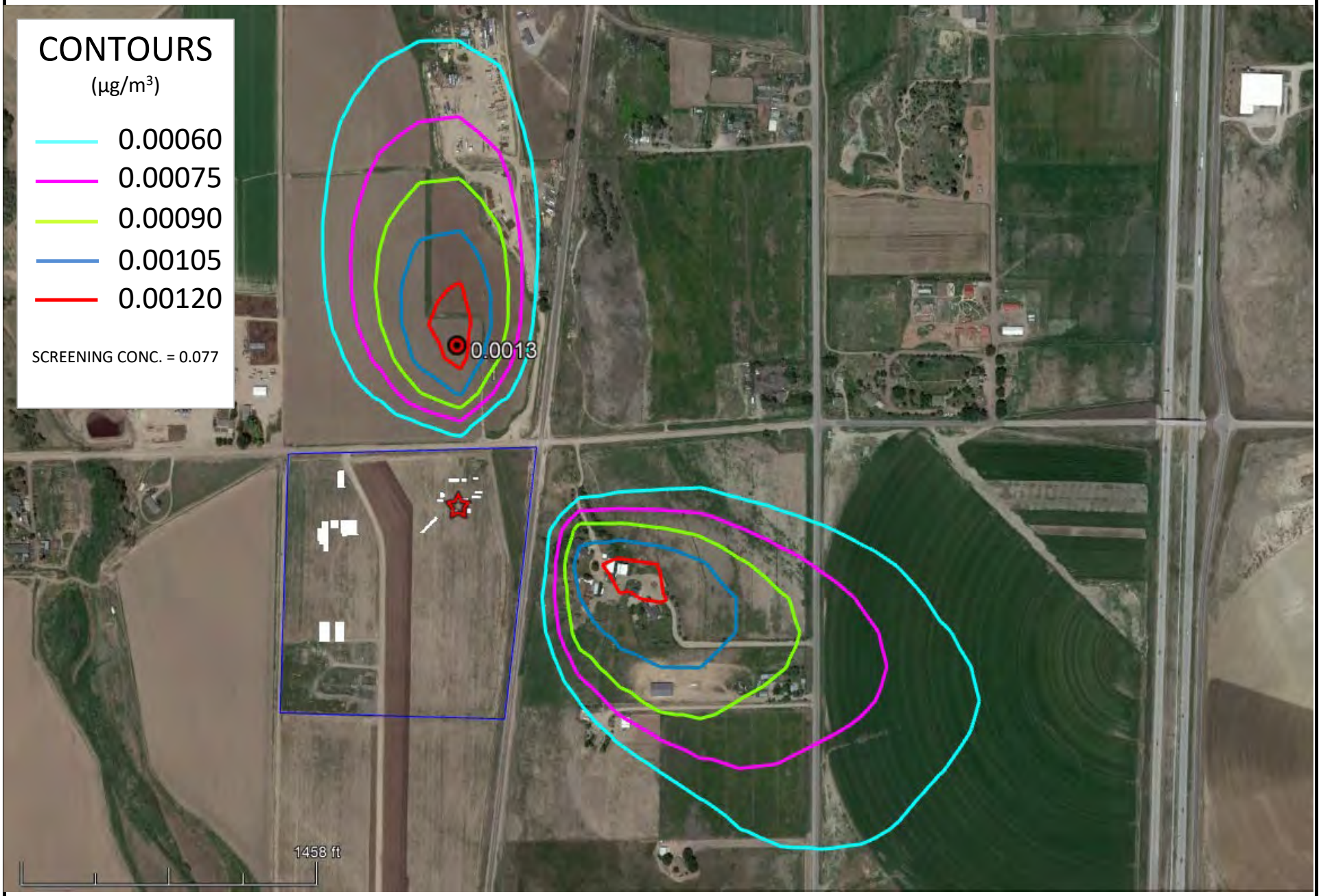

FIGURE 11A - FORMALDEHYDE MAP (LONG-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
AIRS ID 001
MAX CONCENTRATION

NOTES
SCREENING CONC. = 0.077
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

antea group
11325 N Community House Rd, Suite 420
Charlotte, North Carolina 28277

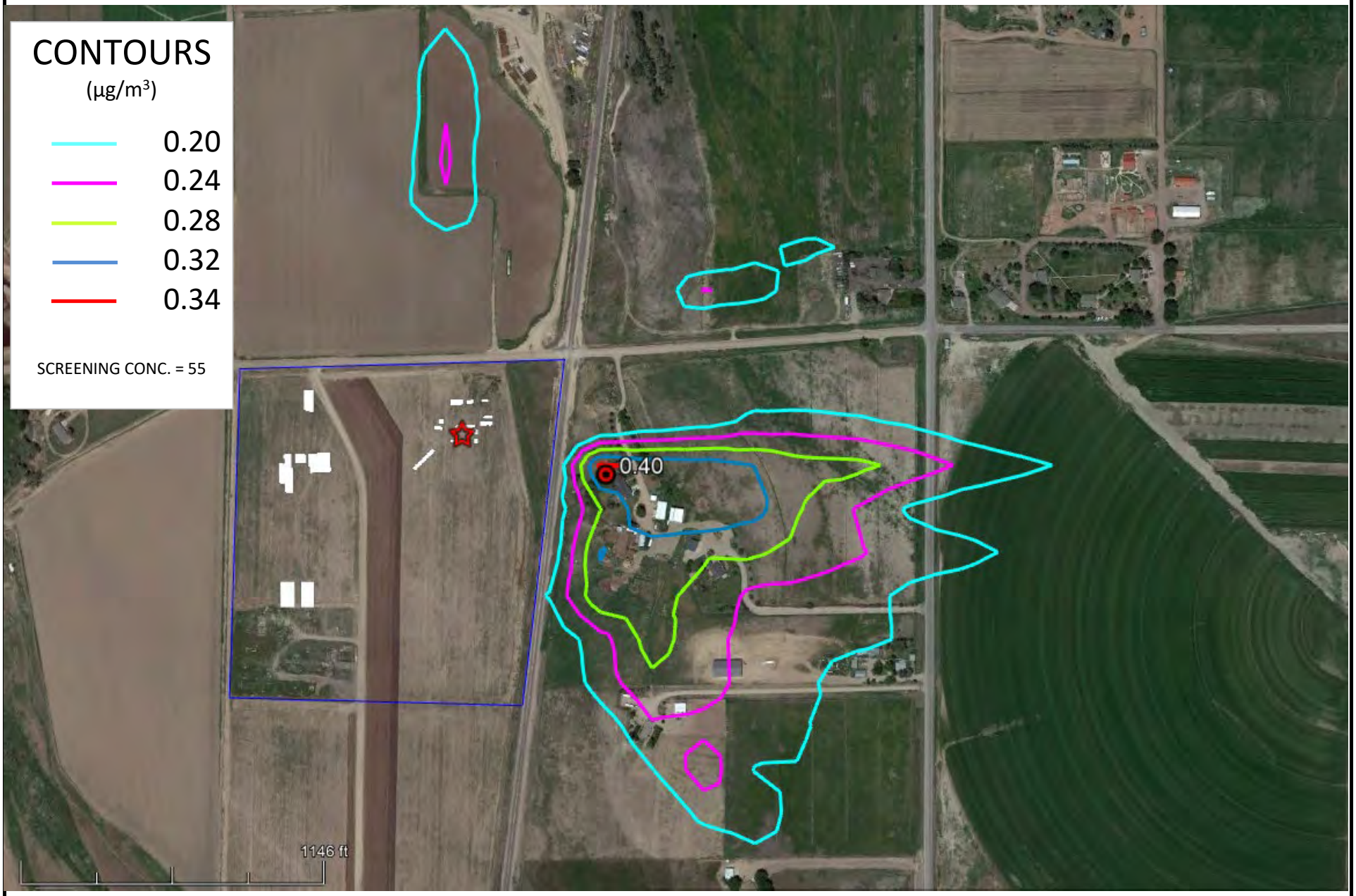

FIGURE 11B - FORMALDEHYDE MAP (SHORT-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
- AIRS ID 001
- MAX CONCENTRATION

NOTES
SCREENING CONC. = 55
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

antea group
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Charlotte, North Carolina 28277

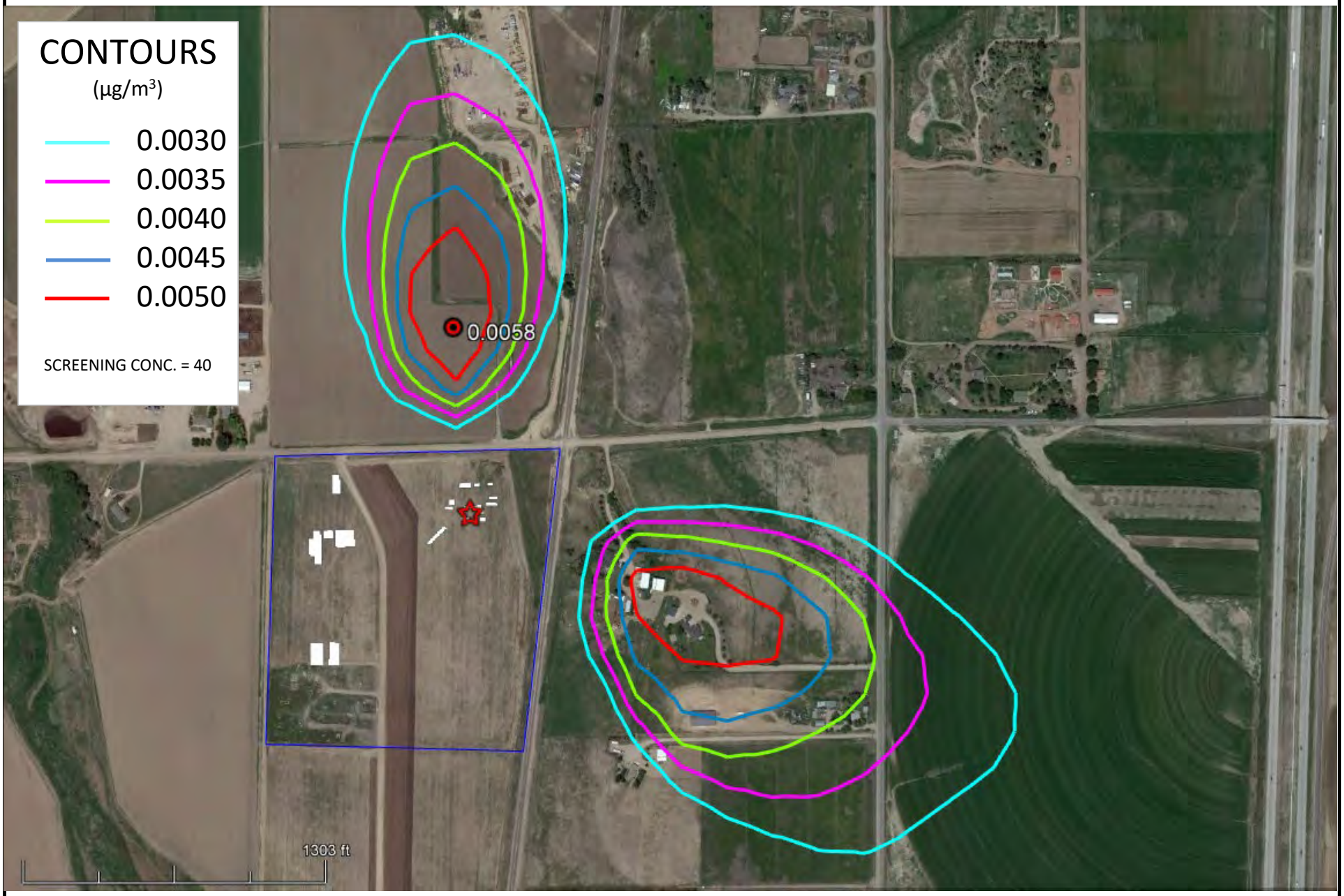

FIGURE 12A - TOLUENE MAP (LONG-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
- AIRS ID 001
- MAX CONCENTRATION

NOTES
SCREENING CONC. = 40
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

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Charlotte, North Carolina 28277

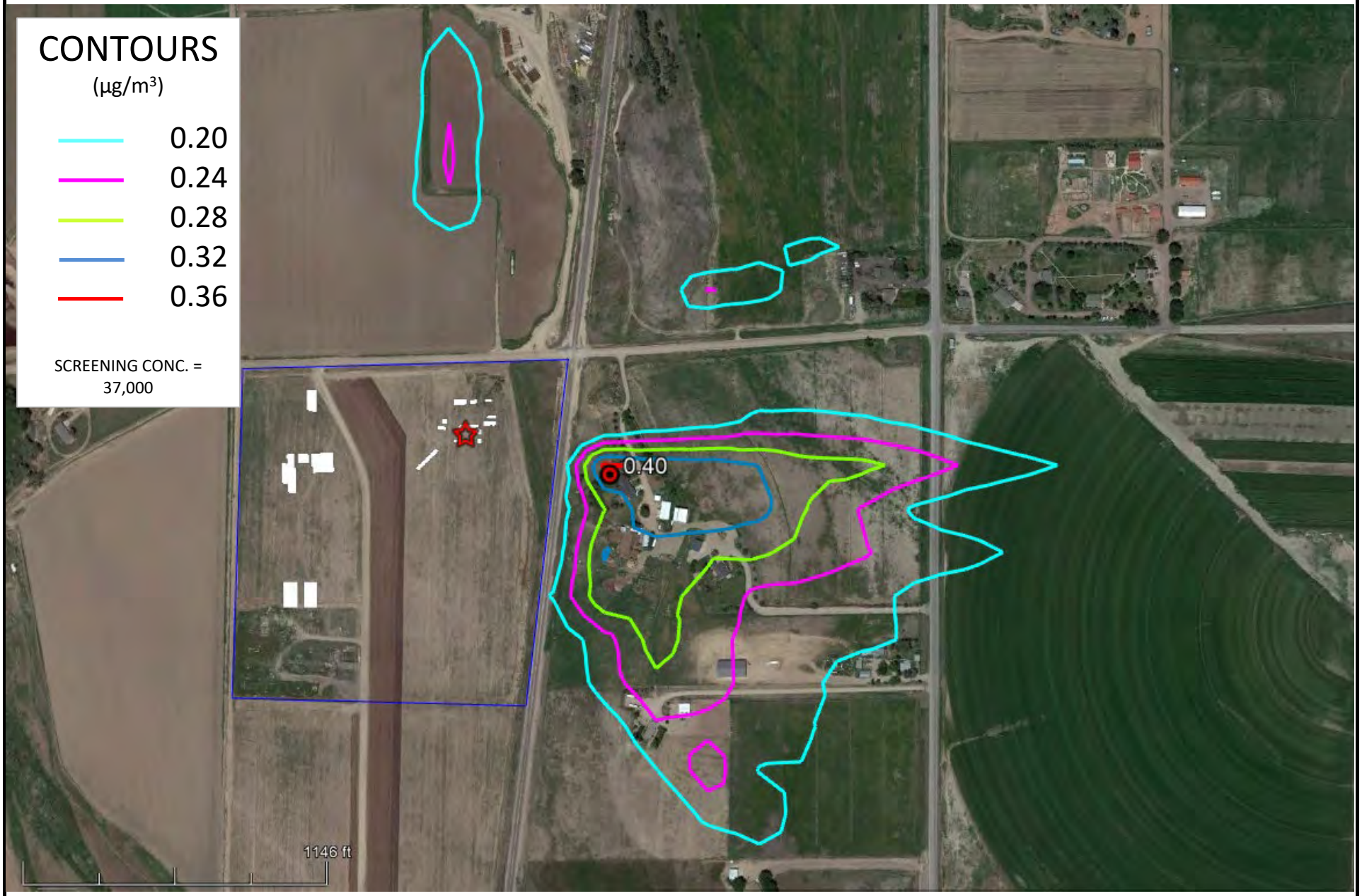

FIGURE 12B - TOLUENE MAP (SHORT-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
- AIRS ID 001
- MAX CONCENTRATION

NOTES
SCREENING CONC. = 37,000
FIGURE UNITS = µg/m3

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

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Charlotte, North Carolina 28277

FIGURE 13A - QUINONE MAP (LONG-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
- AIRS ID 001
- MAX CONCENTRATION

NOTES
SCREENING CONC. = N/A
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

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Charlotte, North Carolina 28277

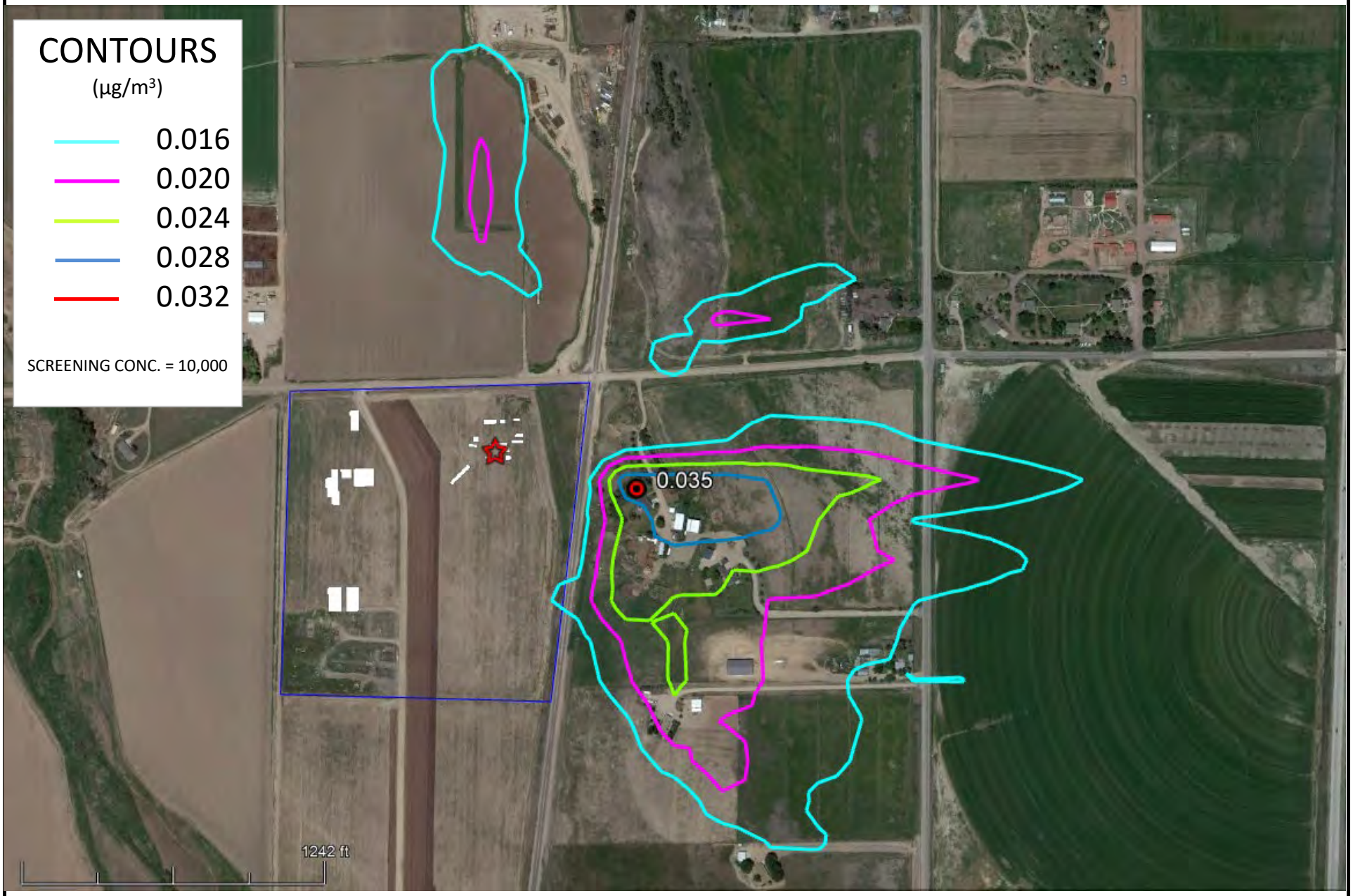

FIGURE 13B - QUINONE MAP (SHORT-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
- AIRS ID 001
- MAX CONCENTRATION

NOTES
SCREENING CONC. = 10,000
FIGURE UNITS = µg/m3

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

anteagroup

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Charlotte, North Carolina 28277

FIGURE 14A - BENZENE MAP (LONG-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
- AIRS ID 001
- MAX CONCENTRATION

NOTES
SCREENING CONC. = 0.13
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

antea group

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Charlotte, North Carolina 28277

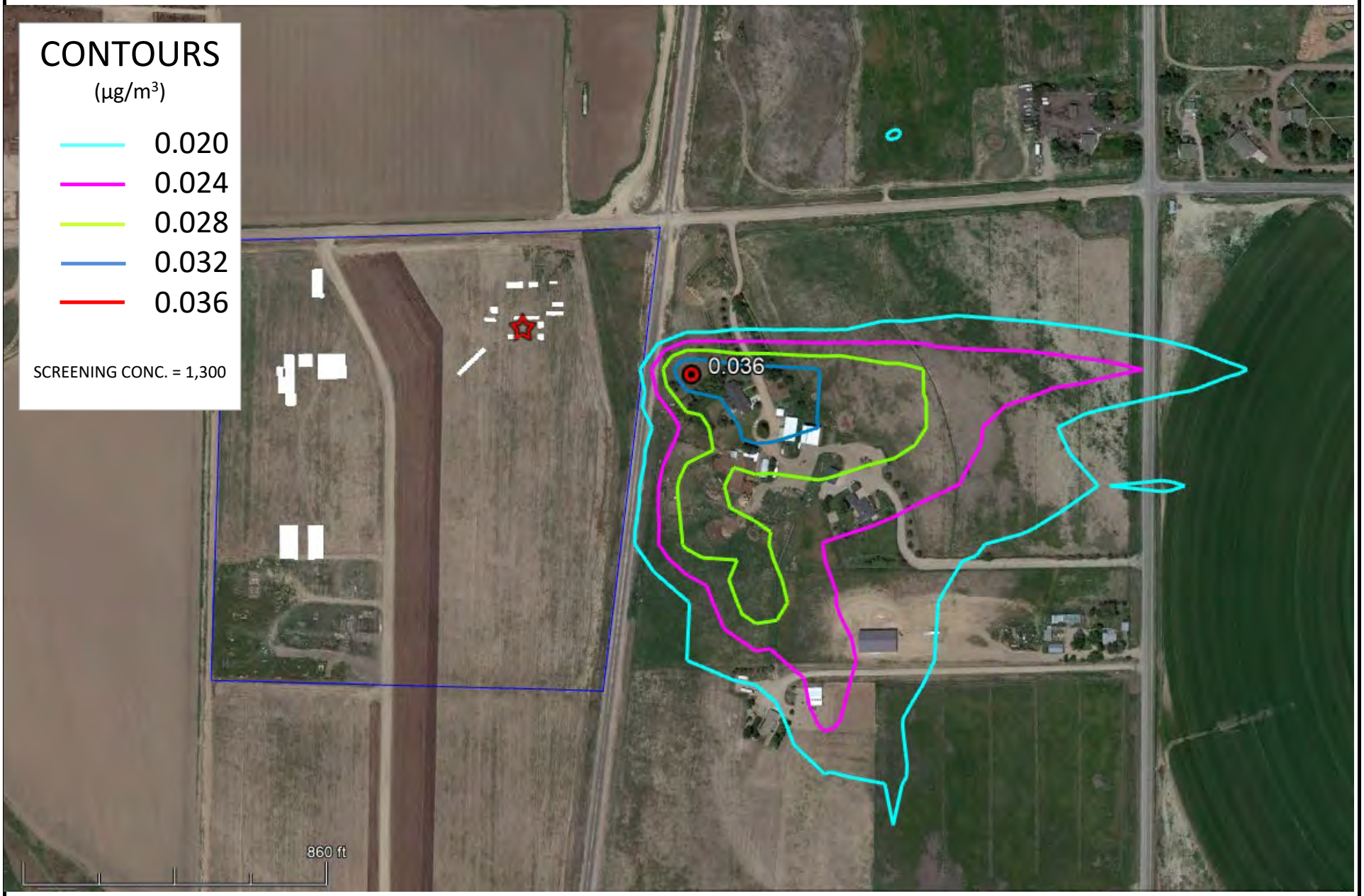

FIGURE 14B - BENZENE MAP (SHORT-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
- AIRS ID 001
- MAX CONCENTRATION

NOTES
SCREENING CONC. = 1,300
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

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Charlotte, North Carolina 28277

FIGURE 15A - ETHYLBENZENE MAP (LONG-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
- AIRS ID 001
- MAX CONCENTRATION

NOTES
SCREENING CONC. = 0.4
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

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Charlotte, North Carolina 28277

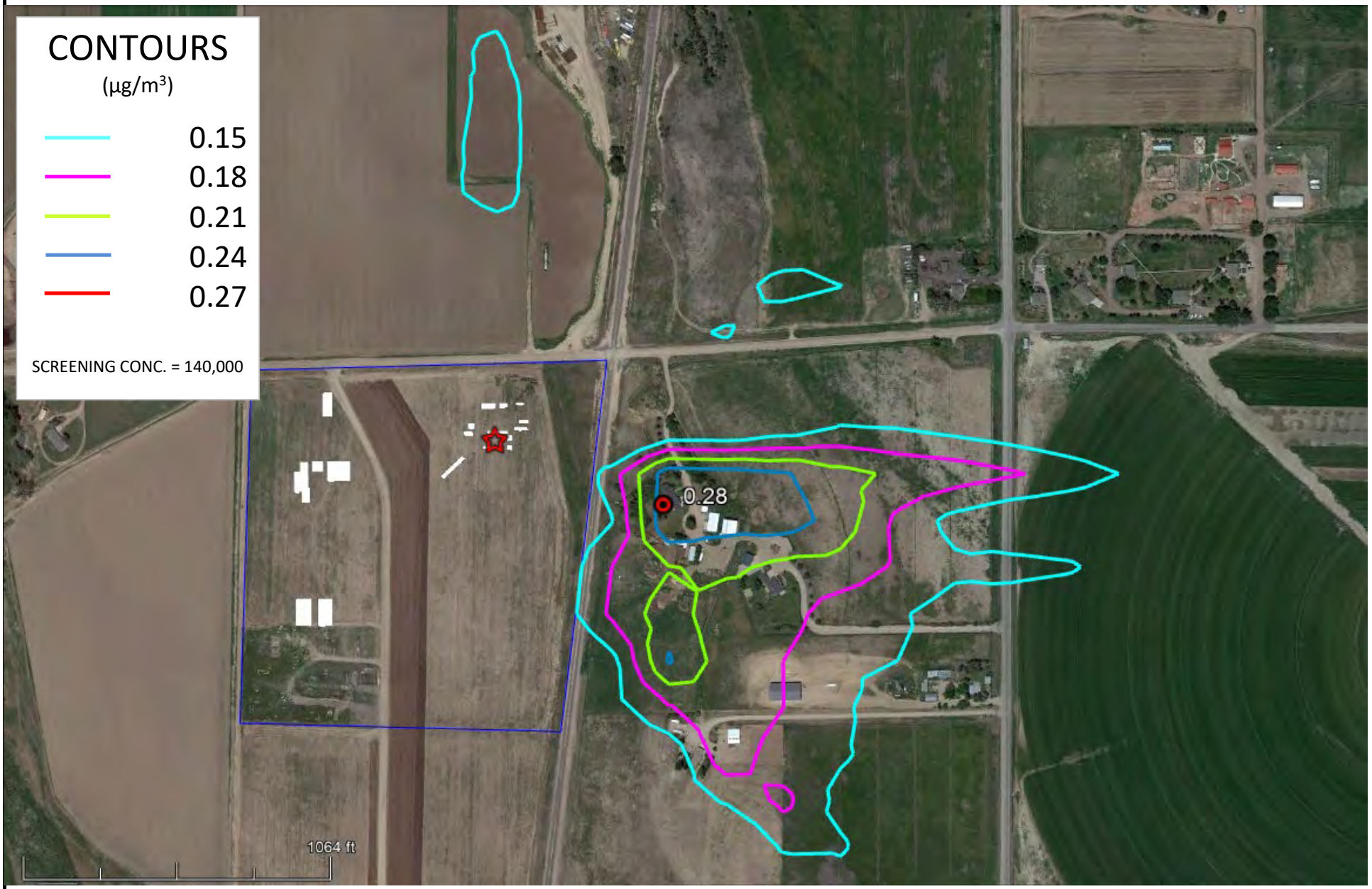

FIGURE 15B - ETHYLBENZENE MAP (SHORT-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
AIRS ID 001
MAX CONCENTRATION

NOTES
SCREENING CONC. = 140,000
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

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Charlotte, North Carolina 28277

FIGURE 16A - XYLENE MAP (LONG-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
AIRS ID 001
MAX CONCENTRATION

NOTES
SCREENING CONC. = 10
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

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Charlotte, North Carolina 28277

FIGURE 16B - XYLENE MAP (SHORT-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
AIRS ID 001
MAX CONCENTRATION

NOTES
SCREENING CONC. = 8,700
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

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Charlotte, North Carolina 28277

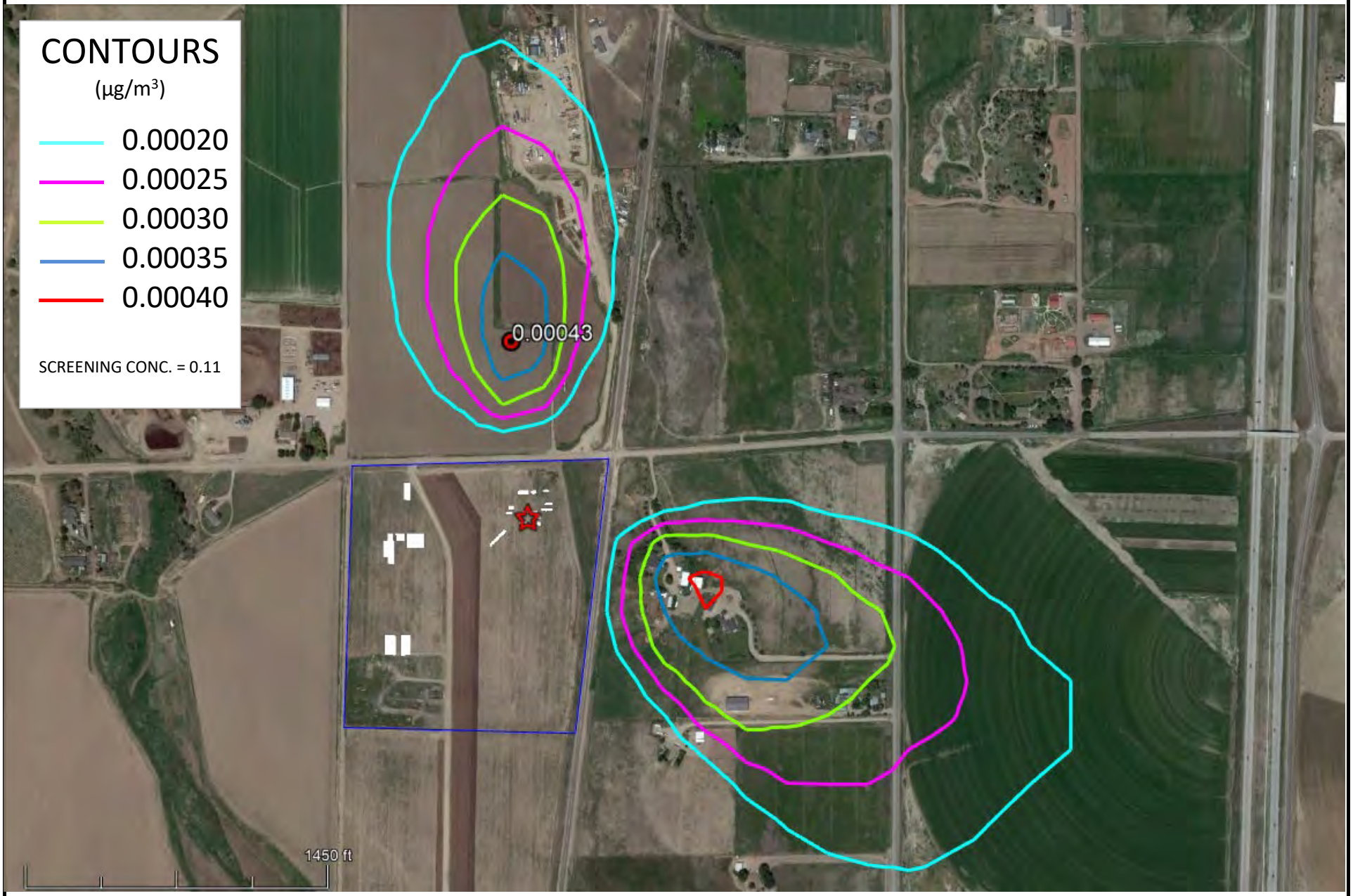

FIGURE 17A - TOTAL PAH MAP (LONG-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
- AIRS ID 001
- MAX CONCENTRATION

NOTES
SCREENING CONC. = 0.11
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

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Charlotte, North Carolina 28277

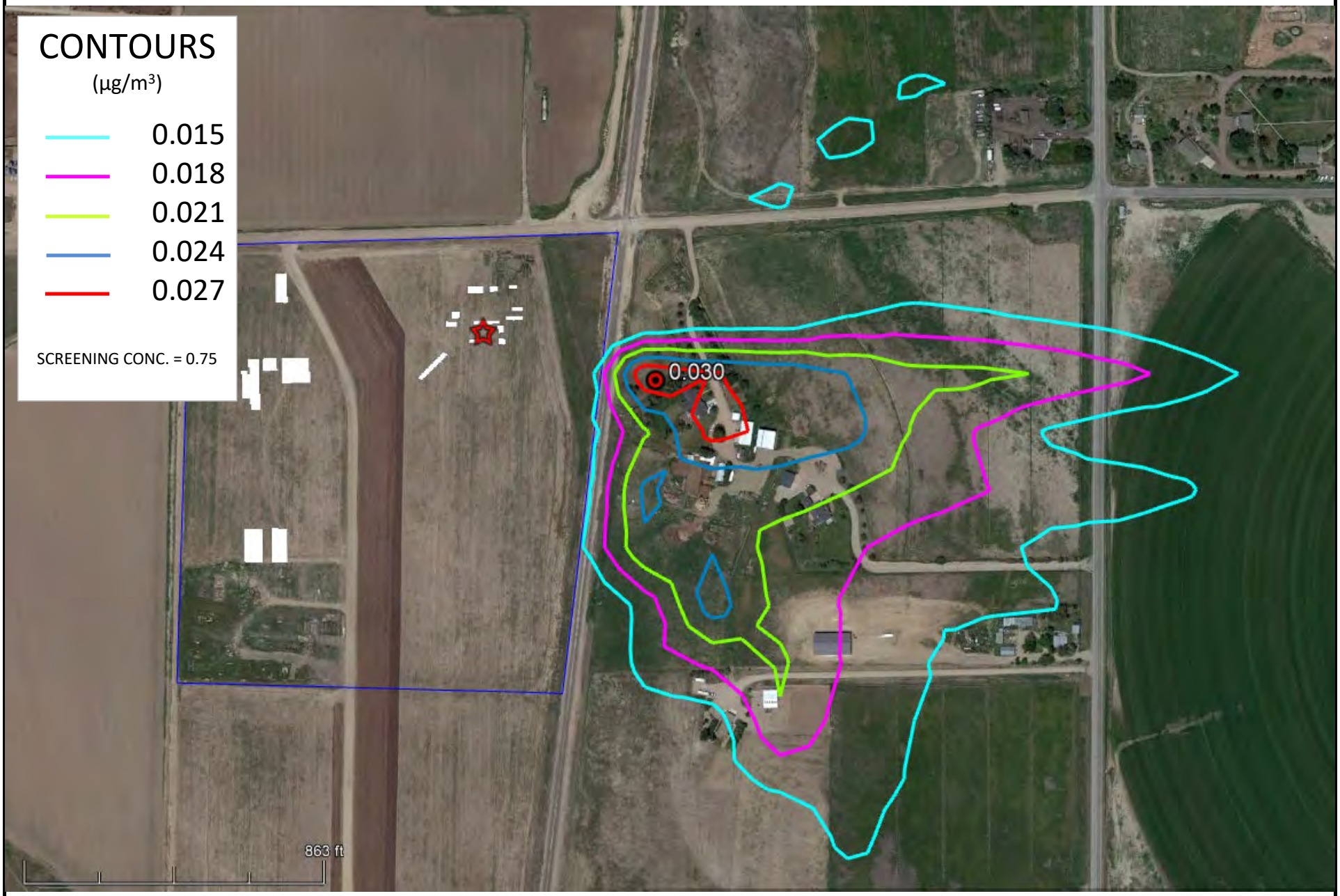

FIGURE 17B - TOTAL PAH MAP (SHORT-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
- AIRS ID 001
- MAX CONCENTRATION

NOTES
SCREENING CONC. = 0.75
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

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Charlotte, North Carolina 28277

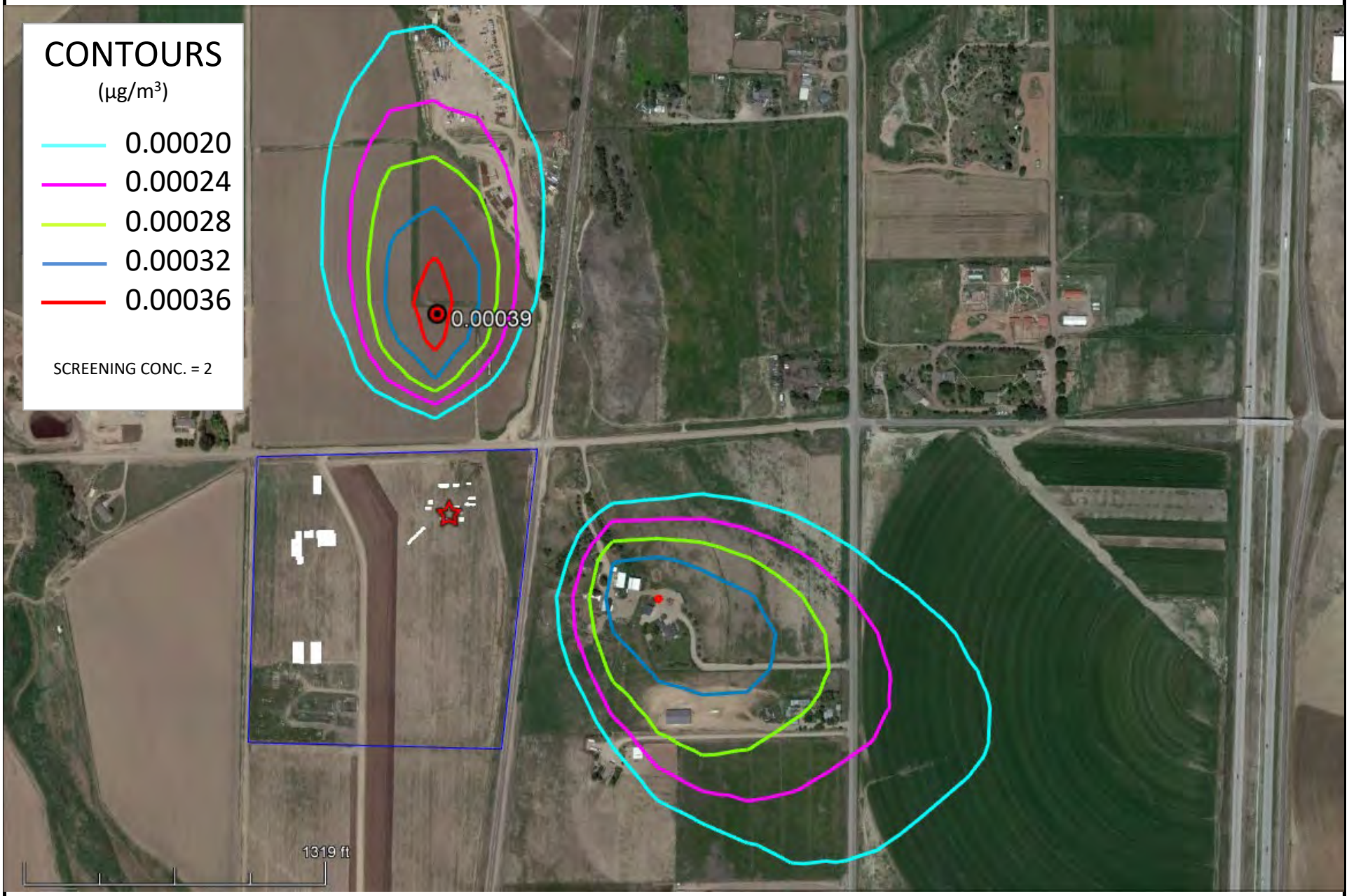

FIGURE 18A - HCL MAP (LONG-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
- AIRS ID 001
- MAX CONCENTRATION

NOTES
SCREENING CONC. = 2
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

antea group
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Charlotte, North Carolina 28277

FIGURE 18B - HCL MAP (SHORT-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
☆ AIRS ID 001
◎ MAX CONCENTRATION

NOTES
SCREENING CONC. = N/A
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

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Charlotte, North Carolina 28277

Appendix A – Emission Calculations and Supporting Documentation

Appendix saved separately as "Appendix A"

Appendix B – AERMOD Model Output

Appendix saved separately as "Appendix A"

Emission Calculations for Modeling
Connell Resources
Fort Collins, CO and Wellington, CO

Permit Limits

Drum Mixer:	400	tons per hour
HMA Production Limit (tons/yr):	300,000	Air Construction Permit OOLR076
HMA Production Limit (hrs/yr):	750	(@maximum production rate w/ maximum Drum Mixer rate)
HMA Production Limit (hrs/yr):	1,154	(@nominal actual production rate)
Nominal Production Rate:	260	tons per hr

Natural Gas or Propane

Criteria Pollutant	Emission Factor (lb/ton asphalt produced) (Ctl)	Emission Factor Reference	Actual (lbs/hr)	Potential (lbs/hr)	Actual (tpy)	Potential (tpy)	Permit Limits (tpy)
PM	0.0177	AP-42, Table 11.1-3	4.60	7.08	2.7	2.7	2.7
PM-10	0.0041	AP-42, Table 11.1-3	1.07	1.64	0.6	0.6	0.7
PM-2.5	0.0010	AP-42, Table 11.1-4	0.26	0.40	0.2	0.2	0.2
NOx	0.026	AP-42, Table 11.1-7	6.76	10.40	3.9	3.9	8.3
SO_2	0.0034	AP-42, Table 11.1-8	0.88	1.36	0.5	0.5	8.7
VOC	0.0320	AP-42, Table 11.1-7	8.32	12.80	4.8	4.8	4.8
CO	0.13	stack tests	33.80	52.00	19.5	19.5	19.5

- Actual Emissions (tpy) = Actual (lbs/hr) x Nominal Production Rate (hrs/yr) / 2,000 lbs/yr
- Potential Emissions (tpy) = Potential (lbs/hr) x Maximum Production Rate (hrs/yr) / 2,000 lbs/yr

Waste Oil

Criteria Pollutant	Emission Factor (lb/ton asphalt produced) (Ctl)	Emission Factor Reference	Actual (lbs/hr)	Potential (lbs/hr)	Actual (tpy)	Potential (tpy)	Permit Limits (tpy)
PM	0.0177	AP-42, Table 11.1-3	4.60	7.08	2.7	2.7	2.7
PM-10	0.0041	AP-42, Table 11.1-3	1.07	1.64	0.6	0.6	0.7
PM-2.5	0.0010	AP-42, Table 11.1-4	0.26	0.40	0.2	0.2	0.2
NOx	0.055	AP-42, Table 11.1-7	14.30	22.00	8.3	8.3	8.3
SO_2	0.058	AP-42, Table 11.1-8	15.08	23.20	8.7	8.7	8.7
VOC	0.0320	AP-42, Table 11.1-7	8.32	12.80	4.8	4.8	4.8
CO	0.13	stack tests	33.80	52.00	19.5	19.5	19.5

HAP Pollutant	Emission Factor (lb/ton asphalt produced	Emission Factor Reference	Actual (lbs/hr)	Potential (lbs/hr)	Actual (lbs/yr)	Potential (lbs/yr)	Permit Limits (lbs/yr)
Acetaldehyde	0.0013	AP-42, Table 11.1-10 *(p. 11.1-26)*	0.338	0.520	390	390	390
Hexane	0.00092	AP-42, Table 11.1-10 *(p. 11.1-21)*	0.2392	0.368	276	276	285.9
Formaldehyde	0.000689	Michigan Department of Environmental Quality [(1)]	0.179	0.276	206.7	206.7	930
Toluene (NG)	0.00015	AP-42, Table 11.1-10 *(p. 11.1-21)*	0.039	0.060	45	45	870
Toluene (WO)	0.0029	AP-42, Table 11.1-10 *(p. 11.1-26)*	0.754	1.160	870	870	
Quinone (NG)	0.00027	AP-42, Table 11.1-9 *(p. 11.1-19)*	0.0702	0.108	81	81	
Quinone (WO)	0.00016	AP-42, Table 11.1-10 *(p. 11.1-26)*	0.0416	0.064	48	48	
Benzene (WO), (NG)	0.00028	AP-42, Table 11.1-9 *(p. 11.1-20)*	0.0728	0.112	84	84	
Ethylbenzene (WO), (NG)	0.0022	AP-42, Table 11.1-9 *(p. 11.1-19)*	0.572	0.880	660	660	
Xylene (WO), (NG)	0.0027	AP-42, Table 11.1-9 *(p. 11.1-19)*	0.702	1.080	810	810	
Total PAH (NG)	0.00011	AP-42, Table 11.1-10 *(p. 11.1-19)*	0.0286	0.044	33	33	
Total PAH (WO)	0.00023	AP-42, Table 11.1-9 *(p. 11.1-20)*	0.0598	0.092	69	69	
HCl (WO - Only)., NG - ND)	0.00021	AP-42, Table 11.1-8 *(p. 11.1-18)*	0.0546	0.084	63	63	

NG = Natural Gas
WO = Waste Oil
ND = Non Detect

[(1)] "*Eliminate the Manatory Testing Requirements for Toxic Air Contaminates for Hot Mix Asphalt Plants in Michigan* ", Michigan Department of Environmental Quality - Air Division, June 1, 2012

- Actual (lbs/hr) = EF x Nominal Production Rate (tons/hr)
- Actual (lbs/hr) = EF x Maximum Drum Mixer Production Rate (tons/hr)
- Potential (lbs/yr) = Actual (lbs/hr) x Nominal Production Rate (hrs/yr)
- Actual (lbs/yr) = Actual (lbs/hr) x Maximum Nominal Production Rate (hrs/yr)

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** MODEL SETUP OPTIONS SUMMARY ***

** Model Options Selected:

* Model Uses Regulatory DEFAULT Options
* Model Is Setup For Calculation of Average CONCentration Values.
* NO GAS DEPOSITION Data Provided.
* NO PARTICLE DEPOSITION Data Provided.
* Model Uses NO DRY DEPLETION. DDPLETE = F
* Model Uses NO WET DEPLETION. WETDPLT = F
* Stack-tip Downwash.
* Model Accounts for ELEVated Terrain Effects.
* Use Calms Processing Routine.
* Use Missing Data Processing Routine.
* No Exponential Decay.
* Model Uses RURAL Dispersion Only.
* BULKRN - Use BULKRN Delta-T and SolarRad option for SBL in AERMET
* Model Assumes No FLAGPOLE Receptor Heights.
* The User Specified a Pollutant Type of: PARTMATT

**Model Calculates 1 Short Term Average(s) of: 24-HR

**This Run Includes: 1 Source(s); 1 Source Group(s); and 3106 Receptor(s)

with: 1 POINT(s), including

0 POINTCAP(s) and 0 POINTHOR(s)

and: 0 VOLUME source(s)

and: 0 AREA type source(s)

and: 0 LINE source(s)

and: 0 RLINE/RLINEXT source(s)

and: 0 OPENPIT source(s)

and: 0 BUOYANT LINE source(s) with a total of 0 line(s)

and: 0 SWPOINT source(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 22112

**Output Options Selected:

Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)

Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours

m for Missing Hours

b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 1730.68 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0

Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07

Output Units = MICROGRAMS/M**3

```
 **Approximate Storage Requirements of Model =      3.9 MB of RAM.


 **Input Runstream File:         C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi
 **Output Print File:           C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi


 **File for Summary of Results:   C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi
 *** AERMOD - VERSION 22112  ***   *** Title One                                          ***       05/09/23
 *** AERMET - VERSION  22112 ***   ***                                                   ***       15:14:59
                                                                                PAGE   2
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  BULKRN  SigA Data

                                    *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                                (1=YES; 0=NO)

          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
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          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1

              NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS
INCLUDED IN THE DATA FILE.
```

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling
Met Version: 22112

Profile file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling

Surface format: FREE

Profile format: FREE

Surface station no.: 0 Upper air station no.: 23062

Name: UNKNOWN Name: DENVER WSFO, CO

Year: 2006 Year: 2006

First 24 hours of scalar data

YR MO DY JDY HR H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS WD HT REF TA HT

- -

06 01 01 1 01 -26.0 0.162 -9.000 -9.000 -999. 157. 11.8 0.01 1.89 1.00 4.43 326. 10.0 280.1 2.0

06 01 01 1 02 -58.1 0.325 -9.000 -9.000 -999. 445. 42.5 0.01 1.89 1.00 6.57 310. 10.0 281.4 2.0

06 01 01 1 03 -33.0 0.292 -9.000 -9.000 -999. 380. 54.5 0.01 1.89 1.00 5.72 272. 10.0 281.0 2.0

06 01 01 1 04 -14.9 0.128 -9.000 -9.000 -999. 134. 10.2 0.01 1.89 1.00 3.67 320. 10.0 279.8 2.0

06 01 01 1 05 -13.5 0.124 -9.000 -9.000 -999. 105. 10.1 0.01 1.89 1.00 3.71 337. 10.0 279.0 2.0

06 01 01 1 06 -18.3 0.176 -9.000 -9.000 -999. 177. 21.3 0.01 1.89 1.00 4.29 344. 10.0 278.3 2.0

06 01 01 1 07 -34.9 0.286 -9.000 -9.000 -999. 367. 48.1 0.01 1.89 1.00 5.68 327. 10.0 279.3 2.0

06 01 01 1 08 -39.7 0.440 -9.000 -9.000 -999. 701. 154.4 0.01 1.89 1.00 7.96 307. 10.0 279.8 2.0

06 01 01 1 09 -17.3 0.580 -9.000 -9.000 -999. 1058. 810.0 0.01 1.89 0.43 10.10 287. 10.0 279.4 2.0

06 01 01 1 10 38.3 0.682 0.602 0.005 164. 1349. -597.0 0.01 1.89 0.31 11.67 301. 10.0 280.9 2.0

06 01 01 1 11 83.4 0.893 1.120 0.005 486. 2020. -616.6 0.01 1.89 0.26 15.29 291. 10.0 281.4 2.0

06 01 01 1 12 97.2 0.889 1.326 0.005 693. 2013. -521.8 0.01 1.89 0.24 15.20 293. 10.0 281.3 2.0

06 01 01 1 13 137.5 0.968 1.629 0.005 909. 2279. -476.9 0.01 1.89 0.24 16.54 291. 10.0 281.3 2.0

06 01 01 1 14 122.9 0.912 1.653 0.005 1063. 2100. -445.7 0.01 1.89 0.25 15.56 290. 10.0 281.0 2.0

06 01 01 1 15 67.7 0.795 1.385 0.005 1138. 1727. -536.6 0.01 1.89 0.30 13.59 295. 10.0 280.1 2.0

06 01 01 1 16 0.0 0.715 -9.000 -9.000 -999. 1464. 8888.0 0.01 1.89 0.41 12.34 301. 10.0 279.0 2.0

06 01 01 1 17 0.0 0.673 -9.000 -9.000 -999. 1330. 8888.0 0.01 1.89 0.72 11.62 304. 10.0 277.1 2.0

06 01 01 1 18 0.0 0.546 -9.000 -9.000 -999. 987. 8888.0 0.01 1.89 1.00 9.43 293. 10.0 275.9 2.0

06 01 01 1 19 -46.9 0.630 -9.000 -9.000 -999. 1199. 388.5 0.01 1.89 1.00 11.09 294. 10.0 276.2 2.0

06 01 01 1 20 -49.7 0.337 -9.000 -9.000 -999. 566. 55.9 0.01 1.89 1.00 6.57 310. 10.0 275.6 2.0

06 01 01 1 21 -29.5 0.194 -9.000 -9.000 -999. 235. 17.9 0.01 1.89 1.00 4.69 313. 10.0 274.4 2.0

06 01 01 1 22 -29.9 0.238 -9.000 -9.000 -999. 279. 32.8 0.01 1.89 1.00 5.32 338. 10.0 275.8 2.0

06 01 01 1 23 -15.8 0.134 -9.000 -9.000 -999. 123. 11.1 0.01 1.89 1.00 3.67 241. 10.0 274.5 2.0

06 01 01 1 24 -19.1 0.117 -9.000 -9.000 -999. 96. 6.1 0.01 1.89 1.00 3.98 279. 10.0 273.6 2.0

First hour of profile data

YR MO DY HR HEIGHT F WDIR WSPD AMB_TMP sigmaA sigmaW sigmaV

06 01 01 01 2.0 0 -999. -99.00 280.1 99.0 -99.00 -99.00

06 01 01 01 10.0 0 326. 4.43 282.0 5.4 -99.00 0.42

06 01 01 01 60.0 1 316. 5.10 283.1 6.1 -99.00 0.54

F indicates top of profile (=1) or below (=0)

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF HIGHEST 24-HR RESULTS ***

** CONC OF PARTMATT IN MICROGRAMS/M**3 **

DATE NETWORK

GROUP ID AVERAGE CONC (YYMMDDHH) RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL HIGH 1ST HIGH VALUE IS 0.14871 ON 06092324: AT (499650.00, 4508050.00, 1606.22, 1606.22, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)

A Total of 624 Warning Message(s)

A Total of 142 Informational Message(s)

A Total of 8760 Hours Were Processed

A Total of 1 Calm Hours Identified

A Total of 141 Missing Hours Identified (1.61 Percent)

******** FATAL ERROR MESSAGES ********

*** NONE ***

******** WARNING MESSAGES ********

ME W181 3169 MEOPEN: BULKRN Delta-T & SolarRad option for SBL was used in AERMET

MX W403 3169 PFLCNV: Turbulence data is being used w/o ADJ_U* option SigA Data

MX W479 24 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 29 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 30 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 31 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.712

MX W479 48 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 51 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 52 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 53 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 141 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 143 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.877

MX W479 147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 151 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 215 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 216 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.734

MX W479 221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 222 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.588

MX W479 244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 291 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.544

MX W479 296 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 308 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.572

MX W479 312 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 313 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.700

MX W479 314 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.735

MX W479 317 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.795

MX W479 318 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 320 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 321 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 340 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 342 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 344 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 475 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.580

MX W479 479 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 482 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.746

MX W479 483 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 484 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 486 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 487 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.681

MX W479 488 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.697

MX W479 489 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.921

MX W479 509 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 524 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 526 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 527 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 528 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.926

MX W479 529 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.676

MX W479 530 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.808

MX W479 531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.740

MX W479 532 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.537

MX W479 533 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.621

MX W479 534 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.830

MX W479 535 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 554 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 555 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 556 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.743

MX W479 573 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.536

MX W479 574 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.241

MX W479 575 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 576 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.562

MX W479 577 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 578 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.213

MX W479 579 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 580 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 581 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.713

MX W479 582 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.678

MX W479 583 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.869

MX W479 584 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 595 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 597 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.667

MX W479 599 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.596

MX W479 600 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 601 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.705

MX W479 605 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 629 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.665

MX W479 632 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.505

MX W479 724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 725 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 727 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 775 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 822 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 835 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 836 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.517

MX W479 837 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 838 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 839 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 932 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 941 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 1029 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.735

MX W479 1031 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479 1034 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 1035 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 1051 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 1052 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500

MX W479 1053 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.884

MX W479 1054 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.859

MX W479 1055 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.766

MX W479 1056 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.677

MX W479 1060 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 1061 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.639

MX W479 1197 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1198 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.709

MX W479 1199 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 1200 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.530

MX W479 1201 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 1203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.590

MX W479 1204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.726

MX W479 1205 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.750

MX W479 1206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.700

MX W479 1208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1218 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 1219 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.824

MX W479 1220 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 1221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 1222 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 1223 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 1224 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 1225 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 1226 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1227 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.778

MX W479 1228 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 1229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 1231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 1244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 1245 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 1276 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 1277 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 1278 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.729

MX W479 1293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.683

MX W479 1294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.851

MX W479 1295 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1296 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 1297 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 1300 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.634

MX W479 1301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.723

MX W479 1302 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 1303 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 1316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.692

MX W479 1343 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 1344 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.720

MX W479 1345 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1346 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 1347 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 1365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.696

MX W479 1373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 1374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1375 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.622

MX W479 1392 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 1394 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.577

MX W479 1395 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479	1396	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.671
MX W479	1397	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	1441	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	1442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	1483	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.647
MX W479	1532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	1537	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	1539	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.613
MX W479	1540	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	1541	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.648
MX W479	1543	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	1566	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.569
MX W479	1661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	1989	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	1990	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	1991	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	1993	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.563
MX W479	1994	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.534
MX W479	2086	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	2088	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	2089	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	2093	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	2228	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.579
MX W479	2229	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.638
MX W479	2230	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.693
MX W479	2231	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.634
MX W479	2232	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.632
MX W479	2234	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	2235	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.736

MX W479 2253 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 2254 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 2255 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.755

MX W479 2262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 2348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 2349 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2350 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 2351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2352 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.834

MX W479 2353 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.525

MX W479 2354 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2355 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.560

MX W479 2356 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 2373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.752

MX W479 2374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.569

MX W479 2378 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 2379 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.647

MX W479 2380 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 2382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 2399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.920

MX W479 2421 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2422 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 2424 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 2425 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 2428 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 2429 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.578

MX W479 2430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 2445 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.748

MX W479 2446 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479	2447	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.779
MX W479	2448	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.743
MX W479	2449	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.733
MX W479	2450	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	2468	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.568
MX W479	2469	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.019
MX W479	2470	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.976
MX W479	2471	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.882
MX W479	2472	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.650
MX W479	2542	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.620
MX W479	2543	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.826
MX W479	2544	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.734
MX W479	2545	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.629
MX W479	2546	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.769
MX W479	2547	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.656
MX W479	2548	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.679
MX W479	2549	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.853
MX W479	2550	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.715
MX W479	2615	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.589
MX W479	2616	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	2617	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	2639	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	2640	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.715
MX W479	2641	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.777
MX W479	2643	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.648
MX W479	2645	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.602
MX W479	2646	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	2660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	2663	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.896

MX W479	2664	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	2666	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	2669	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	2670	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.500
MX W479	2763	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.504
MX W479	2783	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.567
MX W479	2786	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.588
MX W479	2788	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.748
MX W479	2789	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	2832	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.501
MX W479	2833	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.506
MX W479	2900	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.635
MX W479	2901	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.673
MX W479	2902	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.730
MX W479	2903	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	2905	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	2906	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.753
MX W479	2907	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	3045	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.549
MX W479	3047	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.554
MX W479	3048	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	3148	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.666
MX W479	3149	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	3168	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.553
MX W479	3169	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	3170	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.601
MX W479	3171	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.796
MX W479	3172	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	3173	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.889

MX W479	3174	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.658
MX W479	3239	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	3262	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.633
MX W479	3263	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.636
MX W479	3289	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.546
MX W479	3290	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.586
MX W479	3291	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.607
MX W479	3293	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.528
MX W479	3294	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	3313	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	3316	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.595
MX W479	3337	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	3338	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.521
MX W479	3339	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.513
MX W479	3363	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.584
MX W479	3364	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	3365	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.666
MX W479	3366	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.576
MX W479	3382	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.620
MX W479	3383	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.727
MX W479	3384	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.606
MX W479	3453	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.648
MX W479	3454	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.711
MX W479	3457	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	3509	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.654
MX W479	3525	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	3671	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.541
MX W479	3674	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	3693	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520

MX W479 3748 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.562

MX W479 3792 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.536

MX W479 3796 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 4029 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.848

MX W479 4030 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.707

MX W479 4031 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 4035 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 4036 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 4037 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 4057 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.502

MX W479 4080 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 4101 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.545

MX W479 4102 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 4103 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.847

MX W479 4104 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 4105 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 4172 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.682

MX W479 4173 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.824

MX W479 4227 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 4297 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.508

MX W479 4298 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.590

MX W479 4301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 4493 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 4586 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 4629 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.548

MX W479 4630 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.517

MX W479 4652 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 4653 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.685

MX W479 4654 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 4656 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 4657 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.903

MX W479 4658 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.975

MX W479 4659 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.826

MX W479 4660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.741

MX W479 4661 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.888

MX W479 4677 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.524

MX W479 4679 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 4680 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.591

MX W479 4685 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 4724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 4996 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.544

MX W479 5331 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.662

MX W479 5332 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 5471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 5472 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 5475 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 5614 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.669

MX W479 5615 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 5621 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 5622 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.623

MX W479 5790 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 5804 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 5805 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 5809 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 5812 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.675

MX W479 5813 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 5814 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 5979 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479	5980	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.546
MX W479	6120	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.528
MX W479	6121	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.501
MX W479	6125	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	6126	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	6142	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	6146	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.582
MX W479	6147	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.573
MX W479	6148	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.779
MX W479	6149	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.883
MX W479	6150	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.860
MX W479	6267	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.540
MX W479	6268	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	6271	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.529
MX W479	6286	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.595
MX W479	6292	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.577
MX W479	6294	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.615
MX W479	6405	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.611
MX W479	6406	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.887
MX W479	6407	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.555
MX W479	6408	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.541
MX W479	6409	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	6410	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.740
MX W479	6411	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	6413	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.513
MX W479	6430	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.587
MX W479	6431	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.841
MX W479	6435	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.023
MX W479	6436	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.778

MX W479 6486 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 6501 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.822

MX W479 6524 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 6525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.600

MX W479 6526 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.566

MX W479 6528 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.612

MX W479 6529 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.627

MX W479 6530 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 6531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.662

MX W479 6532 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.680

MX W479 6548 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.718

MX W479 6549 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.739

MX W479 6550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.767

MX W479 6553 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 6554 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.776

MX W479 6555 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 6556 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 6558 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.988

MX W479 6559 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.766

MX W479 6571 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 6572 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.870

MX W479 6573 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.668

MX W479 6574 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.705

MX W479 6577 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.791

MX W479 6578 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 6579 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.622

MX W479 6580 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 6581 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.872

MX W479 6582 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.704

MX W479	6583	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	6596	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	6602	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	6791	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.545
MX W479	6835	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.564
MX W479	6836	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	6868	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	6870	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.516
MX W479	6890	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	6912	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.576
MX W479	6913	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.636
MX W479	6914	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	6915	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.571
MX W479	6917	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	6918	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	7014	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7099	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.534
MX W479	7100	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.759
MX W479	7101	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7103	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	7111	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	7123	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	7126	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.603
MX W479	7127	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	7129	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	7130	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.683
MX W479	7131	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	7132	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.525
MX W479	7195	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.554

MX W479	7196	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	7199	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	7207	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.635
MX W479	7220	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.644
MX W479	7243	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.628
MX W479	7244	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	7246	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.712
MX W479	7252	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.629
MX W479	7253	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	7255	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.681
MX W479	7316	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.757
MX W479	7317	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.558
MX W479	7318	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.570
MX W479	7319	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	7321	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.602
MX W479	7323	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	7324	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.578
MX W479	7326	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.528
MX W479	7340	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.691
MX W479	7343	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.510
MX W479	7345	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	7346	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	7351	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	7363	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	7364	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.215
MX W479	7366	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.516
MX W479	7367	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.612
MX W479	7368	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.799
MX W479	7369	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.518

MX W479 7388 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 7389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 7390 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 7391 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.797

MX W479 7393 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 7395 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 7396 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 7397 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 7399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.656

MX W479 7400 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.686

MX W479 7446 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.641

MX W479 7462 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.761

MX W479 7468 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 7469 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.811

MX W479 7470 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.856

MX W479 7471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.803

MX W479 7484 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 7513 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 7514 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 7531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.594

MX W479 7543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 7585 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.532

MX W479 7586 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.831

MX W479 7587 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

MX W479 7602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 7603 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 7660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.708

MX W479 7661 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 7681 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 7682 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 7683 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.707

MX W479 7684 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.628

MX W479 7753 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.641

MX W479 7755 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.502

MX W479 7794 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 7796 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.032

MX W479 7797 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.212

MX W479 7798 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.800

MX W479 7801 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.637

MX W479 7802 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.906

MX W479 7803 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 7804 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.841

MX W479 7805 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.048

MX W479 7806 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.021

MX W479 7807 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.755

MX W479 7819 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.902

MX W479 7867 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.583

MX W479 7869 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 7873 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 7878 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 7879 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 7891 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 7892 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.532

MX W479 7894 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.509

MX W479 7896 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 7897 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.506

MX W479 7898 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.761

MX W479 7899 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.773

MX W479	7900	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	7901	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.852
MX W479	7941	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	7948	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7989	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.671
MX W479	7990	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	7991	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	7992	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.622
MX W479	7993	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.288
MX W479	7994	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.608
MX W479	7996	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.606
MX W479	8011	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	8041	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.505
MX W479	8042	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.604
MX W479	8062	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.522
MX W479	8067	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.589
MX W479	8086	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.668
MX W479	8087	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.504
MX W479	8088	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.618
MX W479	8089	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	8090	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.585
MX W479	8091	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.523
MX W479	8107	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.613
MX W479	8108	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	8111	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.564
MX W479	8112	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.633
MX W479	8116	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	8117	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.838
MX W479	8118	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.725

MX W479	8119	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.001
MX W479	8120	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.649
MX W479	8190	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.571
MX W479	8191	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.719
MX W479	8192	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	8202	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.572
MX W479	8203	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.563
MX W479	8204	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.511
MX W479	8206	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	8208	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.642
MX W479	8209	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.717
MX W479	8210	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.670
MX W479	8211	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	8213	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.701
MX W479	8214	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.584
MX W479	8215	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.714
MX W479	8216	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.687
MX W479	8229	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.638
MX W479	8230	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	8231	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	8235	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	8238	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.571
MX W479	8301	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.642
MX W479	8304	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.555
MX W479	8306	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.685
MX W479	8307	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	8311	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.550
MX W479	8350	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.596
MX W479	8356	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.511

MX W479	8358	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	8360	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	8427	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.593
MX W479	8428	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.548
MX W479	8442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	8445	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	8447	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	8448	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	8450	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.583
MX W479	8451	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.695
MX W479	8452	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.533
MX W479	8514	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	8553	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.944
MX W479	8567	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.619
MX W479	8570	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.535
MX W479	8571	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	8595	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626
MX W479	8646	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	8660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.567
MX W479	8730	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	8734	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	8735	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.560
MX W479	8760	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** MODEL SETUP OPTIONS SUMMARY ***

** Model Options Selected:

* Model Uses Regulatory DEFAULT Options
* Model Is Setup For Calculation of Average CONCentration Values.
* NO GAS DEPOSITION Data Provided.
* NO PARTICLE DEPOSITION Data Provided.
* Model Uses NO DRY DEPLETION. DDPLETE = F
* Model Uses NO WET DEPLETION. WETDPLT = F
* Stack-tip Downwash.
* Model Accounts for ELEVated Terrain Effects.
* Use Calms Processing Routine.
* Use Missing Data Processing Routine.
* No Exponential Decay.
* Model Uses RURAL Dispersion Only.
* BULKRN - Use BULKRN Delta-T and SolarRad option for SBL in AERMET
* Model Assumes No FLAGPOLE Receptor Heights.
* The User Specified a Pollutant Type of: PARTMATT

**Model Calculates 1 Short Term Average(s) of: 24-HR
and Calculates ANNUAL Averages

**This Run Includes: 1 Source(s); 1 Source Group(s); and 3106 Receptor(s)

with: 1 POINT(s), including

0 POINTCAP(s) and 0 POINTHOR(s)

and: 0 VOLUME source(s)

and: 0 AREA type source(s)

and: 0 LINE source(s)

and: 0 RLINE/RLINEXT source(s)

and: 0 OPENPIT source(s)

and: 0 BUOYANT LINE source(s) with a total of 0 line(s)

and: 0 SWPOINT source(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 22112

**Output Options Selected:

Model Outputs Tables of ANNUAL Averages by Receptor

Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)

Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours

m for Missing Hours

b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 1730.68 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0

Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07

```
             Output Units   = MICROGRAMS/M**3


 **Approximate Storage Requirements of Model =      3.9 MB of RAM.


 **Input Runstream File:         C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi

 **Output Print File:           C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi


 **File for Summary of Results:   C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi

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 *** AERMET - VERSION  22112 ***   ***                                              ***       15:15:40

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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  BULKRN  SigA Data


                          *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***

                                            (1=YES; 0=NO)


      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1


            NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS
INCLUDED IN THE DATA FILE.
```

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

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*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling Met Version: 22112

Profile file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling

Surface format: FREE

Profile format: FREE

Surface station no.: 0 Upper air station no.: 23062

Name: UNKNOWN Name: DENVER WSFO, CO

Year: 2006 Year: 2006

First 24 hours of scalar data

YR MO DY JDY HR H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS WD HT REF TA HT

- -

06 01 01 1 01 -26.0 0.162 -9.000 -9.000 -999. 157. 11.8 0.01 1.89 1.00 4.43 326. 10.0 280.1 2.0

06 01 01 1 02 -58.1 0.325 -9.000 -9.000 -999. 445. 42.5 0.01 1.89 1.00 6.57 310. 10.0 281.4 2.0

06 01 01 1 03 -33.0 0.292 -9.000 -9.000 -999. 380. 54.5 0.01 1.89 1.00 5.72 272. 10.0 281.0 2.0

06 01 01 1 04 -14.9 0.128 -9.000 -9.000 -999. 134. 10.2 0.01 1.89 1.00 3.67 320. 10.0 279.8 2.0

06 01 01 1 05 -13.5 0.124 -9.000 -9.000 -999. 105. 10.1 0.01 1.89 1.00 3.71 337. 10.0 279.0 2.0

06 01 01 1 06 -18.3 0.176 -9.000 -9.000 -999. 177. 21.3 0.01 1.89 1.00 4.29 344. 10.0 278.3 2.0

06 01 01 1 07 -34.9 0.286 -9.000 -9.000 -999. 367. 48.1 0.01 1.89 1.00 5.68 327. 10.0 279.3 2.0

06 01 01 1 08 -39.7 0.440 -9.000 -9.000 -999. 701. 154.4 0.01 1.89 1.00 7.96 307. 10.0 279.8 2.0

06 01 01 1 09 -17.3 0.580 -9.000 -9.000 -999. 1058. 810.0 0.01 1.89 0.43 10.10 287. 10.0 279.4 2.0

06 01 01 1 10 38.3 0.682 0.602 0.005 164. 1349. -597.0 0.01 1.89 0.31 11.67 301. 10.0 280.9 2.0

06 01 01 1 11 83.4 0.893 1.120 0.005 486. 2020. -616.6 0.01 1.89 0.26 15.29 291. 10.0 281.4 2.0

06 01 01 1 12 97.2 0.889 1.326 0.005 693. 2013. -521.8 0.01 1.89 0.24 15.20 293. 10.0 281.3 2.0

06 01 01 1 13 137.5 0.968 1.629 0.005 909. 2279. -476.9 0.01 1.89 0.24 16.54 291. 10.0 281.3 2.0

06 01 01 1 14 122.9 0.912 1.653 0.005 1063. 2100. -445.7 0.01 1.89 0.25 15.56 290. 10.0 281.0 2.0

06 01 01 1 15 67.7 0.795 1.385 0.005 1138. 1727. -536.6 0.01 1.89 0.30 13.59 295. 10.0 280.1 2.0

06 01 01 1 16 0.0 0.715 -9.000 -9.000 -999. 1464. 8888.0 0.01 1.89 0.41 12.34 301. 10.0 279.0 2.0

06 01 01 1 17 0.0 0.673 -9.000 -9.000 -999. 1330. 8888.0 0.01 1.89 0.72 11.62 304. 10.0 277.1 2.0

06 01 01 1 18 0.0 0.546 -9.000 -9.000 -999. 987. 8888.0 0.01 1.89 1.00 9.43 293. 10.0 275.9 2.0

06 01 01 1 19 -46.9 0.630 -9.000 -9.000 -999. 1199. 388.5 0.01 1.89 1.00 11.09 294. 10.0 276.2
2.0

06 01 01 1 20 -49.7 0.337 -9.000 -9.000 -999. 566. 55.9 0.01 1.89 1.00 6.57 310. 10.0 275.6
2.0

06 01 01 1 21 -29.5 0.194 -9.000 -9.000 -999. 235. 17.9 0.01 1.89 1.00 4.69 313. 10.0 274.4
2.0

06 01 01 1 22 -29.9 0.238 -9.000 -9.000 -999. 279. 32.8 0.01 1.89 1.00 5.32 338. 10.0 275.8
2.0

06 01 01 1 23 -15.8 0.134 -9.000 -9.000 -999. 123. 11.1 0.01 1.89 1.00 3.67 241. 10.0 274.5
2.0

06 01 01 1 24 -19.1 0.117 -9.000 -9.000 -999. 96. 6.1 0.01 1.89 1.00 3.98 279. 10.0 273.6
2.0

First hour of profile data

YR MO DY HR HEIGHT F WDIR WSPD AMB_TMP sigmaA sigmaW sigmaV

06 01 01 01 2.0 0 -999. -99.00 280.1 99.0 -99.00 -99.00

06 01 01 01 10.0 0 326. 4.43 282.0 5.4 -99.00 0.42

06 01 01 01 60.0 1 316. 5.10 283.1 6.1 -99.00 0.54

F indicates top of profile (=1) or below (=0)

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*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF PARTMATT IN MICROGRAMS/M**3 **

NETWORK

GROUP ID AVERAGE CONC RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL 1ST HIGHEST VALUE IS 0.00250 AT (499450.00, 4508500.00, 1603.57, 1603.57, 0.00) DC

2ND HIGHEST VALUE IS 0.00244 AT (499450.00, 4508450.00, 1603.33, 1603.33, 0.00) DC

3RD HIGHEST VALUE IS 0.00242 AT (499700.00, 4508150.00, 1610.72, 1610.72, 0.00) DC

4TH HIGHEST VALUE IS 0.00238 AT (499450.00, 4508550.00, 1603.86, 1603.86, 0.00) DC

5TH HIGHEST VALUE IS 0.00235 AT (499750.00, 4508100.00, 1608.86, 1608.86, 0.00) DC

6TH HIGHEST VALUE IS 0.00232 AT (499750.00, 4508150.00, 1610.15, 1610.15, 0.00) DC

7TH HIGHEST VALUE IS 0.00231 AT (499700.00, 4508100.00, 1609.85, 1609.85, 0.00) DC

8TH HIGHEST VALUE IS 0.00230 AT (499400.00, 4508500.00, 1603.34, 1603.34, 0.00) DC

9TH HIGHEST VALUE IS 0.00229 AT (499800.00, 4508100.00, 1606.47, 1606.47, 0.00) DC

10TH HIGHEST VALUE IS 0.00225 AT (499400.00, 4508550.00, 1603.60, 1603.60, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF HIGHEST 24-HR RESULTS ***

** CONC OF PARTMATT IN MICROGRAMS/M**3 **

DATE NETWORK

GROUP ID AVERAGE CONC (YYMMDDHH) RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

- -

ALL HIGH 1ST HIGH VALUE IS 0.04249 ON 06092324: AT (499650.00, 4508050.00, 1606.22, 1606.22, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** AERMOD - VERSION 22112 *** *** Title One *** 05/09/23

*** AERMET - VERSION 22112 *** *** *** 15:15:40

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*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)

A Total of 624 Warning Message(s)

A Total of 142 Informational Message(s)

A Total of 8760 Hours Were Processed

A Total of 1 Calm Hours Identified

A Total of 141 Missing Hours Identified (1.61 Percent)

******** FATAL ERROR MESSAGES ********

*** NONE ***

******** WARNING MESSAGES ********

ME W181 3169 MEOPEN: BULKRN Delta-T & SolarRad option for SBL was used in AERMET

MX W403 3169 PFLCNV: Turbulence data is being used w/o ADJ_U* option SigA Data

MX W479 24 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 29 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 30 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 31 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.712

MX W479 48 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 51 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 52 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 53 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 141 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 143 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.877

MX W479 147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 151 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479	215	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526
MX W479	216	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.734
MX W479	221	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535
MX W479	222	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604
MX W479	243	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.588
MX W479	244	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690
MX W479	291	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.544
MX W479	296	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543
MX W479	308	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.572
MX W479	312	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512
MX W479	313	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.700
MX W479	314	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658
MX W479	316	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.735
MX W479	317	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.795
MX W479	318	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549
MX W479	320	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664
MX W479	321	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644
MX W479	340	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599
MX W479	342	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574
MX W479	344	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561
MX W479	475	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.580
MX W479	479	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684
MX W479	482	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.746
MX W479	483	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542
MX W479	484	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515
MX W479	486	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710
MX W479	487	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.681
MX W479	488	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.697
MX W479	489	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.921

MX W479 509 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 524 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 526 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 527 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 528 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.926

MX W479 529 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.676

MX W479 530 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.808

MX W479 531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.740

MX W479 532 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.537

MX W479 533 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.621

MX W479 534 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.830

MX W479 535 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 554 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 555 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 556 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.743

MX W479 573 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.536

MX W479 574 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.241

MX W479 575 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 576 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.562

MX W479 577 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 578 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.213

MX W479 579 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 580 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 581 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.713

MX W479 582 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.678

MX W479 583 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.869

MX W479 584 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479	595	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603
MX W479	597	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.667
MX W479	599	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.596
MX W479	600	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602
MX W479	601	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561
MX W479	602	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.705
MX W479	605	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535
MX W479	629	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.665
MX W479	632	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.505
MX W479	724	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529
MX W479	725	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592
MX W479	727	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557
MX W479	775	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558
MX W479	822	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620
MX W479	835	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614
MX W479	836	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.517
MX W479	837	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503
MX W479	838	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559
MX W479	839	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607
MX W479	932	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608
MX W479	941	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557
MX W479	1029	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.735
MX W479	1031	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587
MX W479	1034	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539
MX W479	1035	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595
MX W479	1051	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585
MX W479	1052	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500
MX W479	1053	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.884
MX W479	1054	TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.859

MX W479 1055 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.766

MX W479 1056 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.677

MX W479 1060 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 1061 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.639

MX W479 1197 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1198 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.709

MX W479 1199 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 1200 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.530

MX W479 1201 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 1203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.590

MX W479 1204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.726

MX W479 1205 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.750

MX W479 1206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.700

MX W479 1208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1218 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 1219 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.824

MX W479 1220 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 1221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 1222 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 1223 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 1224 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 1225 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 1226 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1227 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.778

MX W479 1228 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 1229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 1231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 1244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 1245 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 1276 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 1277 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 1278 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.729

MX W479 1293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.683

MX W479 1294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.851

MX W479 1295 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1296 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 1297 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 1300 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.634

MX W479 1301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.723

MX W479 1302 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 1303 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 1316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.692

MX W479 1343 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 1344 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.720

MX W479 1345 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1346 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 1347 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 1365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.696

MX W479 1373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 1374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1375 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.622

MX W479	1392	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	1394	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.577
MX W479	1395	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	1396	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.671
MX W479	1397	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	1441	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	1442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	1483	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.647
MX W479	1532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	1537	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	1539	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.613
MX W479	1540	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	1541	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.648
MX W479	1543	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	1566	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.569
MX W479	1661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	1989	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	1990	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	1991	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	1993	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.563
MX W479	1994	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.534
MX W479	2086	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	2088	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	2089	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	2093	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	2228	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.579
MX W479	2229	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.638
MX W479	2230	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.693
MX W479	2231	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.634

MX W479 2232 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.632

MX W479 2234 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 2235 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 2253 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 2254 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 2255 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.755

MX W479 2262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 2348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 2349 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2350 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 2351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2352 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.834

MX W479 2353 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.525

MX W479 2354 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2355 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.560

MX W479 2356 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 2373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.752

MX W479 2374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.569

MX W479 2378 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 2379 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.647

MX W479 2380 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 2382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 2399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.920

MX W479 2421 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2422 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 2424 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 2425 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 2428 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 2429 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.578

MX W479 2430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 2445 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.748

MX W479 2446 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 2447 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

MX W479 2448 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.743

MX W479 2449 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.733

MX W479 2450 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 2468 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2469 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.019

MX W479 2470 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.976

MX W479 2471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.882

MX W479 2472 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 2542 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.826

MX W479 2544 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.734

MX W479 2545 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.629

MX W479 2546 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.769

MX W479 2547 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.656

MX W479 2548 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.679

MX W479 2549 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.853

MX W479 2550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 2615 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 2616 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 2617 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 2639 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 2640 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 2641 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.777

MX W479 2643 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 2645 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479	2646	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	2660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	2663	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.896
MX W479	2664	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	2666	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	2669	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	2670	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.500
MX W479	2763	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.504
MX W479	2783	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.567
MX W479	2786	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.588
MX W479	2788	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.748
MX W479	2789	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	2832	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.501
MX W479	2833	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.506
MX W479	2900	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.635
MX W479	2901	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.673
MX W479	2902	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.730
MX W479	2903	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	2905	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	2906	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.753
MX W479	2907	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	3045	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.549
MX W479	3047	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.554
MX W479	3048	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	3148	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.666
MX W479	3149	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	3168	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.553
MX W479	3169	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	3170	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.601

MX W479 3171 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.796

MX W479 3172 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 3173 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.889

MX W479 3174 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 3239 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 3262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 3263 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 3289 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 3290 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 3291 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 3293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 3294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 3313 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 3316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 3337 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 3338 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.521

MX W479 3339 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 3363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.584

MX W479 3364 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 3365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 3366 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 3382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 3383 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 3384 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.606

MX W479 3453 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 3454 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.711

MX W479 3457 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 3509 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.654

MX W479 3525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479	3671	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.541
MX W479	3674	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	3693	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	3748	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.562
MX W479	3792	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.536
MX W479	3796	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.568
MX W479	4029	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.848
MX W479	4030	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.707
MX W479	4031	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.721
MX W479	4035	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	4036	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.645
MX W479	4037	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	4057	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.502
MX W479	4080	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	4101	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.545
MX W479	4102	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.715
MX W479	4103	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.847
MX W479	4104	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.608
MX W479	4105	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.522
MX W479	4172	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.682
MX W479	4173	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.824
MX W479	4227	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	4297	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	4298	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.590
MX W479	4301	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.582
MX W479	4493	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.603
MX W479	4586	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	4629	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.548
MX W479	4630	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.517

MX W479	4652	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.510
MX W479	4653	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.685
MX W479	4654	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	4656	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	4657	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.903
MX W479	4658	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.975
MX W479	4659	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.826
MX W479	4660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.741
MX W479	4661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.888
MX W479	4677	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.524
MX W479	4679	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.638
MX W479	4680	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	4685	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.731
MX W479	4724	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.589
MX W479	4996	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	5331	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.662
MX W479	5332	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.561
MX W479	5471	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	5472	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.555
MX W479	5475	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.635
MX W479	5614	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.669
MX W479	5615	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.549
MX W479	5621	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.557
MX W479	5622	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.623
MX W479	5790	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.581
MX W479	5804	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.522
MX W479	5805	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.719
MX W479	5809	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.553
MX W479	5812	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.675

MX W479	5813	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.645
MX W479	5814	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.523
MX W479	5979	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	5980	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.546
MX W479	6120	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.528
MX W479	6121	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.501
MX W479	6125	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	6126	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	6142	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	6146	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.582
MX W479	6147	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.573
MX W479	6148	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.779
MX W479	6149	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.883
MX W479	6150	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.860
MX W479	6267	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.540
MX W479	6268	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	6271	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.529
MX W479	6286	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.595
MX W479	6292	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.577
MX W479	6294	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.615
MX W479	6405	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.611
MX W479	6406	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.887
MX W479	6407	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.555
MX W479	6408	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.541
MX W479	6409	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	6410	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.740
MX W479	6411	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	6413	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.513
MX W479	6430	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.587

MX W479	6431	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.841
MX W479	6435	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.023
MX W479	6436	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.778
MX W479	6486	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	6501	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.822
MX W479	6524	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.557
MX W479	6525	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.600
MX W479	6526	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	6528	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.612
MX W479	6529	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	6530	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	6531	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.662
MX W479	6532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.680
MX W479	6548	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.718
MX W479	6549	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.739
MX W479	6550	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.767
MX W479	6553	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.592
MX W479	6554	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.776
MX W479	6555	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.581
MX W479	6556	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	6558	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.988
MX W479	6559	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.766
MX W479	6571	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.523
MX W479	6572	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.870
MX W479	6573	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.668
MX W479	6574	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.705
MX W479	6577	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.791
MX W479	6578	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	6579	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.622

MX W479	6580	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	6581	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.872
MX W479	6582	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.704
MX W479	6583	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	6596	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	6602	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	6791	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.545
MX W479	6835	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.564
MX W479	6836	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	6868	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	6870	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.516
MX W479	6890	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	6912	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.576
MX W479	6913	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.636
MX W479	6914	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	6915	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.571
MX W479	6917	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	6918	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	7014	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7099	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.534
MX W479	7100	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.759
MX W479	7101	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7103	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	7111	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	7123	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	7126	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.603
MX W479	7127	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	7129	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	7130	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.683

MX W479	7131	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	7132	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.525
MX W479	7195	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.554
MX W479	7196	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	7199	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	7207	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.635
MX W479	7220	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.644
MX W479	7243	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.628
MX W479	7244	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	7246	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.712
MX W479	7252	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.629
MX W479	7253	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	7255	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.681
MX W479	7316	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.757
MX W479	7317	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.558
MX W479	7318	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.570
MX W479	7319	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	7321	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.602
MX W479	7323	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	7324	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.578
MX W479	7326	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.528
MX W479	7340	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.691
MX W479	7343	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.510
MX W479	7345	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	7346	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	7351	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	7363	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	7364	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.215
MX W479	7366	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.516

MX W479 7367 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.612

MX W479 7368 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.799

MX W479 7369 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.518

MX W479 7388 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 7389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 7390 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 7391 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.797

MX W479 7393 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 7395 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 7396 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 7397 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 7399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.656

MX W479 7400 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.686

MX W479 7446 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.641

MX W479 7462 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.761

MX W479 7468 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 7469 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.811

MX W479 7470 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.856

MX W479 7471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.803

MX W479 7484 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 7513 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 7514 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 7531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.594

MX W479 7543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 7585 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.532

MX W479 7586 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.831

MX W479 7587 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

MX W479 7602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 7603 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 7660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.708

MX W479 7661 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 7681 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 7682 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 7683 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.707

MX W479 7684 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.628

MX W479 7753 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.641

MX W479 7755 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.502

MX W479 7794 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 7796 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.032

MX W479 7797 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.212

MX W479 7798 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.800

MX W479 7801 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.637

MX W479 7802 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.906

MX W479 7803 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 7804 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.841

MX W479 7805 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.048

MX W479 7806 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.021

MX W479 7807 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.755

MX W479 7819 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.902

MX W479 7867 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.583

MX W479 7869 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 7873 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 7878 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 7879 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 7891 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 7892 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.532

MX W479 7894 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.509

MX W479 7896 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479	7897	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.506
MX W479	7898	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.761
MX W479	7899	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.773
MX W479	7900	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	7901	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.852
MX W479	7941	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	7948	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7989	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.671
MX W479	7990	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	7991	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	7992	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.622
MX W479	7993	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.288
MX W479	7994	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.608
MX W479	7996	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.606
MX W479	8011	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	8041	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.505
MX W479	8042	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.604
MX W479	8062	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.522
MX W479	8067	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.589
MX W479	8086	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.668
MX W479	8087	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.504
MX W479	8088	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.618
MX W479	8089	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	8090	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.585
MX W479	8091	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.523
MX W479	8107	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.613
MX W479	8108	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	8111	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.564
MX W479	8112	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.633

MX W479 8116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 8117 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.838

MX W479 8118 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 8119 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.001

MX W479 8120 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.649

MX W479 8190 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 8191 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 8192 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 8202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.572

MX W479 8203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.563

MX W479 8204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.511

MX W479 8206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 8208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.642

MX W479 8209 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.717

MX W479 8210 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.670

MX W479 8211 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 8213 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.701

MX W479 8214 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.584

MX W479 8215 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.714

MX W479 8216 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.687

MX W479 8229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 8230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 8231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 8235 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 8238 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 8301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.642

MX W479 8304 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 8306 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.685

MX W479 8307 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479	8311	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.550
MX W479	8350	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.596
MX W479	8356	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.511
MX W479	8358	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	8360	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	8427	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.593
MX W479	8428	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.548
MX W479	8442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	8445	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	8447	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	8448	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	8450	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.583
MX W479	8451	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.695
MX W479	8452	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.533
MX W479	8514	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	8553	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.944
MX W479	8567	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.619
MX W479	8570	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.535
MX W479	8571	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	8595	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626
MX W479	8646	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	8660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.567
MX W479	8730	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	8734	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	8735	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.560
MX W479	8760	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** MODEL SETUP OPTIONS SUMMARY ***

** Model Options Selected:

* Model Uses Regulatory DEFAULT Options
* Model Is Setup For Calculation of Average CONCentration Values.
* NO GAS DEPOSITION Data Provided.
* NO PARTICLE DEPOSITION Data Provided.
* Model Uses NO DRY DEPLETION. DDPLETE = F
* Model Uses NO WET DEPLETION. WETDPLT = F
* Stack-tip Downwash.
* Model Accounts for ELEVated Terrain Effects.
* Use Calms Processing Routine.
* Use Missing Data Processing Routine.
* No Exponential Decay.
* Model Uses RURAL Dispersion Only.
* BULKRN - Use BULKRN Delta-T and SolarRad option for SBL in AERMET
* Model Assumes No FLAGPOLE Receptor Heights.
* The User Specified a Pollutant Type of: SULFURDI

**Model Calculates 1 Short Term Average(s) of: 1-HR

**This Run Includes: 1 Source(s); 1 Source Group(s); and 3106 Receptor(s)

with: 1 POINT(s), including

0 POINTCAP(s) and 0 POINTHOR(s)

and: 0 VOLUME source(s)

and: 0 AREA type source(s)

and: 0 LINE source(s)

and: 0 RLINE/RLINEXT source(s)

and: 0 OPENPIT source(s)

and: 0 BUOYANT LINE source(s) with a total of 0 line(s)

and: 0 SWPOINT source(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 22112

**Output Options Selected:

Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)

Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours

m for Missing Hours

b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 1730.68 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0

Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07

Output Units = MICROGRAMS/M**3

```
 **Approximate Storage Requirements of Model =      3.9 MB of RAM.


 **Input Runstream File:         C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi

 **Output Print File:           C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi


 **File for Summary of Results:   C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi

 *** AERMOD - VERSION 22112  ***   *** Title One                                          ***       05/09/23

 *** AERMET - VERSION  22112 ***   ***                                                 ***       15:16:59

                                                                       PAGE   2

 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  BULKRN  SigA Data


                         *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***

                                         (1=YES; 0=NO)


      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1


        NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS
INCLUDED IN THE DATA FILE.
```

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling
Met Version: 22112

Profile file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling

Surface format: FREE

Profile format: FREE

Surface station no.: 0 Upper air station no.: 23062

Name: UNKNOWN Name: DENVER WSFO, CO

Year: 2006 Year: 2006

First 24 hours of scalar data

YR MO DY JDY HR H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS WD HT REF TA HT

- -

06 01 01 1 01 -26.0 0.162 -9.000 -9.000 -999. 157. 11.8 0.01 1.89 1.00 4.43 326. 10.0 280.1 2.0

06 01 01 1 02 -58.1 0.325 -9.000 -9.000 -999. 445. 42.5 0.01 1.89 1.00 6.57 310. 10.0 281.4 2.0

06 01 01 1 03 -33.0 0.292 -9.000 -9.000 -999. 380. 54.5 0.01 1.89 1.00 5.72 272. 10.0 281.0 2.0

06 01 01 1 04 -14.9 0.128 -9.000 -9.000 -999. 134. 10.2 0.01 1.89 1.00 3.67 320. 10.0 279.8 2.0

06 01 01 1 05 -13.5 0.124 -9.000 -9.000 -999. 105. 10.1 0.01 1.89 1.00 3.71 337. 10.0 279.0 2.0

06 01 01 1 06 -18.3 0.176 -9.000 -9.000 -999. 177. 21.3 0.01 1.89 1.00 4.29 344. 10.0 278.3 2.0

06 01 01 1 07 -34.9 0.286 -9.000 -9.000 -999. 367. 48.1 0.01 1.89 1.00 5.68 327. 10.0 279.3 2.0

06 01 01 1 08 -39.7 0.440 -9.000 -9.000 -999. 701. 154.4 0.01 1.89 1.00 7.96 307. 10.0 279.8 2.0

06 01 01 1 09 -17.3 0.580 -9.000 -9.000 -999. 1058. 810.0 0.01 1.89 0.43 10.10 287. 10.0 279.4 2.0

06 01 01 1 10 38.3 0.682 0.602 0.005 164. 1349. -597.0 0.01 1.89 0.31 11.67 301. 10.0 280.9 2.0

06 01 01 1 11 83.4 0.893 1.120 0.005 486. 2020. -616.6 0.01 1.89 0.26 15.29 291. 10.0 281.4 2.0

06 01 01 1 12 97.2 0.889 1.326 0.005 693. 2013. -521.8 0.01 1.89 0.24 15.20 293. 10.0 281.3 2.0

06 01 01 1 13 137.5 0.968 1.629 0.005 909. 2279. -476.9 0.01 1.89 0.24 16.54 291. 10.0 281.3 2.0

06 01 01 1 14 122.9 0.912 1.653 0.005 1063. 2100. -445.7 0.01 1.89 0.25 15.56 290. 10.0 281.0 2.0

06 01 01 1 15 67.7 0.795 1.385 0.005 1138. 1727. -536.6 0.01 1.89 0.30 13.59 295. 10.0 280.1 2.0

06 01 01 1 16 0.0 0.715 -9.000 -9.000 -999. 1464. 8888.0 0.01 1.89 0.41 12.34 301. 10.0 279.0 2.0

06 01 01 1 17 0.0 0.673 -9.000 -9.000 -999. 1330. 8888.0 0.01 1.89 0.72 11.62 304. 10.0 277.1 2.0

06 01 01 1 18 0.0 0.546 -9.000 -9.000 -999. 987. 8888.0 0.01 1.89 1.00 9.43 293. 10.0 275.9 2.0

06 01 01 1 19 -46.9 0.630 -9.000 -9.000 -999. 1199. 388.5 0.01 1.89 1.00 11.09 294. 10.0 276.2 2.0

06 01 01 1 20 -49.7 0.337 -9.000 -9.000 -999. 566. 55.9 0.01 1.89 1.00 6.57 310. 10.0 275.6 2.0

06 01 01 1 21 -29.5 0.194 -9.000 -9.000 -999. 235. 17.9 0.01 1.89 1.00 4.69 313. 10.0 274.4 2.0

06 01 01 1 22 -29.9 0.238 -9.000 -9.000 -999. 279. 32.8 0.01 1.89 1.00 5.32 338. 10.0 275.8 2.0

06 01 01 1 23 -15.8 0.134 -9.000 -9.000 -999. 123. 11.1 0.01 1.89 1.00 3.67 241. 10.0 274.5 2.0

06 01 01 1 24 -19.1 0.117 -9.000 -9.000 -999. 96. 6.1 0.01 1.89 1.00 3.98 279. 10.0 273.6 2.0

First hour of profile data

YR MO DY HR HEIGHT F WDIR WSPD AMB_TMP sigmaA sigmaW sigmaV

06 01 01 01 2.0 0 -999. -99.00 280.1 99.0 -99.00 -99.00

06 01 01 01 10.0 0 326. 4.43 282.0 5.4 -99.00 0.42

06 01 01 01 60.0 1 316. 5.10 283.1 6.1 -99.00 0.54

F indicates top of profile (=1) or below (=0)

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF SULFURDI IN MICROGRAMS/M**3 **

DATE NETWORK

GROUP ID AVERAGE CONC (YYMMDDHH) RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

- -

ALL HIGH 1ST HIGH VALUE IS 7.47378 ON 06102824: AT (499600.00, 4508200.00, 1608.71, 1608.71, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)

A Total of 624 Warning Message(s)

A Total of 142 Informational Message(s)

A Total of 8760 Hours Were Processed

A Total of 1 Calm Hours Identified

A Total of 141 Missing Hours Identified (1.61 Percent)

******** FATAL ERROR MESSAGES ********

*** NONE ***

******** WARNING MESSAGES ********

ME W181 3169 MEOPEN: BULKRN Delta-T & SolarRad option for SBL was used in AERMET

MX W403 3169 PFLCNV: Turbulence data is being used w/o ADJ_U* option SigA Data

MX W479 24 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 29 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 30 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 31 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.712

MX W479 48 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 51 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 52 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 53 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 141 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 143 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.877

MX W479 147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 151 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 215 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 216 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.734

MX W479 221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479	222	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.604
MX W479	243	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.588
MX W479	244	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	291	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	296	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	308	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.572
MX W479	312	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	313	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.700
MX W479	314	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.658
MX W479	316	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.735
MX W479	317	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.795
MX W479	318	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.549
MX W479	320	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	321	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.644
MX W479	340	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	342	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	344	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.561
MX W479	475	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.580
MX W479	479	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	482	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.746
MX W479	483	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	484	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	486	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	487	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.681
MX W479	488	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.697
MX W479	489	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.921
MX W479	509	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.586
MX W479	524	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	525	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519

MX W479 526 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 527 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 528 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.926

MX W479 529 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.676

MX W479 530 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.808

MX W479 531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.740

MX W479 532 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.537

MX W479 533 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.621

MX W479 534 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.830

MX W479 535 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 554 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 555 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 556 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.743

MX W479 573 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.536

MX W479 574 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.241

MX W479 575 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 576 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.562

MX W479 577 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 578 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.213

MX W479 579 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 580 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 581 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.713

MX W479 582 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.678

MX W479 583 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.869

MX W479 584 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 595 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 597 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.667

MX W479 599 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.596

MX W479 600 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 601 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.705

MX W479 605 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 629 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.665

MX W479 632 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.505

MX W479 724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 725 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 727 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 775 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 822 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 835 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 836 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.517

MX W479 837 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 838 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 839 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 932 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 941 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 1029 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.735

MX W479 1031 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479 1034 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 1035 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 1051 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 1052 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500

MX W479 1053 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.884

MX W479 1054 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.859

MX W479 1055 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.766

MX W479 1056 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.677

MX W479 1060 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 1061 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.639

MX W479 1197 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1198 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.709

MX W479 1199 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 1200 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.530

MX W479 1201 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 1203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.590

MX W479 1204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.726

MX W479 1205 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.750

MX W479 1206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.700

MX W479 1208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1218 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 1219 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.824

MX W479 1220 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 1221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 1222 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 1223 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 1224 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 1225 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 1226 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1227 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.778

MX W479 1228 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 1229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 1231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 1244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 1245 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 1276 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 1277 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 1278 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.729

MX W479 1293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.683

MX W479 1294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.851

MX W479 1295 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1296 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 1297 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 1300 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.634

MX W479 1301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.723

MX W479 1302 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 1303 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 1316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.692

MX W479 1343 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 1344 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.720

MX W479 1345 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1346 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 1347 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 1365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.696

MX W479 1373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 1374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1375 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.622

MX W479 1392 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 1394 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.577

MX W479 1395 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479	1396	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.671
MX W479	1397	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	1441	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	1442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	1483	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.647
MX W479	1532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	1537	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	1539	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.613
MX W479	1540	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	1541	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.648
MX W479	1543	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	1566	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.569
MX W479	1661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	1989	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	1990	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	1991	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	1993	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.563
MX W479	1994	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.534
MX W479	2086	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	2088	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	2089	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	2093	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	2228	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.579
MX W479	2229	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.638
MX W479	2230	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.693
MX W479	2231	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.634
MX W479	2232	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.632
MX W479	2234	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	2235	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.736

MX W479	2253	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	2254	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.510
MX W479	2255	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.755
MX W479	2262	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.806
MX W479	2348	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	2349	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.568
MX W479	2350	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	2351	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	2352	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.834
MX W479	2353	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.525
MX W479	2354	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	2355	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.560
MX W479	2356	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.633
MX W479	2373	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.752
MX W479	2374	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.569
MX W479	2378	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	2379	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.647
MX W479	2380	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.671
MX W479	2382	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.698
MX W479	2399	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.920
MX W479	2421	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.620
MX W479	2422	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.727
MX W479	2424	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.582
MX W479	2425	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	2428	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.540
MX W479	2429	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.578
MX W479	2430	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.528
MX W479	2445	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.748
MX W479	2446	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614

MX W479 2447 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

MX W479 2448 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.743

MX W479 2449 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.733

MX W479 2450 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 2468 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2469 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.019

MX W479 2470 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.976

MX W479 2471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.882

MX W479 2472 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 2542 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.826

MX W479 2544 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.734

MX W479 2545 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.629

MX W479 2546 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.769

MX W479 2547 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.656

MX W479 2548 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.679

MX W479 2549 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.853

MX W479 2550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 2615 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 2616 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 2617 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 2639 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 2640 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 2641 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.777

MX W479 2643 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 2645 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 2646 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 2663 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.896

MX W479	2664	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	2666	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	2669	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	2670	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.500
MX W479	2763	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.504
MX W479	2783	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.567
MX W479	2786	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.588
MX W479	2788	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.748
MX W479	2789	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	2832	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.501
MX W479	2833	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.506
MX W479	2900	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.635
MX W479	2901	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.673
MX W479	2902	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.730
MX W479	2903	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	2905	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	2906	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.753
MX W479	2907	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	3045	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.549
MX W479	3047	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.554
MX W479	3048	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	3148	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.666
MX W479	3149	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	3168	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.553
MX W479	3169	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	3170	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.601
MX W479	3171	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.796
MX W479	3172	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	3173	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.889

MX W479	3174	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.658
MX W479	3239	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	3262	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.633
MX W479	3263	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.636
MX W479	3289	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.546
MX W479	3290	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.586
MX W479	3291	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.607
MX W479	3293	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.528
MX W479	3294	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	3313	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	3316	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.595
MX W479	3337	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	3338	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.521
MX W479	3339	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.513
MX W479	3363	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.584
MX W479	3364	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	3365	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.666
MX W479	3366	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.576
MX W479	3382	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.620
MX W479	3383	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.727
MX W479	3384	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.606
MX W479	3453	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.648
MX W479	3454	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.711
MX W479	3457	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	3509	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.654
MX W479	3525	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	3671	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.541
MX W479	3674	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	3693	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520

MX W479	3748	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.562
MX W479	3792	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.536
MX W479	3796	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.568
MX W479	4029	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.848
MX W479	4030	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.707
MX W479	4031	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.721
MX W479	4035	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	4036	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.645
MX W479	4037	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	4057	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.502
MX W479	4080	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	4101	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.545
MX W479	4102	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.715
MX W479	4103	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.847
MX W479	4104	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.608
MX W479	4105	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.522
MX W479	4172	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.682
MX W479	4173	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.824
MX W479	4227	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	4297	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	4298	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.590
MX W479	4301	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.582
MX W479	4493	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.603
MX W479	4586	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	4629	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.548
MX W479	4630	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.517
MX W479	4652	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.510
MX W479	4653	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.685
MX W479	4654	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556

MX W479	4656	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	4657	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.903
MX W479	4658	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.975
MX W479	4659	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.826
MX W479	4660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.741
MX W479	4661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.888
MX W479	4677	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.524
MX W479	4679	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.638
MX W479	4680	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	4685	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.731
MX W479	4724	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.589
MX W479	4996	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	5331	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.662
MX W479	5332	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.561
MX W479	5471	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	5472	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.555
MX W479	5475	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.635
MX W479	5614	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.669
MX W479	5615	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.549
MX W479	5621	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.557
MX W479	5622	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.623
MX W479	5790	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.581
MX W479	5804	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.522
MX W479	5805	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.719
MX W479	5809	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.553
MX W479	5812	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.675
MX W479	5813	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.645
MX W479	5814	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.523
MX W479	5979	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531

MX W479 5980 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 6120 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 6121 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 6125 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 6126 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 6142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 6146 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 6147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

MX W479 6148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

MX W479 6149 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.883

MX W479 6150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.860

MX W479 6267 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 6268 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 6271 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 6286 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 6292 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.577

MX W479 6294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.615

MX W479 6405 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 6406 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.887

MX W479 6407 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 6408 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.541

MX W479 6409 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 6410 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.740

MX W479 6411 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 6413 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 6430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479 6431 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.841

MX W479 6435 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.023

MX W479 6436 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.778

MX W479	6486	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	6501	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.822
MX W479	6524	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.557
MX W479	6525	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.600
MX W479	6526	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	6528	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.612
MX W479	6529	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	6530	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	6531	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.662
MX W479	6532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.680
MX W479	6548	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.718
MX W479	6549	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.739
MX W479	6550	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.767
MX W479	6553	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.592
MX W479	6554	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.776
MX W479	6555	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.581
MX W479	6556	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	6558	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.988
MX W479	6559	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.766
MX W479	6571	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.523
MX W479	6572	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.870
MX W479	6573	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.668
MX W479	6574	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.705
MX W479	6577	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.791
MX W479	6578	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	6579	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.622
MX W479	6580	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	6581	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.872
MX W479	6582	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.704

MX W479	6583	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	6596	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	6602	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	6791	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.545
MX W479	6835	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.564
MX W479	6836	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	6868	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	6870	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.516
MX W479	6890	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	6912	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.576
MX W479	6913	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.636
MX W479	6914	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	6915	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.571
MX W479	6917	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	6918	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	7014	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7099	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.534
MX W479	7100	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.759
MX W479	7101	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7103	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	7111	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	7123	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	7126	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.603
MX W479	7127	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	7129	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	7130	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.683
MX W479	7131	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	7132	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.525
MX W479	7195	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.554

MX W479 7196 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 7199 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.566

MX W479 7207 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 7220 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 7243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.628

MX W479 7244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 7246 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.712

MX W479 7252 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.629

MX W479 7253 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 7255 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.681

MX W479 7316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.757

MX W479 7317 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 7318 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.570

MX W479 7319 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 7321 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 7323 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 7324 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.578

MX W479 7326 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 7340 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.691

MX W479 7343 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 7345 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.627

MX W479 7346 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 7351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 7363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 7364 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.215

MX W479 7366 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 7367 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.612

MX W479 7368 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.799

MX W479 7369 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.518

MX W479 7388 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 7389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 7390 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 7391 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.797

MX W479 7393 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 7395 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 7396 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 7397 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 7399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.656

MX W479 7400 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.686

MX W479 7446 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.641

MX W479 7462 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.761

MX W479 7468 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 7469 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.811

MX W479 7470 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.856

MX W479 7471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.803

MX W479 7484 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 7513 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 7514 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 7531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.594

MX W479 7543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 7585 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.532

MX W479 7586 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.831

MX W479 7587 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

MX W479 7602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 7603 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 7660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.708

MX W479 7661 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 7681 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479	7682	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7683	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.707
MX W479	7684	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.628
MX W479	7753	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.641
MX W479	7755	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.502
MX W479	7794	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.607
MX W479	7796	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.032
MX W479	7797	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.212
MX W479	7798	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.800
MX W479	7801	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.637
MX W479	7802	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.906
MX W479	7803	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	7804	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.841
MX W479	7805	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.048
MX W479	7806	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.021
MX W479	7807	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.755
MX W479	7819	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.902
MX W479	7867	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.583
MX W479	7869	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	7873	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	7878	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.513
MX W479	7879	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	7891	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.666
MX W479	7892	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.532
MX W479	7894	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	7896	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	7897	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.506
MX W479	7898	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.761
MX W479	7899	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.773

MX W479	7900	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	7901	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.852
MX W479	7941	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	7948	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7989	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.671
MX W479	7990	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	7991	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	7992	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.622
MX W479	7993	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.288
MX W479	7994	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.608
MX W479	7996	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.606
MX W479	8011	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	8041	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.505
MX W479	8042	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.604
MX W479	8062	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.522
MX W479	8067	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.589
MX W479	8086	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.668
MX W479	8087	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.504
MX W479	8088	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.618
MX W479	8089	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	8090	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.585
MX W479	8091	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.523
MX W479	8107	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.613
MX W479	8108	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	8111	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.564
MX W479	8112	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.633
MX W479	8116	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	8117	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.838
MX W479	8118	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.725

MX W479	8119	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.001
MX W479	8120	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.649
MX W479	8190	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.571
MX W479	8191	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.719
MX W479	8192	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	8202	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.572
MX W479	8203	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.563
MX W479	8204	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.511
MX W479	8206	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	8208	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.642
MX W479	8209	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.717
MX W479	8210	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.670
MX W479	8211	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	8213	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.701
MX W479	8214	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.584
MX W479	8215	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.714
MX W479	8216	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.687
MX W479	8229	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.638
MX W479	8230	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	8231	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	8235	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	8238	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.571
MX W479	8301	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.642
MX W479	8304	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.555
MX W479	8306	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.685
MX W479	8307	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	8311	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.550
MX W479	8350	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.596
MX W479	8356	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.511

MX W479	8358	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	8360	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	8427	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.593
MX W479	8428	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.548
MX W479	8442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	8445	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	8447	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	8448	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	8450	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.583
MX W479	8451	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.695
MX W479	8452	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.533
MX W479	8514	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	8553	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.944
MX W479	8567	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.619
MX W479	8570	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.535
MX W479	8571	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	8595	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626
MX W479	8646	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	8660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.567
MX W479	8730	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	8734	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	8735	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.560
MX W479	8760	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** MODEL SETUP OPTIONS SUMMARY ***

** Model Options Selected:

* Model Uses Regulatory DEFAULT Options
* Model Is Setup For Calculation of Average CONCentration Values.
* NO GAS DEPOSITION Data Provided.
* NO PARTICLE DEPOSITION Data Provided.
* Model Uses NO DRY DEPLETION. DDPLETE = F
* Model Uses NO WET DEPLETION. WETDPLT = F
* Stack-tip Downwash.
* Model Accounts for ELEVated Terrain Effects.
* Use Calms Processing Routine.
* Use Missing Data Processing Routine.
* No Exponential Decay.
* Model Uses RURAL Dispersion Only.
* BULKRN - Use BULKRN Delta-T and SolarRad option for SBL in AERMET
* Model Assumes No FLAGPOLE Receptor Heights.
* The User Specified a Pollutant Type of: NITRICOX

**Model Calculates 1 Short Term Average(s) of: 1-HR
and Calculates ANNUAL Averages

**This Run Includes: 1 Source(s); 1 Source Group(s); and 3106 Receptor(s)

with: 1 POINT(s), including

0 POINTCAP(s) and 0 POINTHOR(s)

and: 0 VOLUME source(s)

and: 0 AREA type source(s)

and: 0 LINE source(s)

and: 0 RLINE/RLINEXT source(s)

and: 0 OPENPIT source(s)

and: 0 BUOYANT LINE source(s) with a total of 0 line(s)

and: 0 SWPOINT source(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 22112

**Output Options Selected:

Model Outputs Tables of ANNUAL Averages by Receptor

Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)

Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours

m for Missing Hours

b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 1730.68 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0

Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07

```
            Output Units   = MICROGRAMS/M**3


 **Approximate Storage Requirements of Model =      3.9 MB of RAM.


 **Input Runstream File:         C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi

 **Output Print File:           C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi


 **File for Summary of Results:   C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi

 *** AERMOD - VERSION 22112  ***   *** Title One                                   ***       05/09/23

 *** AERMET - VERSION  22112 ***   ***                                             ***       15:16:18

                                                                          PAGE   2

 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  BULKRN  SigA Data


                              *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***

                                            (1=YES; 0=NO)


      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1


          NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS
INCLUDED IN THE DATA FILE.
```

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** AERMOD - VERSION 22112 *** *** Title One *** 05/09/23

*** AERMET - VERSION 22112 *** *** *** 15:16:18

PAGE 3

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling Met Version: 22112

Profile file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling

Surface format: FREE

Profile format: FREE

Surface station no.: 0 Upper air station no.: 23062

Name: UNKNOWN Name: DENVER WSFO, CO

Year: 2006 Year: 2006

First 24 hours of scalar data

YR MO DY JDY HR H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS WD HT REF TA HT

- -

06 01 01 1 01 -26.0 0.162 -9.000 -9.000 -999. 157. 11.8 0.01 1.89 1.00 4.43 326. 10.0 280.1 2.0

06 01 01 1 02 -58.1 0.325 -9.000 -9.000 -999. 445. 42.5 0.01 1.89 1.00 6.57 310. 10.0 281.4
2.0

06 01 01 1 03 -33.0 0.292 -9.000 -9.000 -999. 380. 54.5 0.01 1.89 1.00 5.72 272. 10.0 281.0
2.0

06 01 01 1 04 -14.9 0.128 -9.000 -9.000 -999. 134. 10.2 0.01 1.89 1.00 3.67 320. 10.0 279.8
2.0

06 01 01 1 05 -13.5 0.124 -9.000 -9.000 -999. 105. 10.1 0.01 1.89 1.00 3.71 337. 10.0 279.0
2.0

06 01 01 1 06 -18.3 0.176 -9.000 -9.000 -999. 177. 21.3 0.01 1.89 1.00 4.29 344. 10.0 278.3
2.0

06 01 01 1 07 -34.9 0.286 -9.000 -9.000 -999. 367. 48.1 0.01 1.89 1.00 5.68 327. 10.0 279.3
2.0

06 01 01 1 08 -39.7 0.440 -9.000 -9.000 -999. 701. 154.4 0.01 1.89 1.00 7.96 307. 10.0 279.8
2.0

06 01 01 1 09 -17.3 0.580 -9.000 -9.000 -999. 1058. 810.0 0.01 1.89 0.43 10.10 287. 10.0 279.4
2.0

06 01 01 1 10 38.3 0.682 0.602 0.005 164. 1349. -597.0 0.01 1.89 0.31 11.67 301. 10.0 280.9
2.0

06 01 01 1 11 83.4 0.893 1.120 0.005 486. 2020. -616.6 0.01 1.89 0.26 15.29 291. 10.0 281.4
2.0

06 01 01 1 12 97.2 0.889 1.326 0.005 693. 2013. -521.8 0.01 1.89 0.24 15.20 293. 10.0 281.3
2.0

06 01 01 1 13 137.5 0.968 1.629 0.005 909. 2279. -476.9 0.01 1.89 0.24 16.54 291. 10.0
281.3 2.0

06 01 01 1 14 122.9 0.912 1.653 0.005 1063. 2100. -445.7 0.01 1.89 0.25 15.56 290. 10.0
281.0 2.0

06 01 01 1 15 67.7 0.795 1.385 0.005 1138. 1727. -536.6 0.01 1.89 0.30 13.59 295. 10.0
280.1 2.0

06 01 01 1 16 0.0 0.715 -9.000 -9.000 -999. 1464. 8888.0 0.01 1.89 0.41 12.34 301. 10.0 279.0
2.0

06 01 01 1 17 0.0 0.673 -9.000 -9.000 -999. 1330. 8888.0 0.01 1.89 0.72 11.62 304. 10.0 277.1
2.0

06 01 01 1 18 0.0 0.546 -9.000 -9.000 -999. 987. 8888.0 0.01 1.89 1.00 9.43 293. 10.0 275.9
2.0

06 01 01 1 19 -46.9 0.630 -9.000 -9.000 -999. 1199. 388.5 0.01 1.89 1.00 11.09 294. 10.0 276.2
2.0

06 01 01 1 20 -49.7 0.337 -9.000 -9.000 -999. 566. 55.9 0.01 1.89 1.00 6.57 310. 10.0 275.6
2.0

06 01 01 1 21 -29.5 0.194 -9.000 -9.000 -999. 235. 17.9 0.01 1.89 1.00 4.69 313. 10.0 274.4
2.0

06 01 01 1 22 -29.9 0.238 -9.000 -9.000 -999. 279. 32.8 0.01 1.89 1.00 5.32 338. 10.0 275.8
2.0

06 01 01 1 23 -15.8 0.134 -9.000 -9.000 -999. 123. 11.1 0.01 1.89 1.00 3.67 241. 10.0 274.5
2.0

06 01 01 1 24 -19.1 0.117 -9.000 -9.000 -999. 96. 6.1 0.01 1.89 1.00 3.98 279. 10.0 273.6
2.0

First hour of profile data

YR MO DY HR HEIGHT F WDIR WSPD AMB_TMP sigmaA sigmaW sigmaV

06 01 01 01 2.0 0 -999. -99.00 280.1 99.0 -99.00 -99.00

06 01 01 01 10.0 0 326. 4.43 282.0 5.4 -99.00 0.42

06 01 01 01 60.0 1 316. 5.10 283.1 6.1 -99.00 0.54

F indicates top of profile (=1) or below (=0)

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF NITRICOX IN MICROGRAMS/M**3 **

NETWORK

GROUP ID AVERAGE CONC RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL 1ST HIGHEST VALUE IS 0.10354 AT (499450.00, 4508500.00, 1603.57, 1603.57, 0.00) DC

2ND HIGHEST VALUE IS 0.10127 AT (499450.00, 4508450.00, 1603.33, 1603.33, 0.00) DC

3RD HIGHEST VALUE IS 0.10055 AT (499700.00, 4508150.00, 1610.72, 1610.72, 0.00) DC

4TH HIGHEST VALUE IS 0.09863 AT (499450.00, 4508550.00, 1603.86, 1603.86, 0.00) DC

5TH HIGHEST VALUE IS 0.09763 AT (499750.00, 4508100.00, 1608.86, 1608.86, 0.00) DC

6TH HIGHEST VALUE IS 0.09637 AT (499750.00, 4508150.00, 1610.15, 1610.15, 0.00) DC

7TH HIGHEST VALUE IS 0.09586 AT (499700.00, 4508100.00, 1609.85, 1609.85, 0.00) DC

8TH HIGHEST VALUE IS 0.09537 AT (499400.00, 4508500.00, 1603.34, 1603.34, 0.00) DC

9TH HIGHEST VALUE IS 0.09492 AT (499800.00, 4508100.00, 1606.47, 1606.47, 0.00) DC

10TH HIGHEST VALUE IS 0.09330 AT (499400.00, 4508550.00, 1603.60, 1603.60, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF NITRICOX IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	NETWORK RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL HIGH 1ST HIGH VALUE IS 7.13016 ON 06102824: AT (499600.00, 4508200.00, 1608.71, 1608.71, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)

A Total of 624 Warning Message(s)

A Total of 142 Informational Message(s)

A Total of 8760 Hours Were Processed

A Total of 1 Calm Hours Identified

A Total of 141 Missing Hours Identified (1.61 Percent)

******** FATAL ERROR MESSAGES ********

*** NONE ***

******** WARNING MESSAGES ********

ME W181 3169 MEOPEN: BULKRN Delta-T & SolarRad option for SBL was used in AERMET

MX W403 3169 PFLCNV: Turbulence data is being used w/o ADJ_U* option SigA Data

MX W479 24 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 29 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 30 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 31 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.712

MX W479 48 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 51 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 52 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 53 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 141 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 143 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.877

MX W479 147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 151 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 215 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 216 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.734

MX W479 221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 222 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.588

MX W479 244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 291 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.544

MX W479 296 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 308 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.572

MX W479 312 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 313 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.700

MX W479 314 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.735

MX W479 317 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.795

MX W479 318 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 320 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 321 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 340 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 342 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 344 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 475 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.580

MX W479 479 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 482 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.746

MX W479 483 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 484 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 486 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 487 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.681

MX W479 488 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.697

MX W479 489 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.921

MX W479 509 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 524 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 526 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 527 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 528 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.926

MX W479 529 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.676

MX W479 530 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.808

MX W479 531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.740

MX W479 532 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.537

MX W479 533 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.621

MX W479 534 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.830

MX W479 535 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 554 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 555 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 556 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.743

MX W479 573 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.536

MX W479 574 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.241

MX W479 575 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 576 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.562

MX W479 577 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 578 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.213

MX W479 579 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 580 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 581 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.713

MX W479 582 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.678

MX W479 583 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.869

MX W479 584 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 595 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 597 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.667

MX W479 599 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.596

MX W479 600 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 601 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.705

MX W479 605 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 629 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.665

MX W479 632 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.505

MX W479 724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 725 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 727 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 775 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 822 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 835 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 836 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.517

MX W479 837 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 838 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 839 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 932 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 941 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 1029 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.735

MX W479 1031 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479 1034 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 1035 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 1051 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 1052 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500

MX W479 1053 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.884

MX W479 1054 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.859

MX W479 1055 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.766

MX W479 1056 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.677

MX W479 1060 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 1061 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.639

MX W479 1197 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1198 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.709

MX W479 1199 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 1200 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.530

MX W479 1201 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 1203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.590

MX W479 1204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.726

MX W479 1205 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.750

MX W479 1206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.700

MX W479 1208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1218 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 1219 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.824

MX W479 1220 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 1221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 1222 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 1223 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 1224 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 1225 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 1226 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1227 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.778

MX W479 1228 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 1229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 1231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 1244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 1245 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 1276 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 1277 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 1278 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.729

MX W479 1293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.683

MX W479 1294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.851

MX W479 1295 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1296 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 1297 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 1300 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.634

MX W479 1301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.723

MX W479 1302 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 1303 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 1316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.692

MX W479 1343 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 1344 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.720

MX W479 1345 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1346 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 1347 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 1365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.696

MX W479 1373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 1374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1375 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.622

MX W479	1392	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	1394	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.577
MX W479	1395	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	1396	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.671
MX W479	1397	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	1441	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	1442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	1483	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.647
MX W479	1532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	1537	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	1539	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.613
MX W479	1540	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	1541	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.648
MX W479	1543	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	1566	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.569
MX W479	1661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	1989	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	1990	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	1991	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	1993	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.563
MX W479	1994	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.534
MX W479	2086	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	2088	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	2089	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	2093	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	2228	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.579
MX W479	2229	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.638
MX W479	2230	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.693
MX W479	2231	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.634

MX W479 2232 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.632

MX W479 2234 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 2235 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 2253 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 2254 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 2255 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.755

MX W479 2262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 2348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 2349 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2350 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 2351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2352 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.834

MX W479 2353 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.525

MX W479 2354 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2355 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.560

MX W479 2356 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 2373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.752

MX W479 2374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.569

MX W479 2378 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 2379 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.647

MX W479 2380 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 2382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 2399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.920

MX W479 2421 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2422 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 2424 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 2425 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 2428 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 2429 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.578

MX W479	2430	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.528
MX W479	2445	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.748
MX W479	2446	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	2447	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.779
MX W479	2448	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.743
MX W479	2449	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.733
MX W479	2450	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	2468	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.568
MX W479	2469	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.019
MX W479	2470	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.976
MX W479	2471	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.882
MX W479	2472	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.650
MX W479	2542	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.620
MX W479	2543	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.826
MX W479	2544	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.734
MX W479	2545	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.629
MX W479	2546	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.769
MX W479	2547	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.656
MX W479	2548	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.679
MX W479	2549	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.853
MX W479	2550	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.715
MX W479	2615	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.589
MX W479	2616	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	2617	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	2639	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	2640	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.715
MX W479	2641	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.777
MX W479	2643	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.648
MX W479	2645	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.602

MX W479 2646 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 2663 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.896

MX W479 2664 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 2666 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 2669 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 2670 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500

MX W479 2763 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.504

MX W479 2783 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.567

MX W479 2786 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.588

MX W479 2788 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.748

MX W479 2789 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2832 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 2833 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.506

MX W479 2900 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 2901 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.673

MX W479 2902 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.730

MX W479 2903 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 2905 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 2906 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 2907 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 3045 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 3047 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.554

MX W479 3048 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.508

MX W479 3148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 3149 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 3168 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 3169 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 3170 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.601

MX W479 3171 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.796

MX W479 3172 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 3173 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.889

MX W479 3174 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 3239 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 3262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 3263 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 3289 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 3290 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 3291 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 3293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 3294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 3313 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 3316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 3337 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 3338 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.521

MX W479 3339 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 3363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.584

MX W479 3364 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 3365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 3366 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 3382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 3383 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 3384 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.606

MX W479 3453 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 3454 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.711

MX W479 3457 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 3509 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.654

MX W479 3525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479	3671	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.541
MX W479	3674	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	3693	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	3748	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.562
MX W479	3792	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.536
MX W479	3796	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.568
MX W479	4029	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.848
MX W479	4030	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.707
MX W479	4031	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.721
MX W479	4035	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	4036	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.645
MX W479	4037	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	4057	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.502
MX W479	4080	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	4101	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.545
MX W479	4102	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.715
MX W479	4103	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.847
MX W479	4104	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.608
MX W479	4105	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.522
MX W479	4172	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.682
MX W479	4173	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.824
MX W479	4227	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	4297	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	4298	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.590
MX W479	4301	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.582
MX W479	4493	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.603
MX W479	4586	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	4629	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.548
MX W479	4630	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.517

MX W479 4652 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 4653 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.685

MX W479 4654 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 4656 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 4657 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.903

MX W479 4658 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.975

MX W479 4659 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.826

MX W479 4660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.741

MX W479 4661 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.888

MX W479 4677 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.524

MX W479 4679 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 4680 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.591

MX W479 4685 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 4724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 4996 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.544

MX W479 5331 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.662

MX W479 5332 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 5471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 5472 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 5475 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 5614 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.669

MX W479 5615 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 5621 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 5622 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.623

MX W479 5790 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 5804 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 5805 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 5809 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 5812 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.675

MX W479 5813 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 5814 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 5979 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 5980 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 6120 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 6121 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 6125 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 6126 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 6142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 6146 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 6147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

MX W479 6148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

MX W479 6149 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.883

MX W479 6150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.860

MX W479 6267 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 6268 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 6271 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 6286 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 6292 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.577

MX W479 6294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.615

MX W479 6405 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 6406 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.887

MX W479 6407 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 6408 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.541

MX W479 6409 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 6410 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.740

MX W479 6411 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 6413 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 6430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479	6431	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.841
MX W479	6435	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.023
MX W479	6436	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.778
MX W479	6486	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	6501	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.822
MX W479	6524	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.557
MX W479	6525	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.600
MX W479	6526	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	6528	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.612
MX W479	6529	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	6530	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	6531	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.662
MX W479	6532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.680
MX W479	6548	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.718
MX W479	6549	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.739
MX W479	6550	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.767
MX W479	6553	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.592
MX W479	6554	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.776
MX W479	6555	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.581
MX W479	6556	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	6558	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.988
MX W479	6559	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.766
MX W479	6571	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.523
MX W479	6572	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.870
MX W479	6573	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.668
MX W479	6574	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.705
MX W479	6577	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.791
MX W479	6578	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	6579	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.622

MX W479 6580 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 6581 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.872

MX W479 6582 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.704

MX W479 6583 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 6596 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 6602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 6791 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.545

MX W479 6835 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.564

MX W479 6836 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 6868 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 6870 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 6890 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 6912 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 6913 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 6914 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.591

MX W479 6915 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 6917 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 6918 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 7014 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 7099 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.534

MX W479 7100 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.759

MX W479 7101 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 7103 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 7111 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 7123 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 7126 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 7127 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 7129 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.509

MX W479 7130 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.683

MX W479 7131 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 7132 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.525

MX W479 7195 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.554

MX W479 7196 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 7199 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.566

MX W479 7207 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 7220 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 7243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.628

MX W479 7244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 7246 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.712

MX W479 7252 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.629

MX W479 7253 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 7255 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.681

MX W479 7316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.757

MX W479 7317 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 7318 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.570

MX W479 7319 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 7321 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 7323 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 7324 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.578

MX W479 7326 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 7340 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.691

MX W479 7343 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 7345 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.627

MX W479 7346 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 7351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 7363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 7364 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.215

MX W479 7366 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 7367 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.612

MX W479 7368 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.799

MX W479 7369 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.518

MX W479 7388 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 7389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 7390 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 7391 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.797

MX W479 7393 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 7395 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 7396 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 7397 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 7399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.656

MX W479 7400 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.686

MX W479 7446 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.641

MX W479 7462 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.761

MX W479 7468 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 7469 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.811

MX W479 7470 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.856

MX W479 7471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.803

MX W479 7484 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 7513 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 7514 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 7531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.594

MX W479 7543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 7585 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.532

MX W479 7586 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.831

MX W479 7587 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

MX W479 7602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 7603 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479	7660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.708
MX W479	7661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7681	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	7682	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7683	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.707
MX W479	7684	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.628
MX W479	7753	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.641
MX W479	7755	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.502
MX W479	7794	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.607
MX W479	7796	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.032
MX W479	7797	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.212
MX W479	7798	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.800
MX W479	7801	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.637
MX W479	7802	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.906
MX W479	7803	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	7804	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.841
MX W479	7805	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.048
MX W479	7806	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.021
MX W479	7807	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.755
MX W479	7819	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.902
MX W479	7867	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.583
MX W479	7869	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	7873	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	7878	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.513
MX W479	7879	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	7891	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.666
MX W479	7892	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.532
MX W479	7894	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	7896	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556

MX W479	7897	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.506
MX W479	7898	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.761
MX W479	7899	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.773
MX W479	7900	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	7901	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.852
MX W479	7941	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	7948	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7989	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.671
MX W479	7990	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	7991	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	7992	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.622
MX W479	7993	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.288
MX W479	7994	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.608
MX W479	7996	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.606
MX W479	8011	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	8041	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.505
MX W479	8042	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.604
MX W479	8062	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.522
MX W479	8067	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.589
MX W479	8086	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.668
MX W479	8087	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.504
MX W479	8088	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.618
MX W479	8089	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	8090	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.585
MX W479	8091	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.523
MX W479	8107	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.613
MX W479	8108	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	8111	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.564
MX W479	8112	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.633

MX W479 8116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 8117 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.838

MX W479 8118 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 8119 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.001

MX W479 8120 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.649

MX W479 8190 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 8191 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 8192 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 8202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.572

MX W479 8203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.563

MX W479 8204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.511

MX W479 8206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 8208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.642

MX W479 8209 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.717

MX W479 8210 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.670

MX W479 8211 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 8213 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.701

MX W479 8214 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.584

MX W479 8215 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.714

MX W479 8216 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.687

MX W479 8229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 8230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 8231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 8235 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 8238 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 8301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.642

MX W479 8304 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 8306 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.685

MX W479 8307 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479	8311	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.550
MX W479	8350	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.596
MX W479	8356	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.511
MX W479	8358	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	8360	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	8427	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.593
MX W479	8428	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.548
MX W479	8442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	8445	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	8447	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	8448	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	8450	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.583
MX W479	8451	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.695
MX W479	8452	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.533
MX W479	8514	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	8553	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.944
MX W479	8567	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.619
MX W479	8570	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.535
MX W479	8571	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	8595	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626
MX W479	8646	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	8660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.567
MX W479	8730	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	8734	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	8735	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.560
MX W479	8760	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** MODEL SETUP OPTIONS SUMMARY ***

** Model Options Selected:

* Model Uses Regulatory DEFAULT Options
* Model Is Setup For Calculation of Average CONCentration Values.
* NO GAS DEPOSITION Data Provided.
* NO PARTICLE DEPOSITION Data Provided.
* Model Uses NO DRY DEPLETION. DDPLETE = F
* Model Uses NO WET DEPLETION. WETDPLT = F
* Stack-tip Downwash.
* Model Accounts for ELEVated Terrain Effects.
* Use Calms Processing Routine.
* Use Missing Data Processing Routine.
* No Exponential Decay.
* Model Uses RURAL Dispersion Only.
* BULKRN - Use BULKRN Delta-T and SolarRad option for SBL in AERMET
* Model Assumes No FLAGPOLE Receptor Heights.
* The User Specified a Pollutant Type of: CARBONMO

**Model Calculates 2 Short Term Average(s) of: 1-HR 8-HR

**This Run Includes: 1 Source(s); 1 Source Group(s); and 3106 Receptor(s)

with: 1 POINT(s), including

0 POINTCAP(s) and 0 POINTHOR(s)

and: 0 VOLUME source(s)

and: 0 AREA type source(s)

and: 0 LINE source(s)

and: 0 RLINE/RLINEXT source(s)

and: 0 OPENPIT source(s)

and: 0 BUOYANT LINE source(s) with a total of 0 line(s)

and: 0 SWPOINT source(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 22112

**Output Options Selected:

Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)

Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours

m for Missing Hours

b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 1730.68 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0

Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07

Output Units = MICROGRAMS/M**3

```
 **Approximate Storage Requirements of Model =      3.9 MB of RAM.


 **Input Runstream File:         C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi

 **Output Print File:            C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi


 **File for Summary of Results:   C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi

 *** AERMOD - VERSION 22112  ***   *** Title One                                   ***       05/09/23

 *** AERMET - VERSION  22112 ***   ***                                         ***       15:17:40

                                                                PAGE   2

 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  BULKRN  SigA Data


                         *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***

                                        (1=YES; 0=NO)


      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1


        NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS
INCLUDED IN THE DATA FILE.
```

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling
Met Version: 22112

Profile file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling

Surface format: FREE

Profile format: FREE

Surface station no.: 0 Upper air station no.: 23062

Name: UNKNOWN Name: DENVER WSFO, CO

Year: 2006 Year: 2006

First 24 hours of scalar data

YR MO DY JDY HR H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS WD HT REF TA HT

- -

06 01 01 1 01 -26.0 0.162 -9.000 -9.000 -999. 157. 11.8 0.01 1.89 1.00 4.43 326. 10.0 280.1 2.0

06 01 01 1 02 -58.1 0.325 -9.000 -9.000 -999. 445. 42.5 0.01 1.89 1.00 6.57 310. 10.0 281.4 2.0

06 01 01 1 03 -33.0 0.292 -9.000 -9.000 -999. 380. 54.5 0.01 1.89 1.00 5.72 272. 10.0 281.0 2.0

06 01 01 1 04 -14.9 0.128 -9.000 -9.000 -999. 134. 10.2 0.01 1.89 1.00 3.67 320. 10.0 279.8 2.0

06 01 01 1 05 -13.5 0.124 -9.000 -9.000 -999. 105. 10.1 0.01 1.89 1.00 3.71 337. 10.0 279.0 2.0

06 01 01 1 06 -18.3 0.176 -9.000 -9.000 -999. 177. 21.3 0.01 1.89 1.00 4.29 344. 10.0 278.3 2.0

06 01 01 1 07 -34.9 0.286 -9.000 -9.000 -999. 367. 48.1 0.01 1.89 1.00 5.68 327. 10.0 279.3 2.0

06 01 01 1 08 -39.7 0.440 -9.000 -9.000 -999. 701. 154.4 0.01 1.89 1.00 7.96 307. 10.0 279.8 2.0

06 01 01 1 09 -17.3 0.580 -9.000 -9.000 -999. 1058. 810.0 0.01 1.89 0.43 10.10 287. 10.0 279.4 2.0

06 01 01 1 10 38.3 0.682 0.602 0.005 164. 1349. -597.0 0.01 1.89 0.31 11.67 301. 10.0 280.9 2.0

06 01 01 1 11 83.4 0.893 1.120 0.005 486. 2020. -616.6 0.01 1.89 0.26 15.29 291. 10.0 281.4 2.0

06 01 01 1 12 97.2 0.889 1.326 0.005 693. 2013. -521.8 0.01 1.89 0.24 15.20 293. 10.0 281.3 2.0

06 01 01 1 13 137.5 0.968 1.629 0.005 909. 2279. -476.9 0.01 1.89 0.24 16.54 291. 10.0 281.3 2.0

06 01 01 1 14 122.9 0.912 1.653 0.005 1063. 2100. -445.7 0.01 1.89 0.25 15.56 290. 10.0 281.0 2.0

06 01 01 1 15 67.7 0.795 1.385 0.005 1138. 1727. -536.6 0.01 1.89 0.30 13.59 295. 10.0 280.1 2.0

06 01 01 1 16 0.0 0.715 -9.000 -9.000 -999. 1464. 8888.0 0.01 1.89 0.41 12.34 301. 10.0 279.0 2.0

06 01 01 1 17 0.0 0.673 -9.000 -9.000 -999. 1330. 8888.0 0.01 1.89 0.72 11.62 304. 10.0 277.1 2.0

06 01 01 1 18 0.0 0.546 -9.000 -9.000 -999. 987. 8888.0 0.01 1.89 1.00 9.43 293. 10.0 275.9 2.0

06 01 01 1 19 -46.9 0.630 -9.000 -9.000 -999. 1199. 388.5 0.01 1.89 1.00 11.09 294. 10.0 276.2 2.0

06 01 01 1 20 -49.7 0.337 -9.000 -9.000 -999. 566. 55.9 0.01 1.89 1.00 6.57 310. 10.0 275.6 2.0

06 01 01 1 21 -29.5 0.194 -9.000 -9.000 -999. 235. 17.9 0.01 1.89 1.00 4.69 313. 10.0 274.4 2.0

06 01 01 1 22 -29.9 0.238 -9.000 -9.000 -999. 279. 32.8 0.01 1.89 1.00 5.32 338. 10.0 275.8 2.0

06 01 01 1 23 -15.8 0.134 -9.000 -9.000 -999. 123. 11.1 0.01 1.89 1.00 3.67 241. 10.0 274.5 2.0

06 01 01 1 24 -19.1 0.117 -9.000 -9.000 -999. 96. 6.1 0.01 1.89 1.00 3.98 279. 10.0 273.6 2.0

First hour of profile data

YR MO DY HR HEIGHT F WDIR WSPD AMB_TMP sigmaA sigmaW sigmaV

06 01 01 01 2.0 0 -999. -99.00 280.1 99.0 -99.00 -99.00

06 01 01 01 10.0 0 326. 4.43 282.0 5.4 -99.00 0.42

06 01 01 01 60.0 1 316. 5.10 283.1 6.1 -99.00 0.54

F indicates top of profile (=1) or below (=0)

*** AERMOD - VERSION 22112 *** *** Title One *** 05/09/23

*** AERMET - VERSION 22112 *** *** *** 15:17:40

PAGE 4

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF CARBONMO IN MICROGRAMS/M**3 **

DATE NETWORK

GROUP ID AVERAGE CONC (YYMMDDHH) RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL HIGH 1ST HIGH VALUE IS 16.75157 ON 06102824: AT (499600.00, 4508200.00, 1608.71, 1608.71, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF HIGHEST 8-HR RESULTS ***

** CONC OF CARBONMO IN MICROGRAMS/M**3 **

DATE NETWORK

GROUP ID AVERAGE CONC (YYMMDDHH) RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL HIGH 1ST HIGH VALUE IS 10.33737 ON 06092308: AT (499650.00, 4508050.00, 1606.22, 1606.22, 0.00) DC

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)

A Total of 624 Warning Message(s)

A Total of 142 Informational Message(s)

A Total of 8760 Hours Were Processed

A Total of 1 Calm Hours Identified

A Total of 141 Missing Hours Identified (1.61 Percent)

******** FATAL ERROR MESSAGES ********

*** NONE ***

******** WARNING MESSAGES ********

ME W181 3169 MEOPEN: BULKRN Delta-T & SolarRad option for SBL was used in AERMET

MX W403 3169 PFLCNV: Turbulence data is being used w/o ADJ_U* option SigA Data

MX W479 24 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 29 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 30 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 31 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.712

MX W479 48 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 51 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 52 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 53 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 141 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 143 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.877

MX W479 147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 151 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 215 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 216 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.734

MX W479 221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 222 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.588

MX W479 244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 291 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.544

MX W479 296 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 308 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.572

MX W479 312 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479	313	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.700
MX W479	314	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.658
MX W479	316	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.735
MX W479	317	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.795
MX W479	318	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.549
MX W479	320	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	321	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.644
MX W479	340	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	342	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	344	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.561
MX W479	475	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.580
MX W479	479	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	482	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.746
MX W479	483	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	484	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	486	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	487	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.681
MX W479	488	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.697
MX W479	489	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.921
MX W479	509	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.586
MX W479	524	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	525	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	526	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	527	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	528	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.926
MX W479	529	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.676
MX W479	530	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.808
MX W479	531	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.740
MX W479	532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.537

MX W479 533 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.621

MX W479 534 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.830

MX W479 535 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 554 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 555 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 556 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.743

MX W479 573 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.536

MX W479 574 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.241

MX W479 575 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 576 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.562

MX W479 577 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 578 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.213

MX W479 579 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 580 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 581 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.713

MX W479 582 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.678

MX W479 583 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.869

MX W479 584 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 595 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 597 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.667

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MX W479 600 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 601 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.705

MX W479 605 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 629 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.665

MX W479 632 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.505

MX W479 724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 725 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 727 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 775 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 822 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 835 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 836 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.517

MX W479 837 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 838 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 839 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 932 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 941 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 1029 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.735

MX W479 1031 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479 1034 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 1035 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 1051 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 1052 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500

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MX W479 1054 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.859

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MX W479 1060 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 1061 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.639

MX W479 1197 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1198 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.709

MX W479 1199 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 1200 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.530

MX W479 1201 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 1203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.590

MX W479 1204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.726

MX W479 1205 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.750

MX W479 1206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.700

MX W479 1208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1218 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 1219 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.824

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MX W479 1221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 1222 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 1223 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 1224 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 1225 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 1226 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1227 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.778

MX W479 1228 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 1229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 1231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 1244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 1245 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 1276 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 1277 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 1278 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.729

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MX W479 1295 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

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MX W479 1297 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 1300 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.634

MX W479 1301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.723

MX W479 1302 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 1303 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 1316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.692

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MX W479 1345 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1346 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 1347 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 1365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.696

MX W479 1373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 1374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1375 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.622

MX W479 1392 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 1394 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.577

MX W479 1395 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 1396 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 1397 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 1441 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.508

MX W479 1442 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1483 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.647

MX W479 1532 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 1537 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479	1539	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.613
MX W479	1540	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	1541	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.648
MX W479	1543	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	1566	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.569
MX W479	1661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	1989	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	1990	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	1991	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	1993	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.563
MX W479	1994	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.534
MX W479	2086	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	2088	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	2089	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	2093	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	2228	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.579
MX W479	2229	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.638
MX W479	2230	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.693
MX W479	2231	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.634
MX W479	2232	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.632
MX W479	2234	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	2235	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.736
MX W479	2253	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	2254	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.510
MX W479	2255	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.755
MX W479	2262	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.806
MX W479	2348	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	2349	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.568
MX W479	2350	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690

MX W479 2351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2352 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.834

MX W479 2353 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.525

MX W479 2354 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2355 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.560

MX W479 2356 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 2373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.752

MX W479 2374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.569

MX W479 2378 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 2379 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.647

MX W479 2380 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 2382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 2399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.920

MX W479 2421 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2422 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 2424 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 2425 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 2428 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 2429 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.578

MX W479 2430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 2445 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.748

MX W479 2446 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 2447 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

MX W479 2448 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.743

MX W479 2449 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.733

MX W479 2450 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 2468 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2469 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.019

MX W479 2470 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.976

MX W479	2471	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.882
MX W479	2472	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.650
MX W479	2542	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.620
MX W479	2543	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.826
MX W479	2544	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.734
MX W479	2545	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.629
MX W479	2546	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.769
MX W479	2547	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.656
MX W479	2548	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.679
MX W479	2549	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.853
MX W479	2550	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.715
MX W479	2615	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.589
MX W479	2616	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	2617	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	2639	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	2640	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.715
MX W479	2641	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.777
MX W479	2643	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.648
MX W479	2645	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.602
MX W479	2646	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	2660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	2663	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.896
MX W479	2664	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	2666	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	2669	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	2670	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.500
MX W479	2763	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.504
MX W479	2783	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.567
MX W479	2786	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.588

MX W479	2788	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.748
MX W479	2789	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	2832	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.501
MX W479	2833	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.506
MX W479	2900	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.635
MX W479	2901	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.673
MX W479	2902	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.730
MX W479	2903	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	2905	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	2906	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.753
MX W479	2907	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	3045	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.549
MX W479	3047	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.554
MX W479	3048	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	3148	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.666
MX W479	3149	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	3168	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.553
MX W479	3169	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	3170	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.601
MX W479	3171	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.796
MX W479	3172	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	3173	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.889
MX W479	3174	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.658
MX W479	3239	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	3262	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.633
MX W479	3263	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.636
MX W479	3289	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.546
MX W479	3290	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.586
MX W479	3291	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.607

MX W479	3293	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.528
MX W479	3294	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	3313	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	3316	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.595
MX W479	3337	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	3338	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.521
MX W479	3339	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.513
MX W479	3363	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.584
MX W479	3364	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	3365	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.666
MX W479	3366	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.576
MX W479	3382	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.620
MX W479	3383	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.727
MX W479	3384	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.606
MX W479	3453	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.648
MX W479	3454	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.711
MX W479	3457	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	3509	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.654
MX W479	3525	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	3671	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.541
MX W479	3674	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	3693	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	3748	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.562
MX W479	3792	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.536
MX W479	3796	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.568
MX W479	4029	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.848
MX W479	4030	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.707
MX W479	4031	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.721
MX W479	4035	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520

MX W479	4036	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.645
MX W479	4037	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	4057	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.502
MX W479	4080	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	4101	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.545
MX W479	4102	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.715
MX W479	4103	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.847
MX W479	4104	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.608
MX W479	4105	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.522
MX W479	4172	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.682
MX W479	4173	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.824
MX W479	4227	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	4297	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	4298	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.590
MX W479	4301	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.582
MX W479	4493	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.603
MX W479	4586	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	4629	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.548
MX W479	4630	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.517
MX W479	4652	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.510
MX W479	4653	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.685
MX W479	4654	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	4656	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	4657	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.903
MX W479	4658	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.975
MX W479	4659	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.826
MX W479	4660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.741
MX W479	4661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.888
MX W479	4677	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.524

MX W479 4679 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 4680 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.591

MX W479 4685 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 4724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 4996 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.544

MX W479 5331 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.662

MX W479 5332 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 5471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 5472 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 5475 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 5614 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.669

MX W479 5615 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 5621 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 5622 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.623

MX W479 5790 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 5804 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 5805 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 5809 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 5812 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.675

MX W479 5813 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 5814 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 5979 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 5980 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 6120 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 6121 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 6125 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 6126 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 6142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 6146 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 6147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

MX W479 6148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

MX W479 6149 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.883

MX W479 6150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.860

MX W479 6267 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 6268 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 6271 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 6286 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 6292 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.577

MX W479 6294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.615

MX W479 6405 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 6406 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.887

MX W479 6407 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 6408 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.541

MX W479 6409 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 6410 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.740

MX W479 6411 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 6413 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 6430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479 6431 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.841

MX W479 6435 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.023

MX W479 6436 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.778

MX W479 6486 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 6501 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.822

MX W479 6524 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 6525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.600

MX W479 6526 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.566

MX W479 6528 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.612

MX W479 6529 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.627

MX W479	6530	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	6531	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.662
MX W479	6532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.680
MX W479	6548	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.718
MX W479	6549	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.739
MX W479	6550	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.767
MX W479	6553	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.592
MX W479	6554	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.776
MX W479	6555	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.581
MX W479	6556	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	6558	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.988
MX W479	6559	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.766
MX W479	6571	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.523
MX W479	6572	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.870
MX W479	6573	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.668
MX W479	6574	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.705
MX W479	6577	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.791
MX W479	6578	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	6579	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.622
MX W479	6580	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	6581	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.872
MX W479	6582	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.704
MX W479	6583	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	6596	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	6602	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	6791	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.545
MX W479	6835	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.564
MX W479	6836	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	6868	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512

MX W479	6870	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.516
MX W479	6890	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	6912	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.576
MX W479	6913	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.636
MX W479	6914	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	6915	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.571
MX W479	6917	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	6918	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	7014	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7099	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.534
MX W479	7100	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.759
MX W479	7101	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7103	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	7111	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	7123	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	7126	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.603
MX W479	7127	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	7129	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	7130	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.683
MX W479	7131	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	7132	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.525
MX W479	7195	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.554
MX W479	7196	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	7199	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	7207	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.635
MX W479	7220	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.644
MX W479	7243	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.628
MX W479	7244	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	7246	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.712

MX W479	7252	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.629
MX W479	7253	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	7255	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.681
MX W479	7316	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.757
MX W479	7317	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.558
MX W479	7318	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.570
MX W479	7319	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	7321	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.602
MX W479	7323	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	7324	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.578
MX W479	7326	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.528
MX W479	7340	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.691
MX W479	7343	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.510
MX W479	7345	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	7346	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	7351	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	7363	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	7364	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.215
MX W479	7366	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.516
MX W479	7367	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.612
MX W479	7368	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.799
MX W479	7369	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.518
MX W479	7388	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.589
MX W479	7389	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.553
MX W479	7390	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.725
MX W479	7391	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.797
MX W479	7393	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7395	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	7396	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559

MX W479	7397	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	7399	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.656
MX W479	7400	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.686
MX W479	7446	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.641
MX W479	7462	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.761
MX W479	7468	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.636
MX W479	7469	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.811
MX W479	7470	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.856
MX W479	7471	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.803
MX W479	7484	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.540
MX W479	7513	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.558
MX W479	7514	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.585
MX W479	7531	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.594
MX W479	7543	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	7585	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.532
MX W479	7586	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.831
MX W479	7587	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.573
MX W479	7602	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.586
MX W479	7603	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.561
MX W479	7660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.708
MX W479	7661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7681	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	7682	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7683	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.707
MX W479	7684	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.628
MX W479	7753	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.641
MX W479	7755	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.502
MX W479	7794	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.607
MX W479	7796	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.032

MX W479 7797 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.212

MX W479 7798 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.800

MX W479 7801 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.637

MX W479 7802 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.906

MX W479 7803 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 7804 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.841

MX W479 7805 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.048

MX W479 7806 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.021

MX W479 7807 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.755

MX W479 7819 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.902

MX W479 7867 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.583

MX W479 7869 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 7873 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 7878 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 7879 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 7891 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 7892 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.532

MX W479 7894 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.509

MX W479 7896 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 7897 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.506

MX W479 7898 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.761

MX W479 7899 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.773

MX W479 7900 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 7901 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.852

MX W479 7941 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 7948 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 7989 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 7990 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 7991 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.627

MX W479 7992 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.622

MX W479 7993 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.288

MX W479 7994 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 7996 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.606

MX W479 8011 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 8041 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.505

MX W479 8042 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 8062 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 8067 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 8086 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 8087 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.504

MX W479 8088 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.618

MX W479 8089 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 8090 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 8091 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 8107 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 8108 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 8111 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.564

MX W479 8112 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 8116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 8117 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.838

MX W479 8118 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 8119 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.001

MX W479 8120 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.649

MX W479 8190 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 8191 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 8192 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 8202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.572

MX W479 8203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.563

MX W479	8204	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.511
MX W479	8206	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	8208	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.642
MX W479	8209	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.717
MX W479	8210	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.670
MX W479	8211	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	8213	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.701
MX W479	8214	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.584
MX W479	8215	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.714
MX W479	8216	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.687
MX W479	8229	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.638
MX W479	8230	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	8231	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	8235	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	8238	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.571
MX W479	8301	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.642
MX W479	8304	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.555
MX W479	8306	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.685
MX W479	8307	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	8311	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.550
MX W479	8350	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.596
MX W479	8356	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.511
MX W479	8358	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	8360	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	8427	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.593
MX W479	8428	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.548
MX W479	8442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	8445	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	8447	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643

MX W479	8448	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	8450	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.583
MX W479	8451	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.695
MX W479	8452	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.533
MX W479	8514	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	8553	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.944
MX W479	8567	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.619
MX W479	8570	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.535
MX W479	8571	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	8595	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626
MX W479	8646	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	8660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.567
MX W479	8730	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	8734	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	8735	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.560
MX W479	8760	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** MODEL SETUP OPTIONS SUMMARY ***

** Model Options Selected:

* Model Uses Regulatory DEFAULT Options
* Model Is Setup For Calculation of Average CONCentration Values.
* NO GAS DEPOSITION Data Provided.
* NO PARTICLE DEPOSITION Data Provided.
* Model Uses NO DRY DEPLETION. DDPLETE = F
* Model Uses NO WET DEPLETION. WETDPLT = F
* Stack-tip Downwash.
* Model Accounts for ELEVated Terrain Effects.
* Use Calms Processing Routine.
* Use Missing Data Processing Routine.
* No Exponential Decay.
* Model Uses RURAL Dispersion Only.
* BULKRN - Use BULKRN Delta-T and SolarRad option for SBL in AERMET
* Model Assumes No FLAGPOLE Receptor Heights.
* The User Specified a Pollutant Type of: VOC

**Model Calculates 1 Short Term Average(s) of: 1-HR
and Calculates ANNUAL Averages

**This Run Includes: 1 Source(s); 1 Source Group(s); and 3106 Receptor(s)

with: 1 POINT(s), including

0 POINTCAP(s) and 0 POINTHOR(s)

and: 0 VOLUME source(s)

and: 0 AREA type source(s)

and: 0 LINE source(s)

and: 0 RLINE/RLINEXT source(s)

and: 0 OPENPIT source(s)

and: 0 BUOYANT LINE source(s) with a total of 0 line(s)

and: 0 SWPOINT source(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 22112

**Output Options Selected:

Model Outputs Tables of ANNUAL Averages by Receptor

Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)

Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours

m for Missing Hours

b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 1730.68 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0

Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07

```
          Output Units   = MICROGRAMS/M**3


 **Approximate Storage Requirements of Model =      3.9 MB of RAM.


 **Input Runstream File:          C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi

 **Output Print File:            C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi


 **File for Summary of Results:   C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi

 *** AERMOD - VERSION 22112  ***   *** Title One                                    ***       05/09/23

 *** AERMET - VERSION  22112 ***   ***                                              ***       15:25:11

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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  BULKRN  SigA Data


                        *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***

                                     (1=YES; 0=NO)


     1111111111 1111111111 1111111111 1111111111 1111111111

     1111111111 1111111111 1111111111 1111111111 1111111111

     1111111111 1111111111 1111111111 1111111111 1111111111

     1111111111 1111111111 1111111111 1111111111 1111111111

     1111111111 1111111111 1111111111 1111111111 1111111111

     1111111111 1111111111 1111111111 1111111111 1111111111

     1111111111 1111111111 1111111111 1111111111 1111111111

     1111111111 11111


          NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS
INCLUDED IN THE DATA FILE.
```

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

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*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling Met Version: 22112

Profile file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling

Surface format: FREE

Profile format: FREE

Surface station no.: 0 Upper air station no.: 23062

Name: UNKNOWN Name: DENVER WSFO, CO

Year: 2006 Year: 2006

First 24 hours of scalar data

YR MO DY JDY HR H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS WD HT REF TA HT

- -

06 01 01 1 01 -26.0 0.162 -9.000 -9.000 -999. 157. 11.8 0.01 1.89 1.00 4.43 326. 10.0 280.1 2.0

06 01 01 1 02 -58.1 0.325 -9.000 -9.000 -999. 445. 42.5 0.01 1.89 1.00 6.57 310. 10.0 281.4 2.0

06 01 01 1 03 -33.0 0.292 -9.000 -9.000 -999. 380. 54.5 0.01 1.89 1.00 5.72 272. 10.0 281.0 2.0

06 01 01 1 04 -14.9 0.128 -9.000 -9.000 -999. 134. 10.2 0.01 1.89 1.00 3.67 320. 10.0 279.8 2.0

06 01 01 1 05 -13.5 0.124 -9.000 -9.000 -999. 105. 10.1 0.01 1.89 1.00 3.71 337. 10.0 279.0 2.0

06 01 01 1 06 -18.3 0.176 -9.000 -9.000 -999. 177. 21.3 0.01 1.89 1.00 4.29 344. 10.0 278.3 2.0

06 01 01 1 07 -34.9 0.286 -9.000 -9.000 -999. 367. 48.1 0.01 1.89 1.00 5.68 327. 10.0 279.3 2.0

06 01 01 1 08 -39.7 0.440 -9.000 -9.000 -999. 701. 154.4 0.01 1.89 1.00 7.96 307. 10.0 279.8 2.0

06 01 01 1 09 -17.3 0.580 -9.000 -9.000 -999. 1058. 810.0 0.01 1.89 0.43 10.10 287. 10.0 279.4 2.0

06 01 01 1 10 38.3 0.682 0.602 0.005 164. 1349. -597.0 0.01 1.89 0.31 11.67 301. 10.0 280.9 2.0

06 01 01 1 11 83.4 0.893 1.120 0.005 486. 2020. -616.6 0.01 1.89 0.26 15.29 291. 10.0 281.4 2.0

06 01 01 1 12 97.2 0.889 1.326 0.005 693. 2013. -521.8 0.01 1.89 0.24 15.20 293. 10.0 281.3 2.0

06 01 01 1 13 137.5 0.968 1.629 0.005 909. 2279. -476.9 0.01 1.89 0.24 16.54 291. 10.0 281.3 2.0

06 01 01 1 14 122.9 0.912 1.653 0.005 1063. 2100. -445.7 0.01 1.89 0.25 15.56 290. 10.0 281.0 2.0

06 01 01 1 15 67.7 0.795 1.385 0.005 1138. 1727. -536.6 0.01 1.89 0.30 13.59 295. 10.0 280.1 2.0

06 01 01 1 16 0.0 0.715 -9.000 -9.000 -999. 1464. 8888.0 0.01 1.89 0.41 12.34 301. 10.0 279.0 2.0

06 01 01 1 17 0.0 0.673 -9.000 -9.000 -999. 1330. 8888.0 0.01 1.89 0.72 11.62 304. 10.0 277.1 2.0

06 01 01 1 18 0.0 0.546 -9.000 -9.000 -999. 987. 8888.0 0.01 1.89 1.00 9.43 293. 10.0 275.9 2.0

06 01 01 1 19 -46.9 0.630 -9.000 -9.000 -999. 1199. 388.5 0.01 1.89 1.00 11.09 294. 10.0 276.2
2.0

06 01 01 1 20 -49.7 0.337 -9.000 -9.000 -999. 566. 55.9 0.01 1.89 1.00 6.57 310. 10.0 275.6
2.0

06 01 01 1 21 -29.5 0.194 -9.000 -9.000 -999. 235. 17.9 0.01 1.89 1.00 4.69 313. 10.0 274.4
2.0

06 01 01 1 22 -29.9 0.238 -9.000 -9.000 -999. 279. 32.8 0.01 1.89 1.00 5.32 338. 10.0 275.8
2.0

06 01 01 1 23 -15.8 0.134 -9.000 -9.000 -999. 123. 11.1 0.01 1.89 1.00 3.67 241. 10.0 274.5
2.0

06 01 01 1 24 -19.1 0.117 -9.000 -9.000 -999. 96. 6.1 0.01 1.89 1.00 3.98 279. 10.0 273.6
2.0

First hour of profile data

YR MO DY HR HEIGHT F WDIR WSPD AMB_TMP sigmaA sigmaW sigmaV

06 01 01 01 2.0 0 -999. -99.00 280.1 99.0 -99.00 -99.00

06 01 01 01 10.0 0 326. 4.43 282.0 5.4 -99.00 0.42

06 01 01 01 60.0 1 316. 5.10 283.1 6.1 -99.00 0.54

F indicates top of profile (=1) or below (=0)

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*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF VOC IN MICROGRAMS/M**3 **

NETWORK

GROUP ID AVERAGE CONC RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL 1ST HIGHEST VALUE IS 0.05988 AT (499450.00, 4508500.00, 1603.57, 1603.57, 0.00) DC

2ND HIGHEST VALUE IS 0.05857 AT (499450.00, 4508450.00, 1603.33, 1603.33, 0.00) DC

3RD HIGHEST VALUE IS 0.05815 AT (499700.00, 4508150.00, 1610.72, 1610.72, 0.00) DC

4TH HIGHEST VALUE IS 0.05704 AT (499450.00, 4508550.00, 1603.86, 1603.86, 0.00) DC

5TH HIGHEST VALUE IS 0.05646 AT (499750.00, 4508100.00, 1608.86, 1608.86, 0.00) DC

6TH HIGHEST VALUE IS 0.05573 AT (499750.00, 4508150.00, 1610.15, 1610.15, 0.00) DC

7TH HIGHEST VALUE IS 0.05544 AT (499700.00, 4508100.00, 1609.85, 1609.85, 0.00) DC

8TH HIGHEST VALUE IS 0.05515 AT (499400.00, 4508500.00, 1603.34, 1603.34, 0.00) DC

9TH HIGHEST VALUE IS 0.05489 AT (499800.00, 4508100.00, 1606.47, 1606.47, 0.00) DC

10TH HIGHEST VALUE IS 0.05396 AT (499400.00, 4508550.00, 1603.60, 1603.60, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF VOC IN MICROGRAMS/M**3 **

DATE NETWORK

GROUP ID AVERAGE CONC (YYMMDDHH) RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

- -

ALL HIGH 1ST HIGH VALUE IS 4.12346 ON 06102824: AT (499600.00, 4508200.00, 1608.71, 1608.71, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** AERMOD - VERSION 22112 *** *** Title One *** 05/09/23

*** AERMET - VERSION 22112 *** *** *** 15:25:11

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*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)

A Total of 624 Warning Message(s)

A Total of 142 Informational Message(s)

A Total of 8760 Hours Were Processed

A Total of 1 Calm Hours Identified

A Total of 141 Missing Hours Identified (1.61 Percent)

******** FATAL ERROR MESSAGES ********

*** NONE ***

******** WARNING MESSAGES ********

ME W181 3169 MEOPEN: BULKRN Delta-T & SolarRad option for SBL was used in AERMET

MX W403 3169 PFLCNV: Turbulence data is being used w/o ADJ_U* option SigA Data

MX W479 24 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 29 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 30 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 31 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.712

MX W479 48 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 51 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 52 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 53 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 141 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 143 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.877

MX W479 147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 151 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479	215	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	216	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.734
MX W479	221	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.535
MX W479	222	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.604
MX W479	243	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.588
MX W479	244	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	291	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	296	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	308	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.572
MX W479	312	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	313	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.700
MX W479	314	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.658
MX W479	316	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.735
MX W479	317	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.795
MX W479	318	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.549
MX W479	320	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	321	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.644
MX W479	340	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	342	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	344	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.561
MX W479	475	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.580
MX W479	479	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	482	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.746
MX W479	483	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	484	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	486	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	487	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.681
MX W479	488	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.697
MX W479	489	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.921

MX W479	509	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.586
MX W479	524	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	525	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	526	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	527	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	528	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.926
MX W479	529	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.676
MX W479	530	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.808
MX W479	531	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.740
MX W479	532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.537
MX W479	533	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.621
MX W479	534	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.830
MX W479	535	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.510
MX W479	550	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.611
MX W479	554	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.558
MX W479	555	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.719
MX W479	556	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.743
MX W479	573	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.536
MX W479	574	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.241
MX W479	575	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.721
MX W479	576	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.562
MX W479	577	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	578	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.213
MX W479	579	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.698
MX W479	580	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	581	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.713
MX W479	582	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.678
MX W479	583	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.869
MX W479	584	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.806

MX W479	595	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.603
MX W479	597	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.667
MX W479	599	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.596
MX W479	600	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.602
MX W479	601	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.561
MX W479	602	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.705
MX W479	605	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.535
MX W479	629	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.665
MX W479	632	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.505
MX W479	724	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.529
MX W479	725	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.592
MX W479	727	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.557
MX W479	775	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.558
MX W479	822	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.620
MX W479	835	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	836	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.517
MX W479	837	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	838	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	839	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.607
MX W479	932	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.608
MX W479	941	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.557
MX W479	1029	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.735
MX W479	1031	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.587
MX W479	1034	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	1035	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.595
MX W479	1051	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.585
MX W479	1052	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.500
MX W479	1053	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.884
MX W479	1054	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.859

MX W479 1055 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.766

MX W479 1056 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.677

MX W479 1060 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 1061 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.639

MX W479 1197 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1198 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.709

MX W479 1199 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 1200 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.530

MX W479 1201 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 1203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.590

MX W479 1204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.726

MX W479 1205 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.750

MX W479 1206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.700

MX W479 1208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1218 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 1219 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.824

MX W479 1220 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 1221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 1222 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 1223 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 1224 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 1225 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 1226 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1227 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.778

MX W479 1228 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 1229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 1231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 1244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 1245 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 1276 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 1277 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 1278 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.729

MX W479 1293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.683

MX W479 1294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.851

MX W479 1295 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1296 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 1297 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 1300 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.634

MX W479 1301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.723

MX W479 1302 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 1303 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 1316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.692

MX W479 1343 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 1344 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.720

MX W479 1345 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1346 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 1347 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 1365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.696

MX W479 1373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 1374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1375 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.622

MX W479 1392 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 1394 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.577

MX W479 1395 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 1396 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 1397 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 1441 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.508

MX W479 1442 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1483 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.647

MX W479 1532 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 1537 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1539 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 1540 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 1541 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 1543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 1566 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.569

MX W479 1661 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 1989 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 1990 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 1991 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.509

MX W479 1993 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.563

MX W479 1994 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.534

MX W479 2086 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 2088 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 2089 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 2093 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 2228 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.579

MX W479 2229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 2230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.693

MX W479 2231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.634

MX W479 2232 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.632

MX W479 2234 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 2235 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 2253 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 2254 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 2255 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.755

MX W479 2262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 2348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 2349 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2350 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 2351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2352 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.834

MX W479 2353 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.525

MX W479 2354 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2355 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.560

MX W479 2356 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 2373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.752

MX W479 2374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.569

MX W479 2378 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 2379 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.647

MX W479 2380 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 2382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 2399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.920

MX W479 2421 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2422 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 2424 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 2425 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 2428 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 2429 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.578

MX W479 2430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 2445 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.748

MX W479 2446 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 2447 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

MX W479 2448 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.743

MX W479 2449 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.733

MX W479 2450 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 2468 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2469 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.019

MX W479 2470 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.976

MX W479 2471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.882

MX W479 2472 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 2542 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.826

MX W479 2544 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.734

MX W479 2545 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.629

MX W479 2546 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.769

MX W479 2547 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.656

MX W479 2548 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.679

MX W479 2549 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.853

MX W479 2550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 2615 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 2616 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 2617 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 2639 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 2640 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 2641 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.777

MX W479 2643 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 2645 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 2646 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 2663 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.896

MX W479 2664 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 2666 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 2669 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 2670 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500

MX W479 2763 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.504

MX W479 2783 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.567

MX W479 2786 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.588

MX W479 2788 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.748

MX W479 2789 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2832 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 2833 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.506

MX W479 2900 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 2901 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.673

MX W479 2902 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.730

MX W479 2903 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 2905 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 2906 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 2907 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 3045 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 3047 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.554

MX W479 3048 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.508

MX W479 3148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 3149 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 3168 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 3169 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 3170 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.601

MX W479 3171 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.796

MX W479 3172 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 3173 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.889

MX W479 3174 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 3239 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 3262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 3263 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 3289 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 3290 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 3291 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 3293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 3294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 3313 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 3316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 3337 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 3338 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.521

MX W479 3339 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 3363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.584

MX W479 3364 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 3365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 3366 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 3382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 3383 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 3384 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.606

MX W479 3453 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 3454 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.711

MX W479 3457 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 3509 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.654

MX W479 3525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479	3671	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.541
MX W479	3674	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	3693	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	3748	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.562
MX W479	3792	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.536
MX W479	3796	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.568
MX W479	4029	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.848
MX W479	4030	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.707
MX W479	4031	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.721
MX W479	4035	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	4036	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.645
MX W479	4037	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	4057	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.502
MX W479	4080	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	4101	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.545
MX W479	4102	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.715
MX W479	4103	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.847
MX W479	4104	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.608
MX W479	4105	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.522
MX W479	4172	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.682
MX W479	4173	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.824
MX W479	4227	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	4297	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	4298	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.590
MX W479	4301	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.582
MX W479	4493	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.603
MX W479	4586	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	4629	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.548
MX W479	4630	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.517

MX W479 4652 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 4653 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.685

MX W479 4654 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 4656 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 4657 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.903

MX W479 4658 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.975

MX W479 4659 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.826

MX W479 4660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.741

MX W479 4661 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.888

MX W479 4677 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.524

MX W479 4679 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 4680 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.591

MX W479 4685 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 4724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 4996 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.544

MX W479 5331 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.662

MX W479 5332 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 5471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 5472 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 5475 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 5614 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.669

MX W479 5615 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 5621 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 5622 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.623

MX W479 5790 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 5804 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 5805 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 5809 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 5812 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.675

MX W479 5813 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 5814 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 5979 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 5980 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 6120 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 6121 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 6125 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 6126 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 6142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 6146 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 6147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

MX W479 6148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

MX W479 6149 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.883

MX W479 6150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.860

MX W479 6267 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 6268 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 6271 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 6286 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 6292 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.577

MX W479 6294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.615

MX W479 6405 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 6406 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.887

MX W479 6407 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 6408 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.541

MX W479 6409 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 6410 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.740

MX W479 6411 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 6413 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 6430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479	6431	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.841
MX W479	6435	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.023
MX W479	6436	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.778
MX W479	6486	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	6501	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.822
MX W479	6524	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.557
MX W479	6525	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.600
MX W479	6526	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	6528	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.612
MX W479	6529	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	6530	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	6531	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.662
MX W479	6532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.680
MX W479	6548	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.718
MX W479	6549	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.739
MX W479	6550	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.767
MX W479	6553	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.592
MX W479	6554	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.776
MX W479	6555	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.581
MX W479	6556	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	6558	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.988
MX W479	6559	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.766
MX W479	6571	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.523
MX W479	6572	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.870
MX W479	6573	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.668
MX W479	6574	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.705
MX W479	6577	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.791
MX W479	6578	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	6579	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.622

MX W479	6580	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	6581	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.872
MX W479	6582	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.704
MX W479	6583	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	6596	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	6602	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	6791	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.545
MX W479	6835	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.564
MX W479	6836	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	6868	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	6870	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.516
MX W479	6890	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	6912	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.576
MX W479	6913	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.636
MX W479	6914	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	6915	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.571
MX W479	6917	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	6918	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	7014	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7099	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.534
MX W479	7100	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.759
MX W479	7101	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7103	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	7111	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	7123	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	7126	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.603
MX W479	7127	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	7129	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	7130	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.683

MX W479	7131	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	7132	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.525
MX W479	7195	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.554
MX W479	7196	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	7199	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	7207	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.635
MX W479	7220	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.644
MX W479	7243	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.628
MX W479	7244	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	7246	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.712
MX W479	7252	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.629
MX W479	7253	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	7255	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.681
MX W479	7316	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.757
MX W479	7317	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.558
MX W479	7318	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.570
MX W479	7319	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	7321	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.602
MX W479	7323	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	7324	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.578
MX W479	7326	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.528
MX W479	7340	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.691
MX W479	7343	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.510
MX W479	7345	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	7346	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	7351	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	7363	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	7364	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.215
MX W479	7366	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.516

MX W479	7367	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.612
MX W479	7368	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.799
MX W479	7369	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.518
MX W479	7388	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.589
MX W479	7389	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.553
MX W479	7390	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.725
MX W479	7391	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.797
MX W479	7393	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7395	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	7396	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	7397	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	7399	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.656
MX W479	7400	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.686
MX W479	7446	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.641
MX W479	7462	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.761
MX W479	7468	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.636
MX W479	7469	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.811
MX W479	7470	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.856
MX W479	7471	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.803
MX W479	7484	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.540
MX W479	7513	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.558
MX W479	7514	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.585
MX W479	7531	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.594
MX W479	7543	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	7585	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.532
MX W479	7586	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.831
MX W479	7587	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.573
MX W479	7602	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.586
MX W479	7603	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.561

MX W479 7660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.708

MX W479 7661 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 7681 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 7682 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 7683 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.707

MX W479 7684 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.628

MX W479 7753 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.641

MX W479 7755 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.502

MX W479 7794 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 7796 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.032

MX W479 7797 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.212

MX W479 7798 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.800

MX W479 7801 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.637

MX W479 7802 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.906

MX W479 7803 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 7804 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.841

MX W479 7805 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.048

MX W479 7806 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.021

MX W479 7807 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.755

MX W479 7819 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.902

MX W479 7867 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.583

MX W479 7869 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 7873 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 7878 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 7879 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 7891 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 7892 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.532

MX W479 7894 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.509

MX W479 7896 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479	7897	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.506
MX W479	7898	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.761
MX W479	7899	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.773
MX W479	7900	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	7901	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.852
MX W479	7941	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	7948	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7989	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.671
MX W479	7990	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	7991	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	7992	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.622
MX W479	7993	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.288
MX W479	7994	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.608
MX W479	7996	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.606
MX W479	8011	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	8041	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.505
MX W479	8042	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.604
MX W479	8062	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.522
MX W479	8067	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.589
MX W479	8086	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.668
MX W479	8087	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.504
MX W479	8088	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.618
MX W479	8089	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	8090	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.585
MX W479	8091	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.523
MX W479	8107	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.613
MX W479	8108	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	8111	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.564
MX W479	8112	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.633

MX W479 8116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 8117 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.838

MX W479 8118 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 8119 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.001

MX W479 8120 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.649

MX W479 8190 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 8191 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 8192 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 8202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.572

MX W479 8203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.563

MX W479 8204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.511

MX W479 8206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 8208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.642

MX W479 8209 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.717

MX W479 8210 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.670

MX W479 8211 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 8213 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.701

MX W479 8214 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.584

MX W479 8215 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.714

MX W479 8216 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.687

MX W479 8229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 8230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 8231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 8235 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 8238 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 8301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.642

MX W479 8304 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 8306 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.685

MX W479 8307 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 8311 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.550

MX W479 8350 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.596

MX W479 8356 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.511

MX W479 8358 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 8360 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 8427 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.593

MX W479 8428 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.548

MX W479 8442 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.566

MX W479 8445 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 8447 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 8448 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.591

MX W479 8450 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.583

MX W479 8451 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.695

MX W479 8452 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.533

MX W479 8514 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 8553 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.944

MX W479 8567 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.619

MX W479 8570 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 8571 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.544

MX W479 8595 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.626

MX W479 8646 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 8660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.567

MX W479 8730 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 8734 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 8735 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.560

MX W479 8760 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.626

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** MODEL SETUP OPTIONS SUMMARY ***

** Model Options Selected:

* Model Uses Regulatory DEFAULT Options
* Model Is Setup For Calculation of Average CONCentration Values.
* NO GAS DEPOSITION Data Provided.
* NO PARTICLE DEPOSITION Data Provided.
* Model Uses NO DRY DEPLETION. DDPLETE = F
* Model Uses NO WET DEPLETION. WETDPLT = F
* Stack-tip Downwash.
* Model Accounts for ELEVated Terrain Effects.
* Use Calms Processing Routine.
* Use Missing Data Processing Routine.
* No Exponential Decay.
* Model Uses RURAL Dispersion Only.
* BULKRN - Use BULKRN Delta-T and SolarRad option for SBL in AERMET
* Model Assumes No FLAGPOLE Receptor Heights.
* The User Specified a Pollutant Type of: ACETALDE

**Model Calculates 1 Short Term Average(s) of: 1-HR
and Calculates ANNUAL Averages

**This Run Includes: 1 Source(s); 1 Source Group(s); and 3106 Receptor(s)

with: 1 POINT(s), including

0 POINTCAP(s) and 0 POINTHOR(s)

and: 0 VOLUME source(s)

and: 0 AREA type source(s)

and: 0 LINE source(s)

and: 0 RLINE/RLINEXT source(s)

and: 0 OPENPIT source(s)

and: 0 BUOYANT LINE source(s) with a total of 0 line(s)

and: 0 SWPOINT source(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 22112

**Output Options Selected:

Model Outputs Tables of ANNUAL Averages by Receptor

Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)

Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours

m for Missing Hours

b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 1730.68 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0

Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07

```
            Output Units   = MICROGRAMS/M**3


 **Approximate Storage Requirements of Model =      3.9 MB of RAM.


 **Input Runstream File:         C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi

 **Output Print File:           C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi


 **File for Summary of Results:   C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi

 *** AERMOD - VERSION 22112  ***   *** Title One                                        ***       05/09/23

 *** AERMET - VERSION  22112 ***   ***                                            ***       15:18:18

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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  BULKRN  SigA Data


                         *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***

                                        (1=YES; 0=NO)


      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1


          NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS
INCLUDED IN THE DATA FILE.
```

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** AERMOD - VERSION 22112 *** *** Title One *** 05/09/23

*** AERMET - VERSION 22112 *** *** *** 15:18:18

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*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling Met Version: 22112

Profile file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling

Surface format: FREE

Profile format: FREE

Surface station no.: 0 Upper air station no.: 23062

Name: UNKNOWN Name: DENVER WSFO, CO

Year: 2006 Year: 2006

First 24 hours of scalar data

YR MO DY JDY HR H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS WD HT REF TA HT

- -

06 01 01 1 01 -26.0 0.162 -9.000 -9.000 -999. 157. 11.8 0.01 1.89 1.00 4.43 326. 10.0 280.1 2.0

06 01 01 1 02 -58.1 0.325 -9.000 -9.000 -999. 445. 42.5 0.01 1.89 1.00 6.57 310. 10.0 281.4
2.0

06 01 01 1 03 -33.0 0.292 -9.000 -9.000 -999. 380. 54.5 0.01 1.89 1.00 5.72 272. 10.0 281.0
2.0

06 01 01 1 04 -14.9 0.128 -9.000 -9.000 -999. 134. 10.2 0.01 1.89 1.00 3.67 320. 10.0 279.8
2.0

06 01 01 1 05 -13.5 0.124 -9.000 -9.000 -999. 105. 10.1 0.01 1.89 1.00 3.71 337. 10.0 279.0
2.0

06 01 01 1 06 -18.3 0.176 -9.000 -9.000 -999. 177. 21.3 0.01 1.89 1.00 4.29 344. 10.0 278.3
2.0

06 01 01 1 07 -34.9 0.286 -9.000 -9.000 -999. 367. 48.1 0.01 1.89 1.00 5.68 327. 10.0 279.3
2.0

06 01 01 1 08 -39.7 0.440 -9.000 -9.000 -999. 701. 154.4 0.01 1.89 1.00 7.96 307. 10.0 279.8
2.0

06 01 01 1 09 -17.3 0.580 -9.000 -9.000 -999. 1058. 810.0 0.01 1.89 0.43 10.10 287. 10.0 279.4
2.0

06 01 01 1 10 38.3 0.682 0.602 0.005 164. 1349. -597.0 0.01 1.89 0.31 11.67 301. 10.0 280.9
2.0

06 01 01 1 11 83.4 0.893 1.120 0.005 486. 2020. -616.6 0.01 1.89 0.26 15.29 291. 10.0 281.4
2.0

06 01 01 1 12 97.2 0.889 1.326 0.005 693. 2013. -521.8 0.01 1.89 0.24 15.20 293. 10.0 281.3
2.0

06 01 01 1 13 137.5 0.968 1.629 0.005 909. 2279. -476.9 0.01 1.89 0.24 16.54 291. 10.0
281.3 2.0

06 01 01 1 14 122.9 0.912 1.653 0.005 1063. 2100. -445.7 0.01 1.89 0.25 15.56 290. 10.0
281.0 2.0

06 01 01 1 15 67.7 0.795 1.385 0.005 1138. 1727. -536.6 0.01 1.89 0.30 13.59 295. 10.0
280.1 2.0

06 01 01 1 16 0.0 0.715 -9.000 -9.000 -999. 1464. 8888.0 0.01 1.89 0.41 12.34 301. 10.0 279.0
2.0

06 01 01 1 17 0.0 0.673 -9.000 -9.000 -999. 1330. 8888.0 0.01 1.89 0.72 11.62 304. 10.0 277.1
2.0

06 01 01 1 18 0.0 0.546 -9.000 -9.000 -999. 987. 8888.0 0.01 1.89 1.00 9.43 293. 10.0 275.9
2.0

06 01 01 1 19 -46.9 0.630 -9.000 -9.000 -999. 1199. 388.5 0.01 1.89 1.00 11.09 294. 10.0 276.2
2.0

06 01 01 1 20 -49.7 0.337 -9.000 -9.000 -999. 566. 55.9 0.01 1.89 1.00 6.57 310. 10.0 275.6
2.0

06 01 01 1 21 -29.5 0.194 -9.000 -9.000 -999. 235. 17.9 0.01 1.89 1.00 4.69 313. 10.0 274.4
2.0

06 01 01 1 22 -29.9 0.238 -9.000 -9.000 -999. 279. 32.8 0.01 1.89 1.00 5.32 338. 10.0 275.8
2.0

06 01 01 1 23 -15.8 0.134 -9.000 -9.000 -999. 123. 11.1 0.01 1.89 1.00 3.67 241. 10.0 274.5
2.0

06 01 01 1 24 -19.1 0.117 -9.000 -9.000 -999. 96. 6.1 0.01 1.89 1.00 3.98 279. 10.0 273.6
2.0

First hour of profile data

YR MO DY HR HEIGHT F WDIR WSPD AMB_TMP sigmaA sigmaW sigmaV

06 01 01 01 2.0 0 -999. -99.00 280.1 99.0 -99.00 -99.00

06 01 01 01 10.0 0 326. 4.43 282.0 5.4 -99.00 0.42

06 01 01 01 60.0 1 316. 5.10 283.1 6.1 -99.00 0.54

F indicates top of profile (=1) or below (=0)

*** AERMOD - VERSION 22112 *** *** Title One *** 05/09/23

*** AERMET - VERSION 22112 *** *** *** 15:18:18

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF ACETALDE IN MICROGRAMS/M**3 **

NETWORK

GROUP ID AVERAGE CONC RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL 1ST HIGHEST VALUE IS 0.00243 AT (499450.00, 4508500.00, 1603.57, 1603.57, 0.00) DC

2ND HIGHEST VALUE IS 0.00238 AT (499450.00, 4508450.00, 1603.33, 1603.33, 0.00) DC

3RD HIGHEST VALUE IS 0.00236 AT (499700.00, 4508150.00, 1610.72, 1610.72, 0.00) DC

4TH HIGHEST VALUE IS 0.00232 AT (499450.00, 4508550.00, 1603.86, 1603.86, 0.00) DC

5TH HIGHEST VALUE IS 0.00229 AT (499750.00, 4508100.00, 1608.86, 1608.86, 0.00) DC

6TH HIGHEST VALUE IS 0.00226 AT (499750.00, 4508150.00, 1610.15, 1610.15, 0.00) DC

7TH HIGHEST VALUE IS 0.00225 AT (499700.00, 4508100.00, 1609.85, 1609.85, 0.00) DC

8TH HIGHEST VALUE IS 0.00224 AT (499400.00, 4508500.00, 1603.34, 1603.34, 0.00) DC

9TH HIGHEST VALUE IS 0.00223 AT (499800.00, 4508100.00, 1606.47, 1606.47, 0.00) DC

10TH HIGHEST VALUE IS 0.00219 AT (499400.00, 4508550.00, 1603.60, 1603.60, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF ACETALDE IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	NETWORK RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL HIGH 1ST HIGH VALUE IS 0.16752 ON 06102824: AT (499600.00, 4508200.00, 1608.71, 1608.71, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)

A Total of 624 Warning Message(s)

A Total of 142 Informational Message(s)

A Total of 8760 Hours Were Processed

A Total of 1 Calm Hours Identified

A Total of 141 Missing Hours Identified (1.61 Percent)

******** FATAL ERROR MESSAGES ********

*** NONE ***

******** WARNING MESSAGES ********

ME W181 3169 MEOPEN: BULKRN Delta-T & SolarRad option for SBL was used in AERMET

MX W403 3169 PFLCNV: Turbulence data is being used w/o ADJ_U* option SigA Data

MX W479 24 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 29 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 30 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 31 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.712

MX W479 48 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 51 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 52 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 53 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 141 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 143 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.877

MX W479 147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 151 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 215 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 216 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.734

MX W479 221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 222 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.588

MX W479 244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 291 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.544

MX W479 296 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 308 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.572

MX W479 312 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 313 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.700

MX W479 314 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.735

MX W479 317 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.795

MX W479 318 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 320 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 321 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 340 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 342 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 344 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 475 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.580

MX W479 479 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 482 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.746

MX W479 483 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 484 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 486 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 487 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.681

MX W479 488 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.697

MX W479 489 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.921

MX W479 509 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 524 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 526 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 527 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 528 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.926

MX W479 529 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.676

MX W479 530 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.808

MX W479 531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.740

MX W479 532 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.537

MX W479 533 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.621

MX W479 534 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.830

MX W479 535 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 554 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 555 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 556 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.743

MX W479 573 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.536

MX W479 574 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.241

MX W479 575 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 576 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.562

MX W479 577 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 578 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.213

MX W479 579 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 580 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 581 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.713

MX W479 582 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.678

MX W479 583 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.869

MX W479 584 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 595 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 597 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.667

MX W479 599 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.596

MX W479 600 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 601 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.705

MX W479 605 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 629 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.665

MX W479 632 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.505

MX W479 724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 725 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 727 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 775 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 822 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 835 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 836 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.517

MX W479 837 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 838 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 839 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 932 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 941 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 1029 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.735

MX W479 1031 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479 1034 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 1035 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 1051 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 1052 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500

MX W479 1053 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.884

MX W479 1054 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.859

MX W479 1055 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.766

MX W479 1056 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.677

MX W479 1060 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 1061 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.639

MX W479 1197 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1198 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.709

MX W479 1199 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 1200 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.530

MX W479 1201 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 1203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.590

MX W479 1204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.726

MX W479 1205 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.750

MX W479 1206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.700

MX W479 1208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1218 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 1219 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.824

MX W479 1220 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 1221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 1222 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 1223 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 1224 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 1225 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 1226 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1227 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.778

MX W479 1228 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 1229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 1231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 1244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 1245 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 1276 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 1277 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 1278 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.729

MX W479 1293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.683

MX W479 1294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.851

MX W479 1295 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1296 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 1297 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 1300 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.634

MX W479 1301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.723

MX W479 1302 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 1303 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 1316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.692

MX W479 1343 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 1344 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.720

MX W479 1345 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1346 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 1347 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 1365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.696

MX W479 1373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 1374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1375 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.622

MX W479	1392	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	1394	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.577
MX W479	1395	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	1396	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.671
MX W479	1397	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	1441	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	1442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	1483	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.647
MX W479	1532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	1537	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	1539	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.613
MX W479	1540	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	1541	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.648
MX W479	1543	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	1566	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.569
MX W479	1661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	1989	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	1990	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	1991	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	1993	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.563
MX W479	1994	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.534
MX W479	2086	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	2088	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	2089	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	2093	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	2228	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.579
MX W479	2229	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.638
MX W479	2230	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.693
MX W479	2231	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.634

MX W479	2232	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.632
MX W479	2234	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	2235	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.736
MX W479	2253	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	2254	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.510
MX W479	2255	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.755
MX W479	2262	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.806
MX W479	2348	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	2349	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.568
MX W479	2350	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	2351	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	2352	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.834
MX W479	2353	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.525
MX W479	2354	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	2355	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.560
MX W479	2356	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.633
MX W479	2373	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.752
MX W479	2374	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.569
MX W479	2378	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	2379	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.647
MX W479	2380	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.671
MX W479	2382	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.698
MX W479	2399	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.920
MX W479	2421	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.620
MX W479	2422	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.727
MX W479	2424	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.582
MX W479	2425	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	2428	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.540
MX W479	2429	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.578

MX W479 2430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 2445 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.748

MX W479 2446 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 2447 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

MX W479 2448 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.743

MX W479 2449 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.733

MX W479 2450 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 2468 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2469 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.019

MX W479 2470 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.976

MX W479 2471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.882

MX W479 2472 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 2542 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.826

MX W479 2544 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.734

MX W479 2545 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.629

MX W479 2546 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.769

MX W479 2547 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.656

MX W479 2548 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.679

MX W479 2549 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.853

MX W479 2550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 2615 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 2616 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 2617 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 2639 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 2640 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 2641 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.777

MX W479 2643 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 2645 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479	2646	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	2660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	2663	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.896
MX W479	2664	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	2666	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	2669	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	2670	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.500
MX W479	2763	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.504
MX W479	2783	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.567
MX W479	2786	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.588
MX W479	2788	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.748
MX W479	2789	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	2832	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.501
MX W479	2833	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.506
MX W479	2900	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.635
MX W479	2901	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.673
MX W479	2902	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.730
MX W479	2903	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	2905	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	2906	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.753
MX W479	2907	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	3045	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.549
MX W479	3047	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.554
MX W479	3048	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	3148	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.666
MX W479	3149	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	3168	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.553
MX W479	3169	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	3170	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.601

MX W479	3171	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.796
MX W479	3172	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	3173	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.889
MX W479	3174	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.658
MX W479	3239	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	3262	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.633
MX W479	3263	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.636
MX W479	3289	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.546
MX W479	3290	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.586
MX W479	3291	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.607
MX W479	3293	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.528
MX W479	3294	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	3313	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	3316	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.595
MX W479	3337	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	3338	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.521
MX W479	3339	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.513
MX W479	3363	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.584
MX W479	3364	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	3365	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.666
MX W479	3366	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.576
MX W479	3382	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.620
MX W479	3383	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.727
MX W479	3384	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.606
MX W479	3453	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.648
MX W479	3454	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.711
MX W479	3457	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	3509	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.654
MX W479	3525	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614

MX W479	3671	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.541
MX W479	3674	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	3693	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	3748	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.562
MX W479	3792	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.536
MX W479	3796	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.568
MX W479	4029	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.848
MX W479	4030	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.707
MX W479	4031	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.721
MX W479	4035	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	4036	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.645
MX W479	4037	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	4057	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.502
MX W479	4080	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	4101	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.545
MX W479	4102	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.715
MX W479	4103	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.847
MX W479	4104	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.608
MX W479	4105	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.522
MX W479	4172	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.682
MX W479	4173	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.824
MX W479	4227	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	4297	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	4298	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.590
MX W479	4301	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.582
MX W479	4493	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.603
MX W479	4586	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	4629	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.548
MX W479	4630	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.517

MX W479 4652 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 4653 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.685

MX W479 4654 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 4656 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 4657 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.903

MX W479 4658 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.975

MX W479 4659 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.826

MX W479 4660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.741

MX W479 4661 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.888

MX W479 4677 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.524

MX W479 4679 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 4680 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.591

MX W479 4685 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 4724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 4996 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.544

MX W479 5331 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.662

MX W479 5332 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 5471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 5472 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 5475 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 5614 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.669

MX W479 5615 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 5621 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 5622 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.623

MX W479 5790 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 5804 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 5805 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 5809 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 5812 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.675

MX W479 5813 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 5814 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 5979 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 5980 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 6120 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 6121 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 6125 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 6126 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 6142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 6146 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 6147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

MX W479 6148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

MX W479 6149 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.883

MX W479 6150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.860

MX W479 6267 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 6268 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 6271 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 6286 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 6292 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.577

MX W479 6294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.615

MX W479 6405 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 6406 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.887

MX W479 6407 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 6408 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.541

MX W479 6409 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 6410 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.740

MX W479 6411 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 6413 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 6430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479	6431	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.841
MX W479	6435	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.023
MX W479	6436	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.778
MX W479	6486	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	6501	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.822
MX W479	6524	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.557
MX W479	6525	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.600
MX W479	6526	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	6528	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.612
MX W479	6529	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	6530	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	6531	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.662
MX W479	6532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.680
MX W479	6548	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.718
MX W479	6549	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.739
MX W479	6550	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.767
MX W479	6553	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.592
MX W479	6554	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.776
MX W479	6555	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.581
MX W479	6556	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	6558	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.988
MX W479	6559	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.766
MX W479	6571	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.523
MX W479	6572	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.870
MX W479	6573	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.668
MX W479	6574	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.705
MX W479	6577	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.791
MX W479	6578	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	6579	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.622

MX W479	6580	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	6581	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.872
MX W479	6582	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.704
MX W479	6583	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	6596	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	6602	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	6791	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.545
MX W479	6835	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.564
MX W479	6836	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	6868	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	6870	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.516
MX W479	6890	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	6912	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.576
MX W479	6913	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.636
MX W479	6914	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	6915	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.571
MX W479	6917	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	6918	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	7014	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7099	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.534
MX W479	7100	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.759
MX W479	7101	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7103	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	7111	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	7123	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	7126	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.603
MX W479	7127	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	7129	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	7130	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.683

MX W479 7131 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 7132 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.525

MX W479 7195 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.554

MX W479 7196 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 7199 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.566

MX W479 7207 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 7220 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 7243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.628

MX W479 7244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 7246 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.712

MX W479 7252 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.629

MX W479 7253 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 7255 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.681

MX W479 7316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.757

MX W479 7317 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 7318 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.570

MX W479 7319 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 7321 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 7323 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 7324 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.578

MX W479 7326 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 7340 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.691

MX W479 7343 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 7345 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.627

MX W479 7346 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 7351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 7363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 7364 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.215

MX W479 7366 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 7367 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.612

MX W479 7368 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.799

MX W479 7369 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.518

MX W479 7388 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 7389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 7390 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 7391 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.797

MX W479 7393 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 7395 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 7396 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 7397 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 7399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.656

MX W479 7400 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.686

MX W479 7446 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.641

MX W479 7462 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.761

MX W479 7468 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 7469 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.811

MX W479 7470 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.856

MX W479 7471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.803

MX W479 7484 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 7513 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 7514 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 7531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.594

MX W479 7543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 7585 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.532

MX W479 7586 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.831

MX W479 7587 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

MX W479 7602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 7603 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479	7660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.708
MX W479	7661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7681	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	7682	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7683	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.707
MX W479	7684	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.628
MX W479	7753	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.641
MX W479	7755	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.502
MX W479	7794	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.607
MX W479	7796	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.032
MX W479	7797	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.212
MX W479	7798	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.800
MX W479	7801	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.637
MX W479	7802	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.906
MX W479	7803	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	7804	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.841
MX W479	7805	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.048
MX W479	7806	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.021
MX W479	7807	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.755
MX W479	7819	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.902
MX W479	7867	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.583
MX W479	7869	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	7873	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	7878	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.513
MX W479	7879	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	7891	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.666
MX W479	7892	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.532
MX W479	7894	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	7896	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556

MX W479	7897	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.506
MX W479	7898	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.761
MX W479	7899	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.773
MX W479	7900	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	7901	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.852
MX W479	7941	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	7948	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7989	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.671
MX W479	7990	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	7991	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	7992	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.622
MX W479	7993	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.288
MX W479	7994	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.608
MX W479	7996	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.606
MX W479	8011	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	8041	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.505
MX W479	8042	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.604
MX W479	8062	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.522
MX W479	8067	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.589
MX W479	8086	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.668
MX W479	8087	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.504
MX W479	8088	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.618
MX W479	8089	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	8090	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.585
MX W479	8091	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.523
MX W479	8107	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.613
MX W479	8108	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	8111	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.564
MX W479	8112	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.633

MX W479 8116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 8117 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.838

MX W479 8118 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 8119 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.001

MX W479 8120 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.649

MX W479 8190 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 8191 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 8192 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 8202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.572

MX W479 8203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.563

MX W479 8204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.511

MX W479 8206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 8208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.642

MX W479 8209 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.717

MX W479 8210 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.670

MX W479 8211 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 8213 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.701

MX W479 8214 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.584

MX W479 8215 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.714

MX W479 8216 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.687

MX W479 8229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 8230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 8231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 8235 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 8238 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 8301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.642

MX W479 8304 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 8306 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.685

MX W479 8307 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479	8311	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.550
MX W479	8350	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.596
MX W479	8356	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.511
MX W479	8358	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	8360	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	8427	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.593
MX W479	8428	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.548
MX W479	8442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	8445	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	8447	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	8448	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	8450	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.583
MX W479	8451	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.695
MX W479	8452	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.533
MX W479	8514	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	8553	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.944
MX W479	8567	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.619
MX W479	8570	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.535
MX W479	8571	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	8595	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626
MX W479	8646	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	8660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.567
MX W479	8730	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	8734	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	8735	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.560
MX W479	8760	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** MODEL SETUP OPTIONS SUMMARY ***

** Model Options Selected:

* Model Uses Regulatory DEFAULT Options
* Model Is Setup For Calculation of Average CONCentration Values.
* NO GAS DEPOSITION Data Provided.
* NO PARTICLE DEPOSITION Data Provided.
* Model Uses NO DRY DEPLETION. DDPLETE = F
* Model Uses NO WET DEPLETION. WETDPLT = F
* Stack-tip Downwash.
* Model Accounts for ELEVated Terrain Effects.
* Use Calms Processing Routine.
* Use Missing Data Processing Routine.
* No Exponential Decay.
* Model Uses RURAL Dispersion Only.
* BULKRN - Use BULKRN Delta-T and SolarRad option for SBL in AERMET
* Model Assumes No FLAGPOLE Receptor Heights.
* The User Specified a Pollutant Type of: HEXANE

**Model Calculates 1 Short Term Average(s) of: 1-HR
and Calculates ANNUAL Averages

**This Run Includes: 1 Source(s); 1 Source Group(s); and 3106 Receptor(s)

with: 1 POINT(s), including

0 POINTCAP(s) and 0 POINTHOR(s)

and: 0 VOLUME source(s)

and: 0 AREA type source(s)

and: 0 LINE source(s)

and: 0 RLINE/RLINEXT source(s)

and: 0 OPENPIT source(s)

and: 0 BUOYANT LINE source(s) with a total of 0 line(s)

and: 0 SWPOINT source(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 22112

**Output Options Selected:

Model Outputs Tables of ANNUAL Averages by Receptor

Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)

Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours

m for Missing Hours

b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 1730.68 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0

Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07

```
          Output Units   = MICROGRAMS/M**3


 **Approximate Storage Requirements of Model =      3.9 MB of RAM.


 **Input Runstream File:         C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi
 **Output Print File:           C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi


 **File for Summary of Results:   C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi
 *** AERMOD - VERSION 22112  ***   *** Title One                                   ***       05/09/23
 *** AERMET - VERSION  22112 ***   ***                                             ***       15:19:00
                                                                       PAGE   2
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  BULKRN  SigA Data


                         *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                        (1=YES; 0=NO)


      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1


          NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS
INCLUDED IN THE DATA FILE.
```

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** AERMOD - VERSION 22112 *** *** Title One *** 05/09/23

*** AERMET - VERSION 22112 *** *** *** 15:19:00

PAGE 3

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling Met Version: 22112

Profile file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling

Surface format: FREE

Profile format: FREE

Surface station no.: 0 Upper air station no.: 23062

Name: UNKNOWN Name: DENVER WSFO, CO

Year: 2006 Year: 2006

First 24 hours of scalar data

YR MO DY JDY HR H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS WD HT REF TA HT

- -

06 01 01 1 01 -26.0 0.162 -9.000 -9.000 -999. 157. 11.8 0.01 1.89 1.00 4.43 326. 10.0 280.1 2.0

06 01 01 1 02 -58.1 0.325 -9.000 -9.000 -999. 445. 42.5 0.01 1.89 1.00 6.57 310. 10.0 281.4
2.0

06 01 01 1 03 -33.0 0.292 -9.000 -9.000 -999. 380. 54.5 0.01 1.89 1.00 5.72 272. 10.0 281.0
2.0

06 01 01 1 04 -14.9 0.128 -9.000 -9.000 -999. 134. 10.2 0.01 1.89 1.00 3.67 320. 10.0 279.8
2.0

06 01 01 1 05 -13.5 0.124 -9.000 -9.000 -999. 105. 10.1 0.01 1.89 1.00 3.71 337. 10.0 279.0
2.0

06 01 01 1 06 -18.3 0.176 -9.000 -9.000 -999. 177. 21.3 0.01 1.89 1.00 4.29 344. 10.0 278.3
2.0

06 01 01 1 07 -34.9 0.286 -9.000 -9.000 -999. 367. 48.1 0.01 1.89 1.00 5.68 327. 10.0 279.3
2.0

06 01 01 1 08 -39.7 0.440 -9.000 -9.000 -999. 701. 154.4 0.01 1.89 1.00 7.96 307. 10.0 279.8
2.0

06 01 01 1 09 -17.3 0.580 -9.000 -9.000 -999. 1058. 810.0 0.01 1.89 0.43 10.10 287. 10.0 279.4
2.0

06 01 01 1 10 38.3 0.682 0.602 0.005 164. 1349. -597.0 0.01 1.89 0.31 11.67 301. 10.0 280.9
2.0

06 01 01 1 11 83.4 0.893 1.120 0.005 486. 2020. -616.6 0.01 1.89 0.26 15.29 291. 10.0 281.4
2.0

06 01 01 1 12 97.2 0.889 1.326 0.005 693. 2013. -521.8 0.01 1.89 0.24 15.20 293. 10.0 281.3
2.0

06 01 01 1 13 137.5 0.968 1.629 0.005 909. 2279. -476.9 0.01 1.89 0.24 16.54 291. 10.0
281.3 2.0

06 01 01 1 14 122.9 0.912 1.653 0.005 1063. 2100. -445.7 0.01 1.89 0.25 15.56 290. 10.0
281.0 2.0

06 01 01 1 15 67.7 0.795 1.385 0.005 1138. 1727. -536.6 0.01 1.89 0.30 13.59 295. 10.0
280.1 2.0

06 01 01 1 16 0.0 0.715 -9.000 -9.000 -999. 1464. 8888.0 0.01 1.89 0.41 12.34 301. 10.0 279.0
2.0

06 01 01 1 17 0.0 0.673 -9.000 -9.000 -999. 1330. 8888.0 0.01 1.89 0.72 11.62 304. 10.0 277.1
2.0

06 01 01 1 18 0.0 0.546 -9.000 -9.000 -999. 987. 8888.0 0.01 1.89 1.00 9.43 293. 10.0 275.9
2.0

06 01 01 1 19 -46.9 0.630 -9.000 -9.000 -999. 1199. 388.5 0.01 1.89 1.00 11.09 294. 10.0 276.2
2.0

06 01 01 1 20 -49.7 0.337 -9.000 -9.000 -999. 566. 55.9 0.01 1.89 1.00 6.57 310. 10.0 275.6
2.0

06 01 01 1 21 -29.5 0.194 -9.000 -9.000 -999. 235. 17.9 0.01 1.89 1.00 4.69 313. 10.0 274.4
2.0

06 01 01 1 22 -29.9 0.238 -9.000 -9.000 -999. 279. 32.8 0.01 1.89 1.00 5.32 338. 10.0 275.8
2.0

06 01 01 1 23 -15.8 0.134 -9.000 -9.000 -999. 123. 11.1 0.01 1.89 1.00 3.67 241. 10.0 274.5
2.0

06 01 01 1 24 -19.1 0.117 -9.000 -9.000 -999. 96. 6.1 0.01 1.89 1.00 3.98 279. 10.0 273.6
2.0

First hour of profile data

YR MO DY HR HEIGHT F WDIR WSPD AMB_TMP sigmaA sigmaW sigmaV

06 01 01 01 2.0 0 -999. -99.00 280.1 99.0 -99.00 -99.00

06 01 01 01 10.0 0 326. 4.43 282.0 5.4 -99.00 0.42

06 01 01 01 60.0 1 316. 5.10 283.1 6.1 -99.00 0.54

F indicates top of profile (=1) or below (=0)

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HEXANE IN MICROGRAMS/M**3 **

NETWORK

GROUP ID AVERAGE CONC RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL 1ST HIGHEST VALUE IS 0.00172 AT (499450.00, 4508500.00, 1603.57, 1603.57, 0.00) DC

2ND HIGHEST VALUE IS 0.00168 AT (499450.00, 4508450.00, 1603.33, 1603.33, 0.00) DC

3RD HIGHEST VALUE IS 0.00167 AT (499700.00, 4508150.00, 1610.72, 1610.72, 0.00) DC

4TH HIGHEST VALUE IS 0.00164 AT (499450.00, 4508550.00, 1603.86, 1603.86, 0.00) DC

5TH HIGHEST VALUE IS 0.00162 AT (499750.00, 4508100.00, 1608.86, 1608.86, 0.00) DC

6TH HIGHEST VALUE IS 0.00160 AT (499750.00, 4508150.00, 1610.15, 1610.15, 0.00) DC

7TH HIGHEST VALUE IS 0.00159 AT (499700.00, 4508100.00, 1609.85, 1609.85, 0.00) DC

8TH HIGHEST VALUE IS 0.00159 AT (499400.00, 4508500.00, 1603.34, 1603.34, 0.00) DC

9TH HIGHEST VALUE IS 0.00158 AT (499800.00, 4508100.00, 1606.47, 1606.47, 0.00) DC

10TH HIGHEST VALUE IS 0.00155 AT (499400.00, 4508550.00, 1603.60, 1603.60, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF HEXANE IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	NETWORK RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL HIGH 1ST HIGH VALUE IS 0.11855 ON 06102824: AT (499600.00, 4508200.00, 1608.71, 1608.71, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)

A Total of 624 Warning Message(s)

A Total of 142 Informational Message(s)

A Total of 8760 Hours Were Processed

A Total of 1 Calm Hours Identified

A Total of 141 Missing Hours Identified (1.61 Percent)

******** FATAL ERROR MESSAGES ********

*** NONE ***

******** WARNING MESSAGES ********

ME W181 3169 MEOPEN: BULKRN Delta-T & SolarRad option for SBL was used in AERMET

MX W403 3169 PFLCNV: Turbulence data is being used w/o ADJ_U* option SigA Data

MX W479 24 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 29 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 30 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 31 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.712

MX W479 48 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 51 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 52 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 53 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 141 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 143 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.877

MX W479 147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 151 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 215 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 216 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.734

MX W479 221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 222 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.588

MX W479 244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 291 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.544

MX W479 296 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 308 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.572

MX W479 312 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 313 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.700

MX W479 314 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.735

MX W479 317 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.795

MX W479 318 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 320 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 321 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 340 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 342 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 344 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 475 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.580

MX W479 479 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 482 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.746

MX W479 483 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 484 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 486 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 487 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.681

MX W479 488 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.697

MX W479 489 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.921

MX W479 509 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 524 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 526 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 527 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 528 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.926

MX W479 529 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.676

MX W479 530 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.808

MX W479 531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.740

MX W479 532 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.537

MX W479 533 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.621

MX W479 534 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.830

MX W479 535 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 554 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 555 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 556 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.743

MX W479 573 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.536

MX W479 574 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.241

MX W479 575 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 576 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.562

MX W479 577 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 578 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.213

MX W479 579 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 580 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 581 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.713

MX W479 582 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.678

MX W479 583 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.869

MX W479 584 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 595 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 597 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.667

MX W479 599 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.596

MX W479 600 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 601 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.705

MX W479 605 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 629 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.665

MX W479 632 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.505

MX W479 724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 725 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 727 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 775 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 822 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 835 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 836 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.517

MX W479 837 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 838 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 839 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 932 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 941 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 1029 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.735

MX W479 1031 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479 1034 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 1035 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 1051 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 1052 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500

MX W479 1053 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.884

MX W479 1054 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.859

MX W479 1055 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.766

MX W479 1056 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.677

MX W479 1060 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 1061 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.639

MX W479 1197 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1198 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.709

MX W479 1199 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 1200 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.530

MX W479 1201 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 1203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.590

MX W479 1204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.726

MX W479 1205 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.750

MX W479 1206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.700

MX W479 1208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1218 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 1219 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.824

MX W479 1220 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 1221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 1222 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 1223 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 1224 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 1225 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 1226 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1227 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.778

MX W479 1228 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 1229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 1231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 1244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 1245 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 1276 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 1277 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 1278 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.729

MX W479 1293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.683

MX W479 1294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.851

MX W479 1295 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1296 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 1297 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 1300 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.634

MX W479 1301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.723

MX W479 1302 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 1303 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 1316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.692

MX W479 1343 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 1344 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.720

MX W479 1345 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1346 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 1347 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 1365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.696

MX W479 1373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 1374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1375 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.622

MX W479	1392	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	1394	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.577
MX W479	1395	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	1396	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.671
MX W479	1397	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	1441	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	1442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	1483	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.647
MX W479	1532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	1537	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	1539	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.613
MX W479	1540	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	1541	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.648
MX W479	1543	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	1566	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.569
MX W479	1661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	1989	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	1990	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	1991	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	1993	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.563
MX W479	1994	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.534
MX W479	2086	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	2088	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	2089	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	2093	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	2228	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.579
MX W479	2229	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.638
MX W479	2230	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.693
MX W479	2231	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.634

MX W479 2232 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.632

MX W479 2234 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 2235 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 2253 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 2254 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 2255 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.755

MX W479 2262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 2348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 2349 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2350 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 2351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2352 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.834

MX W479 2353 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.525

MX W479 2354 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2355 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.560

MX W479 2356 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 2373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.752

MX W479 2374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.569

MX W479 2378 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 2379 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.647

MX W479 2380 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 2382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 2399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.920

MX W479 2421 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2422 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 2424 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 2425 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 2428 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 2429 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.578

MX W479 2430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 2445 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.748

MX W479 2446 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 2447 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

MX W479 2448 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.743

MX W479 2449 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.733

MX W479 2450 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 2468 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2469 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.019

MX W479 2470 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.976

MX W479 2471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.882

MX W479 2472 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 2542 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.826

MX W479 2544 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.734

MX W479 2545 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.629

MX W479 2546 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.769

MX W479 2547 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.656

MX W479 2548 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.679

MX W479 2549 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.853

MX W479 2550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 2615 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 2616 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 2617 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 2639 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 2640 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 2641 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.777

MX W479 2643 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 2645 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 2646 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 2663 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.896

MX W479 2664 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 2666 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 2669 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 2670 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500

MX W479 2763 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.504

MX W479 2783 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.567

MX W479 2786 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.588

MX W479 2788 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.748

MX W479 2789 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2832 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 2833 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.506

MX W479 2900 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 2901 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.673

MX W479 2902 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.730

MX W479 2903 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 2905 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 2906 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 2907 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 3045 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 3047 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.554

MX W479 3048 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.508

MX W479 3148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 3149 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 3168 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 3169 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 3170 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.601

MX W479 3171 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.796

MX W479 3172 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 3173 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.889

MX W479 3174 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 3239 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 3262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 3263 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 3289 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 3290 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 3291 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 3293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 3294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 3313 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 3316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 3337 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 3338 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.521

MX W479 3339 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 3363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.584

MX W479 3364 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 3365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 3366 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 3382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 3383 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 3384 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.606

MX W479 3453 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 3454 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.711

MX W479 3457 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 3509 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.654

MX W479 3525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479	3671	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.541
MX W479	3674	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	3693	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	3748	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.562
MX W479	3792	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.536
MX W479	3796	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.568
MX W479	4029	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.848
MX W479	4030	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.707
MX W479	4031	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.721
MX W479	4035	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	4036	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.645
MX W479	4037	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	4057	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.502
MX W479	4080	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	4101	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.545
MX W479	4102	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.715
MX W479	4103	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.847
MX W479	4104	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.608
MX W479	4105	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.522
MX W479	4172	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.682
MX W479	4173	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.824
MX W479	4227	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	4297	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	4298	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.590
MX W479	4301	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.582
MX W479	4493	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.603
MX W479	4586	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	4629	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.548
MX W479	4630	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.517

MX W479	4652	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.510
MX W479	4653	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.685
MX W479	4654	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	4656	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	4657	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.903
MX W479	4658	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.975
MX W479	4659	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.826
MX W479	4660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.741
MX W479	4661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.888
MX W479	4677	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.524
MX W479	4679	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.638
MX W479	4680	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	4685	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.731
MX W479	4724	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.589
MX W479	4996	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	5331	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.662
MX W479	5332	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.561
MX W479	5471	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	5472	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.555
MX W479	5475	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.635
MX W479	5614	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.669
MX W479	5615	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.549
MX W479	5621	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.557
MX W479	5622	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.623
MX W479	5790	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.581
MX W479	5804	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.522
MX W479	5805	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.719
MX W479	5809	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.553
MX W479	5812	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.675

MX W479	5813	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.645
MX W479	5814	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.523
MX W479	5979	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	5980	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.546
MX W479	6120	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.528
MX W479	6121	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.501
MX W479	6125	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	6126	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	6142	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	6146	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.582
MX W479	6147	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.573
MX W479	6148	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.779
MX W479	6149	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.883
MX W479	6150	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.860
MX W479	6267	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.540
MX W479	6268	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	6271	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.529
MX W479	6286	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.595
MX W479	6292	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.577
MX W479	6294	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.615
MX W479	6405	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.611
MX W479	6406	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.887
MX W479	6407	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.555
MX W479	6408	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.541
MX W479	6409	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	6410	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.740
MX W479	6411	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	6413	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.513
MX W479	6430	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.587

MX W479	6431	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.841
MX W479	6435	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.023
MX W479	6436	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.778
MX W479	6486	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	6501	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.822
MX W479	6524	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.557
MX W479	6525	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.600
MX W479	6526	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	6528	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.612
MX W479	6529	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	6530	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	6531	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.662
MX W479	6532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.680
MX W479	6548	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.718
MX W479	6549	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.739
MX W479	6550	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.767
MX W479	6553	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.592
MX W479	6554	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.776
MX W479	6555	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.581
MX W479	6556	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	6558	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.988
MX W479	6559	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.766
MX W479	6571	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.523
MX W479	6572	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.870
MX W479	6573	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.668
MX W479	6574	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.705
MX W479	6577	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.791
MX W479	6578	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	6579	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.622

MX W479	6580	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	6581	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.872
MX W479	6582	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.704
MX W479	6583	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	6596	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	6602	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	6791	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.545
MX W479	6835	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.564
MX W479	6836	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	6868	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	6870	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.516
MX W479	6890	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	6912	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.576
MX W479	6913	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.636
MX W479	6914	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	6915	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.571
MX W479	6917	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	6918	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	7014	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7099	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.534
MX W479	7100	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.759
MX W479	7101	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7103	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	7111	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	7123	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	7126	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.603
MX W479	7127	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	7129	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	7130	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.683

MX W479	7131	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	7132	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.525
MX W479	7195	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.554
MX W479	7196	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	7199	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	7207	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.635
MX W479	7220	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.644
MX W479	7243	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.628
MX W479	7244	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	7246	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.712
MX W479	7252	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.629
MX W479	7253	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	7255	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.681
MX W479	7316	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.757
MX W479	7317	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.558
MX W479	7318	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.570
MX W479	7319	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	7321	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.602
MX W479	7323	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	7324	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.578
MX W479	7326	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.528
MX W479	7340	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.691
MX W479	7343	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.510
MX W479	7345	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	7346	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	7351	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	7363	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	7364	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.215
MX W479	7366	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.516

MX W479	7367	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.612
MX W479	7368	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.799
MX W479	7369	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.518
MX W479	7388	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.589
MX W479	7389	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.553
MX W479	7390	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.725
MX W479	7391	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.797
MX W479	7393	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7395	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	7396	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	7397	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	7399	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.656
MX W479	7400	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.686
MX W479	7446	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.641
MX W479	7462	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.761
MX W479	7468	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.636
MX W479	7469	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.811
MX W479	7470	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.856
MX W479	7471	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.803
MX W479	7484	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.540
MX W479	7513	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.558
MX W479	7514	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.585
MX W479	7531	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.594
MX W479	7543	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	7585	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.532
MX W479	7586	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.831
MX W479	7587	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.573
MX W479	7602	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.586
MX W479	7603	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.561

MX W479	7660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.708
MX W479	7661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7681	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	7682	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7683	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.707
MX W479	7684	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.628
MX W479	7753	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.641
MX W479	7755	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.502
MX W479	7794	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.607
MX W479	7796	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.032
MX W479	7797	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.212
MX W479	7798	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.800
MX W479	7801	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.637
MX W479	7802	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.906
MX W479	7803	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	7804	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.841
MX W479	7805	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.048
MX W479	7806	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.021
MX W479	7807	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.755
MX W479	7819	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.902
MX W479	7867	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.583
MX W479	7869	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	7873	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	7878	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.513
MX W479	7879	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	7891	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.666
MX W479	7892	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.532
MX W479	7894	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	7896	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556

MX W479	7897	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.506
MX W479	7898	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.761
MX W479	7899	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.773
MX W479	7900	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	7901	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.852
MX W479	7941	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	7948	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7989	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.671
MX W479	7990	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	7991	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	7992	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.622
MX W479	7993	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.288
MX W479	7994	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.608
MX W479	7996	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.606
MX W479	8011	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	8041	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.505
MX W479	8042	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.604
MX W479	8062	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.522
MX W479	8067	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.589
MX W479	8086	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.668
MX W479	8087	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.504
MX W479	8088	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.618
MX W479	8089	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	8090	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.585
MX W479	8091	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.523
MX W479	8107	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.613
MX W479	8108	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	8111	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.564
MX W479	8112	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.633

MX W479 8116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 8117 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.838

MX W479 8118 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 8119 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.001

MX W479 8120 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.649

MX W479 8190 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 8191 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 8192 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 8202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.572

MX W479 8203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.563

MX W479 8204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.511

MX W479 8206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 8208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.642

MX W479 8209 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.717

MX W479 8210 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.670

MX W479 8211 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 8213 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.701

MX W479 8214 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.584

MX W479 8215 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.714

MX W479 8216 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.687

MX W479 8229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 8230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 8231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 8235 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 8238 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 8301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.642

MX W479 8304 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 8306 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.685

MX W479 8307 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479	8311	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.550
MX W479	8350	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.596
MX W479	8356	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.511
MX W479	8358	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	8360	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	8427	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.593
MX W479	8428	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.548
MX W479	8442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	8445	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	8447	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	8448	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	8450	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.583
MX W479	8451	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.695
MX W479	8452	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.533
MX W479	8514	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	8553	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.944
MX W479	8567	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.619
MX W479	8570	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.535
MX W479	8571	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	8595	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626
MX W479	8646	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	8660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.567
MX W479	8730	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	8734	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	8735	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.560
MX W479	8760	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** MODEL SETUP OPTIONS SUMMARY ***

** Model Options Selected:

* Model Uses Regulatory DEFAULT Options
* Model Is Setup For Calculation of Average CONCentration Values.
* NO GAS DEPOSITION Data Provided.
* NO PARTICLE DEPOSITION Data Provided.
* Model Uses NO DRY DEPLETION. DDPLETE = F
* Model Uses NO WET DEPLETION. WETDPLT = F
* Stack-tip Downwash.
* Model Accounts for ELEVated Terrain Effects.
* Use Calms Processing Routine.
* Use Missing Data Processing Routine.
* No Exponential Decay.
* Model Uses RURAL Dispersion Only.
* BULKRN - Use BULKRN Delta-T and SolarRad option for SBL in AERMET
* Model Assumes No FLAGPOLE Receptor Heights.
* The User Specified a Pollutant Type of: FORMALDE

**Model Calculates 1 Short Term Average(s) of: 1-HR
and Calculates ANNUAL Averages

**This Run Includes: 1 Source(s); 1 Source Group(s); and 3106 Receptor(s)

with: 1 POINT(s), including

0 POINTCAP(s) and 0 POINTHOR(s)

and: 0 VOLUME source(s)

and: 0 AREA type source(s)

and: 0 LINE source(s)

and: 0 RLINE/RLINEXT source(s)

and: 0 OPENPIT source(s)

and: 0 BUOYANT LINE source(s) with a total of 0 line(s)

and: 0 SWPOINT source(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 22112

**Output Options Selected:

Model Outputs Tables of ANNUAL Averages by Receptor

Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)

Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours

m for Missing Hours

b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 1730.68 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0

Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07

```
            Output Units   = MICROGRAMS/M**3


 **Approximate Storage Requirements of Model =      3.9 MB of RAM.


 **Input Runstream File:          C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi

 **Output Print File:            C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi


 **File for Summary of Results:   C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi

 *** AERMOD - VERSION 22112  ***   *** Title One                                   ***       05/09/23

 *** AERMET - VERSION  22112 ***   ***                                        ***       15:19:40

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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  BULKRN  SigA Data


                        *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***

                                        (1=YES; 0=NO)


       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1


           NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS
INCLUDED IN THE DATA FILE.
```

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** AERMOD - VERSION 22112 *** *** Title One *** 05/09/23

*** AERMET - VERSION 22112 *** *** *** 15:19:40

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*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling Met Version: 22112

Profile file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling

Surface format: FREE

Profile format: FREE

Surface station no.: 0 Upper air station no.: 23062

Name: UNKNOWN Name: DENVER WSFO, CO

Year: 2006 Year: 2006

First 24 hours of scalar data

YR MO DY JDY HR H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS WD HT REF TA HT

- -

06 01 01 1 01 -26.0 0.162 -9.000 -9.000 -999. 157. 11.8 0.01 1.89 1.00 4.43 326. 10.0 280.1 2.0

06 01 01 1 02 -58.1 0.325 -9.000 -9.000 -999. 445. 42.5 0.01 1.89 1.00 6.57 310. 10.0 281.4
2.0

06 01 01 1 03 -33.0 0.292 -9.000 -9.000 -999. 380. 54.5 0.01 1.89 1.00 5.72 272. 10.0 281.0
2.0

06 01 01 1 04 -14.9 0.128 -9.000 -9.000 -999. 134. 10.2 0.01 1.89 1.00 3.67 320. 10.0 279.8
2.0

06 01 01 1 05 -13.5 0.124 -9.000 -9.000 -999. 105. 10.1 0.01 1.89 1.00 3.71 337. 10.0 279.0
2.0

06 01 01 1 06 -18.3 0.176 -9.000 -9.000 -999. 177. 21.3 0.01 1.89 1.00 4.29 344. 10.0 278.3
2.0

06 01 01 1 07 -34.9 0.286 -9.000 -9.000 -999. 367. 48.1 0.01 1.89 1.00 5.68 327. 10.0 279.3
2.0

06 01 01 1 08 -39.7 0.440 -9.000 -9.000 -999. 701. 154.4 0.01 1.89 1.00 7.96 307. 10.0 279.8
2.0

06 01 01 1 09 -17.3 0.580 -9.000 -9.000 -999. 1058. 810.0 0.01 1.89 0.43 10.10 287. 10.0 279.4
2.0

06 01 01 1 10 38.3 0.682 0.602 0.005 164. 1349. -597.0 0.01 1.89 0.31 11.67 301. 10.0 280.9
2.0

06 01 01 1 11 83.4 0.893 1.120 0.005 486. 2020. -616.6 0.01 1.89 0.26 15.29 291. 10.0 281.4
2.0

06 01 01 1 12 97.2 0.889 1.326 0.005 693. 2013. -521.8 0.01 1.89 0.24 15.20 293. 10.0 281.3
2.0

06 01 01 1 13 137.5 0.968 1.629 0.005 909. 2279. -476.9 0.01 1.89 0.24 16.54 291. 10.0
281.3 2.0

06 01 01 1 14 122.9 0.912 1.653 0.005 1063. 2100. -445.7 0.01 1.89 0.25 15.56 290. 10.0
281.0 2.0

06 01 01 1 15 67.7 0.795 1.385 0.005 1138. 1727. -536.6 0.01 1.89 0.30 13.59 295. 10.0
280.1 2.0

06 01 01 1 16 0.0 0.715 -9.000 -9.000 -999. 1464. 8888.0 0.01 1.89 0.41 12.34 301. 10.0 279.0
2.0

06 01 01 1 17 0.0 0.673 -9.000 -9.000 -999. 1330. 8888.0 0.01 1.89 0.72 11.62 304. 10.0 277.1
2.0

06 01 01 1 18 0.0 0.546 -9.000 -9.000 -999. 987. 8888.0 0.01 1.89 1.00 9.43 293. 10.0 275.9
2.0

06 01 01 1 19 -46.9 0.630 -9.000 -9.000 -999. 1199. 388.5 0.01 1.89 1.00 11.09 294. 10.0 276.2
2.0

06 01 01 1 20 -49.7 0.337 -9.000 -9.000 -999. 566. 55.9 0.01 1.89 1.00 6.57 310. 10.0 275.6
2.0

06 01 01 1 21 -29.5 0.194 -9.000 -9.000 -999. 235. 17.9 0.01 1.89 1.00 4.69 313. 10.0 274.4
2.0

06 01 01 1 22 -29.9 0.238 -9.000 -9.000 -999. 279. 32.8 0.01 1.89 1.00 5.32 338. 10.0 275.8
2.0

06 01 01 1 23 -15.8 0.134 -9.000 -9.000 -999. 123. 11.1 0.01 1.89 1.00 3.67 241. 10.0 274.5
2.0

06 01 01 1 24 -19.1 0.117 -9.000 -9.000 -999. 96. 6.1 0.01 1.89 1.00 3.98 279. 10.0 273.6
2.0

First hour of profile data

YR MO DY HR HEIGHT F WDIR WSPD AMB_TMP sigmaA sigmaW sigmaV

06 01 01 01 2.0 0 -999. -99.00 280.1 99.0 -99.00 -99.00

06 01 01 01 10.0 0 326. 4.43 282.0 5.4 -99.00 0.42

06 01 01 01 60.0 1 316. 5.10 283.1 6.1 -99.00 0.54

F indicates top of profile (=1) or below (=0)

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*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF FORMALDE IN MICROGRAMS/M**3 **

NETWORK

GROUP ID AVERAGE CONC RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL 1ST HIGHEST VALUE IS 0.00128 AT (499450.00, 4508500.00, 1603.57, 1603.57, 0.00) DC

2ND HIGHEST VALUE IS 0.00126 AT (499450.00, 4508450.00, 1603.33, 1603.33, 0.00) DC

3RD HIGHEST VALUE IS 0.00125 AT (499700.00, 4508150.00, 1610.72, 1610.72, 0.00) DC

4TH HIGHEST VALUE IS 0.00122 AT (499450.00, 4508550.00, 1603.86, 1603.86, 0.00) DC

5TH HIGHEST VALUE IS 0.00121 AT (499750.00, 4508100.00, 1608.86, 1608.86, 0.00) DC

6TH HIGHEST VALUE IS 0.00120 AT (499750.00, 4508150.00, 1610.15, 1610.15, 0.00) DC

7TH HIGHEST VALUE IS 0.00119 AT (499700.00, 4508100.00, 1609.85, 1609.85, 0.00) DC

8TH HIGHEST VALUE IS 0.00118 AT (499400.00, 4508500.00, 1603.34, 1603.34, 0.00) DC

9TH HIGHEST VALUE IS 0.00118 AT (499800.00, 4508100.00, 1606.47, 1606.47, 0.00) DC

10TH HIGHEST VALUE IS 0.00116 AT (499400.00, 4508550.00, 1603.60, 1603.60, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF FORMALDE IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	NETWORK RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL HIGH 1ST HIGH VALUE IS 0.08848 ON 06102824: AT (499600.00, 4508200.00, 1608.71, 1608.71, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)

A Total of 624 Warning Message(s)

A Total of 142 Informational Message(s)

A Total of 8760 Hours Were Processed

A Total of 1 Calm Hours Identified

A Total of 141 Missing Hours Identified (1.61 Percent)

******** FATAL ERROR MESSAGES ********

*** NONE ***

******** WARNING MESSAGES ********

ME W181 3169 MEOPEN: BULKRN Delta-T & SolarRad option for SBL was used in AERMET

MX W403 3169 PFLCNV: Turbulence data is being used w/o ADJ_U* option SigA Data

MX W479 24 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 29 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 30 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 31 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.712

MX W479 48 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 51 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 52 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 53 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 141 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 143 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.877

MX W479 147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 151 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 215 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 216 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.734

MX W479 221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 222 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.588

MX W479 244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 291 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.544

MX W479 296 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 308 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.572

MX W479 312 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 313 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.700

MX W479 314 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.735

MX W479 317 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.795

MX W479 318 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 320 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 321 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 340 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 342 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 344 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 475 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.580

MX W479 479 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 482 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.746

MX W479 483 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 484 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 486 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 487 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.681

MX W479 488 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.697

MX W479 489 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.921

MX W479 509 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 524 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 526 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 527 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 528 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.926

MX W479 529 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.676

MX W479 530 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.808

MX W479 531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.740

MX W479 532 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.537

MX W479 533 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.621

MX W479 534 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.830

MX W479 535 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 554 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 555 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 556 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.743

MX W479 573 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.536

MX W479 574 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.241

MX W479 575 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 576 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.562

MX W479 577 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 578 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.213

MX W479 579 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 580 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 581 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.713

MX W479 582 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.678

MX W479 583 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.869

MX W479 584 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 595 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 597 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.667

MX W479 599 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.596

MX W479 600 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 601 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.705

MX W479 605 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 629 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.665

MX W479 632 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.505

MX W479 724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 725 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 727 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 775 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 822 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 835 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 836 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.517

MX W479 837 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 838 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 839 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 932 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 941 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 1029 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.735

MX W479 1031 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479 1034 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 1035 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 1051 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 1052 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500

MX W479 1053 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.884

MX W479 1054 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.859

MX W479	1055	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.766
MX W479	1056	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.677
MX W479	1060	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.721
MX W479	1061	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.639
MX W479	1197	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.658
MX W479	1198	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.709
MX W479	1199	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.645
MX W479	1200	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.530
MX W479	1201	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.663
MX W479	1202	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.650
MX W479	1203	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.590
MX W479	1204	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.726
MX W479	1205	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.750
MX W479	1206	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.700
MX W479	1208	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.604
MX W479	1218	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.513
MX W479	1219	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.824
MX W479	1220	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	1221	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.731
MX W479	1222	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.635
MX W479	1223	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	1224	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.715
MX W479	1225	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	1226	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.753
MX W479	1227	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.778
MX W479	1228	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.636
MX W479	1229	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.602
MX W479	1230	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	1231	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.753

MX W479 1243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 1244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 1245 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 1276 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 1277 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 1278 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.729

MX W479 1293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.683

MX W479 1294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.851

MX W479 1295 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1296 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 1297 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 1300 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.634

MX W479 1301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.723

MX W479 1302 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 1303 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 1316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.692

MX W479 1343 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 1344 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.720

MX W479 1345 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1346 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 1347 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 1365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.696

MX W479 1373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 1374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1375 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.622

MX W479	1392	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	1394	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.577
MX W479	1395	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	1396	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.671
MX W479	1397	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	1441	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	1442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	1483	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.647
MX W479	1532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	1537	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	1539	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.613
MX W479	1540	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	1541	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.648
MX W479	1543	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	1566	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.569
MX W479	1661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	1989	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	1990	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	1991	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	1993	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.563
MX W479	1994	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.534
MX W479	2086	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	2088	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	2089	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	2093	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	2228	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.579
MX W479	2229	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.638
MX W479	2230	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.693
MX W479	2231	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.634

MX W479 2232 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.632

MX W479 2234 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 2235 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 2253 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 2254 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 2255 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.755

MX W479 2262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 2348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 2349 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2350 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 2351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2352 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.834

MX W479 2353 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.525

MX W479 2354 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2355 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.560

MX W479 2356 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 2373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.752

MX W479 2374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.569

MX W479 2378 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 2379 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.647

MX W479 2380 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 2382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 2399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.920

MX W479 2421 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2422 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 2424 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 2425 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 2428 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 2429 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.578

MX W479	2430	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.528
MX W479	2445	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.748
MX W479	2446	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	2447	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.779
MX W479	2448	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.743
MX W479	2449	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.733
MX W479	2450	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	2468	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.568
MX W479	2469	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.019
MX W479	2470	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.976
MX W479	2471	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.882
MX W479	2472	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.650
MX W479	2542	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.620
MX W479	2543	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.826
MX W479	2544	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.734
MX W479	2545	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.629
MX W479	2546	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.769
MX W479	2547	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.656
MX W479	2548	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.679
MX W479	2549	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.853
MX W479	2550	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.715
MX W479	2615	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.589
MX W479	2616	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	2617	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	2639	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	2640	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.715
MX W479	2641	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.777
MX W479	2643	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.648
MX W479	2645	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.602

MX W479 2646 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 2663 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.896

MX W479 2664 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 2666 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 2669 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 2670 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500

MX W479 2763 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.504

MX W479 2783 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.567

MX W479 2786 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.588

MX W479 2788 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.748

MX W479 2789 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2832 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 2833 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.506

MX W479 2900 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 2901 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.673

MX W479 2902 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.730

MX W479 2903 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 2905 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 2906 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 2907 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 3045 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 3047 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.554

MX W479 3048 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.508

MX W479 3148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 3149 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 3168 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 3169 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 3170 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.601

MX W479	3171	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.796
MX W479	3172	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	3173	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.889
MX W479	3174	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.658
MX W479	3239	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	3262	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.633
MX W479	3263	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.636
MX W479	3289	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.546
MX W479	3290	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.586
MX W479	3291	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.607
MX W479	3293	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.528
MX W479	3294	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	3313	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	3316	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.595
MX W479	3337	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	3338	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.521
MX W479	3339	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.513
MX W479	3363	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.584
MX W479	3364	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	3365	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.666
MX W479	3366	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.576
MX W479	3382	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.620
MX W479	3383	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.727
MX W479	3384	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.606
MX W479	3453	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.648
MX W479	3454	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.711
MX W479	3457	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	3509	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.654
MX W479	3525	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614

MX W479	3671	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.541
MX W479	3674	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	3693	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	3748	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.562
MX W479	3792	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.536
MX W479	3796	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.568
MX W479	4029	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.848
MX W479	4030	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.707
MX W479	4031	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.721
MX W479	4035	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	4036	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.645
MX W479	4037	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	4057	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.502
MX W479	4080	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	4101	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.545
MX W479	4102	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.715
MX W479	4103	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.847
MX W479	4104	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.608
MX W479	4105	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.522
MX W479	4172	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.682
MX W479	4173	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.824
MX W479	4227	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	4297	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	4298	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.590
MX W479	4301	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.582
MX W479	4493	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.603
MX W479	4586	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	4629	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.548
MX W479	4630	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.517

MX W479	4652	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.510
MX W479	4653	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.685
MX W479	4654	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	4656	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	4657	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.903
MX W479	4658	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.975
MX W479	4659	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.826
MX W479	4660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.741
MX W479	4661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.888
MX W479	4677	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.524
MX W479	4679	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.638
MX W479	4680	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	4685	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.731
MX W479	4724	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.589
MX W479	4996	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	5331	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.662
MX W479	5332	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.561
MX W479	5471	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	5472	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.555
MX W479	5475	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.635
MX W479	5614	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.669
MX W479	5615	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.549
MX W479	5621	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.557
MX W479	5622	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.623
MX W479	5790	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.581
MX W479	5804	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.522
MX W479	5805	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.719
MX W479	5809	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.553
MX W479	5812	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.675

MX W479	5813	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.645
MX W479	5814	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.523
MX W479	5979	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	5980	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.546
MX W479	6120	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.528
MX W479	6121	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.501
MX W479	6125	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	6126	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	6142	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	6146	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.582
MX W479	6147	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.573
MX W479	6148	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.779
MX W479	6149	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.883
MX W479	6150	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.860
MX W479	6267	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.540
MX W479	6268	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	6271	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.529
MX W479	6286	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.595
MX W479	6292	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.577
MX W479	6294	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.615
MX W479	6405	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.611
MX W479	6406	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.887
MX W479	6407	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.555
MX W479	6408	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.541
MX W479	6409	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	6410	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.740
MX W479	6411	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	6413	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.513
MX W479	6430	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.587

MX W479	6431	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.841
MX W479	6435	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.023
MX W479	6436	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.778
MX W479	6486	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	6501	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.822
MX W479	6524	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.557
MX W479	6525	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.600
MX W479	6526	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	6528	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.612
MX W479	6529	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	6530	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	6531	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.662
MX W479	6532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.680
MX W479	6548	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.718
MX W479	6549	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.739
MX W479	6550	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.767
MX W479	6553	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.592
MX W479	6554	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.776
MX W479	6555	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.581
MX W479	6556	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	6558	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.988
MX W479	6559	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.766
MX W479	6571	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.523
MX W479	6572	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.870
MX W479	6573	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.668
MX W479	6574	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.705
MX W479	6577	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.791
MX W479	6578	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	6579	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.622

MX W479	6580	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	6581	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.872
MX W479	6582	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.704
MX W479	6583	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	6596	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	6602	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	6791	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.545
MX W479	6835	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.564
MX W479	6836	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	6868	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	6870	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.516
MX W479	6890	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	6912	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.576
MX W479	6913	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.636
MX W479	6914	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	6915	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.571
MX W479	6917	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	6918	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	7014	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7099	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.534
MX W479	7100	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.759
MX W479	7101	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7103	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	7111	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	7123	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	7126	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.603
MX W479	7127	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	7129	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	7130	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.683

MX W479	7131	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	7132	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.525
MX W479	7195	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.554
MX W479	7196	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	7199	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	7207	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.635
MX W479	7220	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.644
MX W479	7243	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.628
MX W479	7244	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	7246	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.712
MX W479	7252	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.629
MX W479	7253	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	7255	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.681
MX W479	7316	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.757
MX W479	7317	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.558
MX W479	7318	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.570
MX W479	7319	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	7321	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.602
MX W479	7323	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	7324	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.578
MX W479	7326	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.528
MX W479	7340	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.691
MX W479	7343	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.510
MX W479	7345	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	7346	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	7351	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	7363	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	7364	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.215
MX W479	7366	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.516

MX W479 7367 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.612

MX W479 7368 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.799

MX W479 7369 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.518

MX W479 7388 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 7389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 7390 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 7391 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.797

MX W479 7393 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 7395 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 7396 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 7397 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 7399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.656

MX W479 7400 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.686

MX W479 7446 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.641

MX W479 7462 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.761

MX W479 7468 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 7469 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.811

MX W479 7470 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.856

MX W479 7471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.803

MX W479 7484 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 7513 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 7514 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 7531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.594

MX W479 7543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 7585 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.532

MX W479 7586 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.831

MX W479 7587 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

MX W479 7602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 7603 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479	7660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.708
MX W479	7661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7681	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	7682	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7683	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.707
MX W479	7684	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.628
MX W479	7753	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.641
MX W479	7755	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.502
MX W479	7794	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.607
MX W479	7796	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.032
MX W479	7797	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.212
MX W479	7798	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.800
MX W479	7801	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.637
MX W479	7802	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.906
MX W479	7803	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	7804	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.841
MX W479	7805	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.048
MX W479	7806	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.021
MX W479	7807	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.755
MX W479	7819	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.902
MX W479	7867	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.583
MX W479	7869	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	7873	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	7878	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.513
MX W479	7879	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	7891	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.666
MX W479	7892	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.532
MX W479	7894	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	7896	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556

MX W479	7897	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.506
MX W479	7898	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.761
MX W479	7899	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.773
MX W479	7900	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	7901	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.852
MX W479	7941	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	7948	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7989	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.671
MX W479	7990	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	7991	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	7992	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.622
MX W479	7993	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.288
MX W479	7994	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.608
MX W479	7996	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.606
MX W479	8011	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	8041	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.505
MX W479	8042	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.604
MX W479	8062	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.522
MX W479	8067	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.589
MX W479	8086	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.668
MX W479	8087	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.504
MX W479	8088	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.618
MX W479	8089	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	8090	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.585
MX W479	8091	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.523
MX W479	8107	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.613
MX W479	8108	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	8111	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.564
MX W479	8112	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.633

MX W479	8116	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	8117	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.838
MX W479	8118	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.725
MX W479	8119	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.001
MX W479	8120	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.649
MX W479	8190	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.571
MX W479	8191	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.719
MX W479	8192	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	8202	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.572
MX W479	8203	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.563
MX W479	8204	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.511
MX W479	8206	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	8208	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.642
MX W479	8209	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.717
MX W479	8210	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.670
MX W479	8211	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	8213	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.701
MX W479	8214	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.584
MX W479	8215	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.714
MX W479	8216	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.687
MX W479	8229	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.638
MX W479	8230	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	8231	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	8235	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	8238	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.571
MX W479	8301	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.642
MX W479	8304	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.555
MX W479	8306	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.685
MX W479	8307	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574

MX W479	8311	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.550
MX W479	8350	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.596
MX W479	8356	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.511
MX W479	8358	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	8360	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	8427	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.593
MX W479	8428	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.548
MX W479	8442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	8445	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	8447	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	8448	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	8450	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.583
MX W479	8451	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.695
MX W479	8452	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.533
MX W479	8514	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	8553	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.944
MX W479	8567	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.619
MX W479	8570	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.535
MX W479	8571	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	8595	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626
MX W479	8646	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	8660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.567
MX W479	8730	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	8734	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	8735	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.560
MX W479	8760	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** MODEL SETUP OPTIONS SUMMARY ***

** Model Options Selected:

* Model Uses Regulatory DEFAULT Options
* Model Is Setup For Calculation of Average CONCentration Values.
* NO GAS DEPOSITION Data Provided.
* NO PARTICLE DEPOSITION Data Provided.
* Model Uses NO DRY DEPLETION. DDPLETE = F
* Model Uses NO WET DEPLETION. WETDPLT = F
* Stack-tip Downwash.
* Model Accounts for ELEVated Terrain Effects.
* Use Calms Processing Routine.
* Use Missing Data Processing Routine.
* No Exponential Decay.
* Model Uses RURAL Dispersion Only.
* BULKRN - Use BULKRN Delta-T and SolarRad option for SBL in AERMET
* Model Assumes No FLAGPOLE Receptor Heights.
* The User Specified a Pollutant Type of: TOLUENE

**Model Calculates 1 Short Term Average(s) of: 1-HR
and Calculates ANNUAL Averages

**This Run Includes: 1 Source(s); 1 Source Group(s); and 3106 Receptor(s)

with: 1 POINT(s), including

0 POINTCAP(s) and 0 POINTHOR(s)

and: 0 VOLUME source(s)

and: 0 AREA type source(s)

and: 0 LINE source(s)

and: 0 RLINE/RLINEXT source(s)

and: 0 OPENPIT source(s)

and: 0 BUOYANT LINE source(s) with a total of 0 line(s)

and: 0 SWPOINT source(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 22112

**Output Options Selected:

Model Outputs Tables of ANNUAL Averages by Receptor

Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)

Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours

m for Missing Hours

b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 1730.68 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0

Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07

```
             Output Units   = MICROGRAMS/M**3


 **Approximate Storage Requirements of Model =      3.9 MB of RAM.


 **Input Runstream File:          C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi

 **Output Print File:            C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi


 **File for Summary of Results:   C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi

 *** AERMOD - VERSION 22112  ***   *** Title One                                    ***       05/09/23

 *** AERMET - VERSION  22112 ***   ***                                           ***       15:20:21

                                                                          PAGE   2

 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  BULKRN  SigA Data


                         *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***

                                    (1=YES; 0=NO)


       1111111111 1111111111 1111111111 1111111111 1111111111

       1111111111 1111111111 1111111111 1111111111 1111111111

       1111111111 1111111111 1111111111 1111111111 1111111111

       1111111111 1111111111 1111111111 1111111111 1111111111

       1111111111 1111111111 1111111111 1111111111 1111111111

       1111111111 1111111111 1111111111 1111111111 1111111111

       1111111111 1111111111 1111111111 1111111111 1111111111

       1111111111 11111


          NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS
INCLUDED IN THE DATA FILE.
```

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** AERMOD - VERSION 22112 *** *** Title One *** 05/09/23

*** AERMET - VERSION 22112 *** *** *** 15:20:21

PAGE 3

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling Met Version: 22112

Profile file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling

Surface format: FREE

Profile format: FREE

Surface station no.: 0 Upper air station no.: 23062

Name: UNKNOWN Name: DENVER WSFO, CO

Year: 2006 Year: 2006

First 24 hours of scalar data

YR MO DY JDY HR H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS WD HT REF TA HT

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06 01 01 1 01 -26.0 0.162 -9.000 -9.000 -999. 157. 11.8 0.01 1.89 1.00 4.43 326. 10.0 280.1 2.0

06 01 01 1 02 -58.1 0.325 -9.000 -9.000 -999. 445. 42.5 0.01 1.89 1.00 6.57 310. 10.0 281.4
2.0

06 01 01 1 03 -33.0 0.292 -9.000 -9.000 -999. 380. 54.5 0.01 1.89 1.00 5.72 272. 10.0 281.0
2.0

06 01 01 1 04 -14.9 0.128 -9.000 -9.000 -999. 134. 10.2 0.01 1.89 1.00 3.67 320. 10.0 279.8
2.0

06 01 01 1 05 -13.5 0.124 -9.000 -9.000 -999. 105. 10.1 0.01 1.89 1.00 3.71 337. 10.0 279.0
2.0

06 01 01 1 06 -18.3 0.176 -9.000 -9.000 -999. 177. 21.3 0.01 1.89 1.00 4.29 344. 10.0 278.3
2.0

06 01 01 1 07 -34.9 0.286 -9.000 -9.000 -999. 367. 48.1 0.01 1.89 1.00 5.68 327. 10.0 279.3
2.0

06 01 01 1 08 -39.7 0.440 -9.000 -9.000 -999. 701. 154.4 0.01 1.89 1.00 7.96 307. 10.0 279.8
2.0

06 01 01 1 09 -17.3 0.580 -9.000 -9.000 -999. 1058. 810.0 0.01 1.89 0.43 10.10 287. 10.0 279.4
2.0

06 01 01 1 10 38.3 0.682 0.602 0.005 164. 1349. -597.0 0.01 1.89 0.31 11.67 301. 10.0 280.9
2.0

06 01 01 1 11 83.4 0.893 1.120 0.005 486. 2020. -616.6 0.01 1.89 0.26 15.29 291. 10.0 281.4
2.0

06 01 01 1 12 97.2 0.889 1.326 0.005 693. 2013. -521.8 0.01 1.89 0.24 15.20 293. 10.0 281.3
2.0

06 01 01 1 13 137.5 0.968 1.629 0.005 909. 2279. -476.9 0.01 1.89 0.24 16.54 291. 10.0
281.3 2.0

06 01 01 1 14 122.9 0.912 1.653 0.005 1063. 2100. -445.7 0.01 1.89 0.25 15.56 290. 10.0
281.0 2.0

06 01 01 1 15 67.7 0.795 1.385 0.005 1138. 1727. -536.6 0.01 1.89 0.30 13.59 295. 10.0
280.1 2.0

06 01 01 1 16 0.0 0.715 -9.000 -9.000 -999. 1464. 8888.0 0.01 1.89 0.41 12.34 301. 10.0 279.0
2.0

06 01 01 1 17 0.0 0.673 -9.000 -9.000 -999. 1330. 8888.0 0.01 1.89 0.72 11.62 304. 10.0 277.1
2.0

06 01 01 1 18 0.0 0.546 -9.000 -9.000 -999. 987. 8888.0 0.01 1.89 1.00 9.43 293. 10.0 275.9
2.0

06 01 01 1 19 -46.9 0.630 -9.000 -9.000 -999. 1199. 388.5 0.01 1.89 1.00 11.09 294. 10.0 276.2
2.0

06 01 01 1 20 -49.7 0.337 -9.000 -9.000 -999. 566. 55.9 0.01 1.89 1.00 6.57 310. 10.0 275.6
2.0

06 01 01 1 21 -29.5 0.194 -9.000 -9.000 -999. 235. 17.9 0.01 1.89 1.00 4.69 313. 10.0 274.4
2.0

06 01 01 1 22 -29.9 0.238 -9.000 -9.000 -999. 279. 32.8 0.01 1.89 1.00 5.32 338. 10.0 275.8
2.0

06 01 01 1 23 -15.8 0.134 -9.000 -9.000 -999. 123. 11.1 0.01 1.89 1.00 3.67 241. 10.0 274.5
2.0

06 01 01 1 24 -19.1 0.117 -9.000 -9.000 -999. 96. 6.1 0.01 1.89 1.00 3.98 279. 10.0 273.6
2.0

First hour of profile data

YR MO DY HR HEIGHT F WDIR WSPD AMB_TMP sigmaA sigmaW sigmaV

06 01 01 01 2.0 0 -999. -99.00 280.1 99.0 -99.00 -99.00

06 01 01 01 10.0 0 326. 4.43 282.0 5.4 -99.00 0.42

06 01 01 01 60.0 1 316. 5.10 283.1 6.1 -99.00 0.54

F indicates top of profile (=1) or below (=0)

*** AERMOD - VERSION 22112 *** *** Title One *** 05/09/23

*** AERMET - VERSION 22112 *** *** *** 15:20:21

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*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF TOLUENE IN MICROGRAMS/M**3 **

NETWORK

GROUP ID AVERAGE CONC RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL 1ST HIGHEST VALUE IS 0.00580 AT (499450.00, 4508500.00, 1603.57, 1603.57, 0.00) DC

2ND HIGHEST VALUE IS 0.00567 AT (499450.00, 4508450.00, 1603.33, 1603.33, 0.00) DC

3RD HIGHEST VALUE IS 0.00563 AT (499700.00, 4508150.00, 1610.72, 1610.72, 0.00) DC

4TH HIGHEST VALUE IS 0.00553 AT (499450.00, 4508550.00, 1603.86, 1603.86, 0.00) DC

5TH HIGHEST VALUE IS 0.00547 AT (499750.00, 4508100.00, 1608.86, 1608.86, 0.00) DC

6TH HIGHEST VALUE IS 0.00540 AT (499750.00, 4508150.00, 1610.15, 1610.15, 0.00) DC

7TH HIGHEST VALUE IS 0.00537 AT (499700.00, 4508100.00, 1609.85, 1609.85, 0.00) DC

8TH HIGHEST VALUE IS 0.00534 AT (499400.00, 4508500.00, 1603.34, 1603.34, 0.00) DC

9TH HIGHEST VALUE IS 0.00532 AT (499800.00, 4508100.00, 1606.47, 1606.47, 0.00) DC

10TH HIGHEST VALUE IS 0.00523 AT (499400.00, 4508550.00, 1603.60, 1603.60, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF TOLUENE IN MICROGRAMS/M**3 **

DATE NETWORK

GROUP ID AVERAGE CONC (YYMMDDHH) RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

- -

ALL HIGH 1ST HIGH VALUE IS 0.39946 ON 06102824: AT (499600.00, 4508200.00, 1608.71, 1608.71, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** AERMOD - VERSION 22112 *** *** Title One *** 05/09/23

*** AERMET - VERSION 22112 *** *** *** 15:20:21

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*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)

A Total of 624 Warning Message(s)

A Total of 142 Informational Message(s)

A Total of 8760 Hours Were Processed

A Total of 1 Calm Hours Identified

A Total of 141 Missing Hours Identified (1.61 Percent)

******** FATAL ERROR MESSAGES ********

*** NONE ***

******** WARNING MESSAGES ********

ME W181 3169 MEOPEN: BULKRN Delta-T & SolarRad option for SBL was used in AERMET

MX W403 3169 PFLCNV: Turbulence data is being used w/o ADJ_U* option SigA Data

MX W479 24 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 29 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 30 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 31 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.712

MX W479 48 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 51 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 52 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 53 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 141 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 143 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.877

MX W479 147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 151 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479	215	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	216	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.734
MX W479	221	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.535
MX W479	222	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.604
MX W479	243	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.588
MX W479	244	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	291	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	296	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	308	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.572
MX W479	312	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	313	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.700
MX W479	314	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.658
MX W479	316	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.735
MX W479	317	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.795
MX W479	318	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.549
MX W479	320	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	321	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.644
MX W479	340	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	342	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	344	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.561
MX W479	475	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.580
MX W479	479	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	482	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.746
MX W479	483	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	484	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	486	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	487	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.681
MX W479	488	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.697
MX W479	489	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.921

MX W479 509 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 524 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 526 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 527 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 528 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.926

MX W479 529 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.676

MX W479 530 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.808

MX W479 531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.740

MX W479 532 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.537

MX W479 533 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.621

MX W479 534 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.830

MX W479 535 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 554 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 555 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 556 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.743

MX W479 573 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.536

MX W479 574 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.241

MX W479 575 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 576 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.562

MX W479 577 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 578 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.213

MX W479 579 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 580 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 581 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.713

MX W479 582 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.678

MX W479 583 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.869

MX W479 584 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 595 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 597 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.667

MX W479 599 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.596

MX W479 600 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 601 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.705

MX W479 605 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 629 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.665

MX W479 632 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.505

MX W479 724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 725 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 727 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 775 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 822 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 835 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 836 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.517

MX W479 837 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 838 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 839 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 932 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 941 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 1029 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.735

MX W479 1031 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479 1034 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 1035 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 1051 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 1052 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500

MX W479 1053 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.884

MX W479 1054 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.859

MX W479 1055 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.766

MX W479 1056 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.677

MX W479 1060 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 1061 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.639

MX W479 1197 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1198 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.709

MX W479 1199 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 1200 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.530

MX W479 1201 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 1203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.590

MX W479 1204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.726

MX W479 1205 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.750

MX W479 1206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.700

MX W479 1208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1218 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 1219 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.824

MX W479 1220 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 1221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 1222 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 1223 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 1224 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 1225 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 1226 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1227 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.778

MX W479 1228 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 1229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 1231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 1244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 1245 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 1276 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 1277 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 1278 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.729

MX W479 1293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.683

MX W479 1294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.851

MX W479 1295 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1296 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 1297 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 1300 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.634

MX W479 1301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.723

MX W479 1302 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 1303 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 1316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.692

MX W479 1343 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 1344 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.720

MX W479 1345 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1346 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 1347 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 1365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.696

MX W479 1373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 1374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1375 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.622

MX W479	1392	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	1394	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.577
MX W479	1395	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	1396	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.671
MX W479	1397	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	1441	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	1442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	1483	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.647
MX W479	1532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	1537	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	1539	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.613
MX W479	1540	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	1541	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.648
MX W479	1543	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	1566	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.569
MX W479	1661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	1989	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	1990	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	1991	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	1993	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.563
MX W479	1994	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.534
MX W479	2086	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	2088	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	2089	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	2093	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	2228	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.579
MX W479	2229	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.638
MX W479	2230	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.693
MX W479	2231	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.634

MX W479 2232 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.632

MX W479 2234 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 2235 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 2253 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 2254 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 2255 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.755

MX W479 2262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 2348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 2349 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2350 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 2351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2352 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.834

MX W479 2353 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.525

MX W479 2354 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2355 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.560

MX W479 2356 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 2373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.752

MX W479 2374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.569

MX W479 2378 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 2379 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.647

MX W479 2380 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 2382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 2399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.920

MX W479 2421 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2422 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 2424 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 2425 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 2428 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 2429 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.578

MX W479 2430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 2445 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.748

MX W479 2446 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 2447 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

MX W479 2448 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.743

MX W479 2449 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.733

MX W479 2450 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 2468 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2469 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.019

MX W479 2470 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.976

MX W479 2471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.882

MX W479 2472 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 2542 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.826

MX W479 2544 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.734

MX W479 2545 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.629

MX W479 2546 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.769

MX W479 2547 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.656

MX W479 2548 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.679

MX W479 2549 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.853

MX W479 2550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 2615 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 2616 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 2617 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 2639 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 2640 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 2641 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.777

MX W479 2643 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 2645 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 2646 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 2663 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.896

MX W479 2664 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 2666 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 2669 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 2670 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500

MX W479 2763 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.504

MX W479 2783 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.567

MX W479 2786 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.588

MX W479 2788 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.748

MX W479 2789 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2832 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 2833 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.506

MX W479 2900 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 2901 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.673

MX W479 2902 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.730

MX W479 2903 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 2905 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 2906 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 2907 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 3045 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 3047 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.554

MX W479 3048 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.508

MX W479 3148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 3149 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 3168 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 3169 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 3170 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.601

MX W479	3171	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.796
MX W479	3172	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	3173	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.889
MX W479	3174	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.658
MX W479	3239	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	3262	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.633
MX W479	3263	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.636
MX W479	3289	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.546
MX W479	3290	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.586
MX W479	3291	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.607
MX W479	3293	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.528
MX W479	3294	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	3313	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	3316	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.595
MX W479	3337	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	3338	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.521
MX W479	3339	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.513
MX W479	3363	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.584
MX W479	3364	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	3365	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.666
MX W479	3366	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.576
MX W479	3382	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.620
MX W479	3383	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.727
MX W479	3384	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.606
MX W479	3453	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.648
MX W479	3454	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.711
MX W479	3457	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	3509	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.654
MX W479	3525	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614

MX W479	3671	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.541
MX W479	3674	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	3693	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	3748	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.562
MX W479	3792	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.536
MX W479	3796	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.568
MX W479	4029	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.848
MX W479	4030	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.707
MX W479	4031	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.721
MX W479	4035	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	4036	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.645
MX W479	4037	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	4057	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.502
MX W479	4080	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	4101	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.545
MX W479	4102	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.715
MX W479	4103	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.847
MX W479	4104	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.608
MX W479	4105	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.522
MX W479	4172	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.682
MX W479	4173	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.824
MX W479	4227	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	4297	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	4298	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.590
MX W479	4301	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.582
MX W479	4493	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.603
MX W479	4586	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	4629	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.548
MX W479	4630	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.517

MX W479 4652 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 4653 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.685

MX W479 4654 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 4656 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 4657 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.903

MX W479 4658 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.975

MX W479 4659 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.826

MX W479 4660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.741

MX W479 4661 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.888

MX W479 4677 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.524

MX W479 4679 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 4680 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.591

MX W479 4685 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 4724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 4996 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.544

MX W479 5331 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.662

MX W479 5332 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 5471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 5472 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 5475 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 5614 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.669

MX W479 5615 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 5621 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 5622 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.623

MX W479 5790 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 5804 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 5805 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 5809 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 5812 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.675

MX W479 5813 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 5814 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 5979 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 5980 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 6120 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 6121 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 6125 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 6126 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 6142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 6146 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 6147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

MX W479 6148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

MX W479 6149 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.883

MX W479 6150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.860

MX W479 6267 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 6268 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 6271 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 6286 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 6292 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.577

MX W479 6294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.615

MX W479 6405 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 6406 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.887

MX W479 6407 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 6408 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.541

MX W479 6409 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 6410 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.740

MX W479 6411 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 6413 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 6430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479	6431	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.841
MX W479	6435	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.023
MX W479	6436	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.778
MX W479	6486	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	6501	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.822
MX W479	6524	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.557
MX W479	6525	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.600
MX W479	6526	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	6528	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.612
MX W479	6529	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	6530	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	6531	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.662
MX W479	6532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.680
MX W479	6548	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.718
MX W479	6549	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.739
MX W479	6550	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.767
MX W479	6553	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.592
MX W479	6554	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.776
MX W479	6555	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.581
MX W479	6556	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	6558	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.988
MX W479	6559	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.766
MX W479	6571	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.523
MX W479	6572	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.870
MX W479	6573	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.668
MX W479	6574	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.705
MX W479	6577	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.791
MX W479	6578	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	6579	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.622

MX W479	6580	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	6581	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.872
MX W479	6582	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.704
MX W479	6583	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	6596	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	6602	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	6791	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.545
MX W479	6835	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.564
MX W479	6836	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	6868	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	6870	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.516
MX W479	6890	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	6912	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.576
MX W479	6913	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.636
MX W479	6914	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	6915	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.571
MX W479	6917	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	6918	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	7014	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7099	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.534
MX W479	7100	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.759
MX W479	7101	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7103	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	7111	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	7123	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	7126	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.603
MX W479	7127	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	7129	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	7130	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.683

MX W479	7131	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	7132	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.525
MX W479	7195	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.554
MX W479	7196	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	7199	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	7207	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.635
MX W479	7220	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.644
MX W479	7243	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.628
MX W479	7244	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	7246	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.712
MX W479	7252	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.629
MX W479	7253	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	7255	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.681
MX W479	7316	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.757
MX W479	7317	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.558
MX W479	7318	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.570
MX W479	7319	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	7321	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.602
MX W479	7323	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	7324	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.578
MX W479	7326	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.528
MX W479	7340	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.691
MX W479	7343	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.510
MX W479	7345	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	7346	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	7351	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	7363	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	7364	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.215
MX W479	7366	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.516

MX W479 7367 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.612

MX W479 7368 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.799

MX W479 7369 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.518

MX W479 7388 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 7389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 7390 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 7391 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.797

MX W479 7393 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 7395 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 7396 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 7397 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 7399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.656

MX W479 7400 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.686

MX W479 7446 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.641

MX W479 7462 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.761

MX W479 7468 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 7469 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.811

MX W479 7470 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.856

MX W479 7471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.803

MX W479 7484 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 7513 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 7514 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 7531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.594

MX W479 7543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 7585 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.532

MX W479 7586 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.831

MX W479 7587 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

MX W479 7602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 7603 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479	7660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.708
MX W479	7661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7681	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	7682	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7683	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.707
MX W479	7684	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.628
MX W479	7753	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.641
MX W479	7755	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.502
MX W479	7794	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.607
MX W479	7796	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.032
MX W479	7797	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.212
MX W479	7798	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.800
MX W479	7801	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.637
MX W479	7802	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.906
MX W479	7803	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	7804	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.841
MX W479	7805	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.048
MX W479	7806	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.021
MX W479	7807	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.755
MX W479	7819	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.902
MX W479	7867	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.583
MX W479	7869	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	7873	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	7878	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.513
MX W479	7879	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	7891	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.666
MX W479	7892	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.532
MX W479	7894	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	7896	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556

MX W479	7897	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.506
MX W479	7898	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.761
MX W479	7899	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.773
MX W479	7900	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	7901	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.852
MX W479	7941	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	7948	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7989	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.671
MX W479	7990	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	7991	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	7992	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.622
MX W479	7993	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.288
MX W479	7994	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.608
MX W479	7996	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.606
MX W479	8011	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	8041	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.505
MX W479	8042	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.604
MX W479	8062	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.522
MX W479	8067	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.589
MX W479	8086	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.668
MX W479	8087	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.504
MX W479	8088	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.618
MX W479	8089	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	8090	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.585
MX W479	8091	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.523
MX W479	8107	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.613
MX W479	8108	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	8111	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.564
MX W479	8112	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.633

MX W479	8116	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	8117	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.838
MX W479	8118	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.725
MX W479	8119	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.001
MX W479	8120	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.649
MX W479	8190	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.571
MX W479	8191	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.719
MX W479	8192	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	8202	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.572
MX W479	8203	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.563
MX W479	8204	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.511
MX W479	8206	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	8208	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.642
MX W479	8209	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.717
MX W479	8210	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.670
MX W479	8211	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	8213	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.701
MX W479	8214	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.584
MX W479	8215	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.714
MX W479	8216	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.687
MX W479	8229	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.638
MX W479	8230	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	8231	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	8235	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	8238	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.571
MX W479	8301	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.642
MX W479	8304	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.555
MX W479	8306	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.685
MX W479	8307	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574

MX W479	8311	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.550
MX W479	8350	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.596
MX W479	8356	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.511
MX W479	8358	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	8360	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	8427	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.593
MX W479	8428	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.548
MX W479	8442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	8445	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	8447	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	8448	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	8450	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.583
MX W479	8451	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.695
MX W479	8452	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.533
MX W479	8514	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	8553	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.944
MX W479	8567	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.619
MX W479	8570	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.535
MX W479	8571	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	8595	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626
MX W479	8646	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	8660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.567
MX W479	8730	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	8734	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	8735	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.560
MX W479	8760	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** MODEL SETUP OPTIONS SUMMARY ***

** Model Options Selected:

* Model Uses Regulatory DEFAULT Options
* Model Is Setup For Calculation of Average CONCentration Values.
* NO GAS DEPOSITION Data Provided.
* NO PARTICLE DEPOSITION Data Provided.
* Model Uses NO DRY DEPLETION. DDPLETE = F
* Model Uses NO WET DEPLETION. WETDPLT = F
* Stack-tip Downwash.
* Model Accounts for ELEVated Terrain Effects.
* Use Calms Processing Routine.
* Use Missing Data Processing Routine.
* No Exponential Decay.
* Model Uses RURAL Dispersion Only.
* BULKRN - Use BULKRN Delta-T and SolarRad option for SBL in AERMET
* Model Assumes No FLAGPOLE Receptor Heights.
* The User Specified a Pollutant Type of: QUINONE

**Model Calculates 1 Short Term Average(s) of: 1-HR
and Calculates ANNUAL Averages

**This Run Includes: 1 Source(s); 1 Source Group(s); and 3106 Receptor(s)

with: 1 POINT(s), including

0 POINTCAP(s) and 0 POINTHOR(s)

and: 0 VOLUME source(s)

and: 0 AREA type source(s)

and: 0 LINE source(s)

and: 0 RLINE/RLINEXT source(s)

and: 0 OPENPIT source(s)

and: 0 BUOYANT LINE source(s) with a total of 0 line(s)

and: 0 SWPOINT source(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 22112

**Output Options Selected:

Model Outputs Tables of ANNUAL Averages by Receptor

Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)

Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours

m for Missing Hours

b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 1730.68 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0

Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07

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```
            Output Units   = MICROGRAMS/M**3


 **Approximate Storage Requirements of Model =      3.9 MB of RAM.


 **Input Runstream File:          C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi
 **Output Print File:             C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi


 **File for Summary of Results:   C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi
 *** AERMOD - VERSION 22112  ***   *** Title One                                   ***        05/09/23
 *** AERMET - VERSION  22112 ***   ***                                             ***        15:21:01
                                                                                  PAGE   2
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  BULKRN  SigA Data


                        *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                           (1=YES; 0=NO)


          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1


           NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS
INCLUDED IN THE DATA FILE.
```

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling Met Version: 22112

Profile file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling

Surface format: FREE

Profile format: FREE

Surface station no.: 0 Upper air station no.: 23062

Name: UNKNOWN Name: DENVER WSFO, CO

Year: 2006 Year: 2006

First 24 hours of scalar data

YR MO DY JDY HR H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS WD HT REF TA HT

---

06 01 01 1 01 -26.0 0.162 -9.000 -9.000 -999. 157. 11.8 0.01 1.89 1.00 4.43 326. 10.0 280.1 2.0

06 01 01 1 02 -58.1 0.325 -9.000 -9.000 -999. 445. 42.5 0.01 1.89 1.00 6.57 310. 10.0 281.4
2.0

06 01 01 1 03 -33.0 0.292 -9.000 -9.000 -999. 380. 54.5 0.01 1.89 1.00 5.72 272. 10.0 281.0
2.0

06 01 01 1 04 -14.9 0.128 -9.000 -9.000 -999. 134. 10.2 0.01 1.89 1.00 3.67 320. 10.0 279.8
2.0

06 01 01 1 05 -13.5 0.124 -9.000 -9.000 -999. 105. 10.1 0.01 1.89 1.00 3.71 337. 10.0 279.0
2.0

06 01 01 1 06 -18.3 0.176 -9.000 -9.000 -999. 177. 21.3 0.01 1.89 1.00 4.29 344. 10.0 278.3
2.0

06 01 01 1 07 -34.9 0.286 -9.000 -9.000 -999. 367. 48.1 0.01 1.89 1.00 5.68 327. 10.0 279.3
2.0

06 01 01 1 08 -39.7 0.440 -9.000 -9.000 -999. 701. 154.4 0.01 1.89 1.00 7.96 307. 10.0 279.8
2.0

06 01 01 1 09 -17.3 0.580 -9.000 -9.000 -999. 1058. 810.0 0.01 1.89 0.43 10.10 287. 10.0 279.4
2.0

06 01 01 1 10 38.3 0.682 0.602 0.005 164. 1349. -597.0 0.01 1.89 0.31 11.67 301. 10.0 280.9
2.0

06 01 01 1 11 83.4 0.893 1.120 0.005 486. 2020. -616.6 0.01 1.89 0.26 15.29 291. 10.0 281.4
2.0

06 01 01 1 12 97.2 0.889 1.326 0.005 693. 2013. -521.8 0.01 1.89 0.24 15.20 293. 10.0 281.3
2.0

06 01 01 1 13 137.5 0.968 1.629 0.005 909. 2279. -476.9 0.01 1.89 0.24 16.54 291. 10.0
281.3 2.0

06 01 01 1 14 122.9 0.912 1.653 0.005 1063. 2100. -445.7 0.01 1.89 0.25 15.56 290. 10.0
281.0 2.0

06 01 01 1 15 67.7 0.795 1.385 0.005 1138. 1727. -536.6 0.01 1.89 0.30 13.59 295. 10.0
280.1 2.0

06 01 01 1 16 0.0 0.715 -9.000 -9.000 -999. 1464. 8888.0 0.01 1.89 0.41 12.34 301. 10.0 279.0
2.0

06 01 01 1 17 0.0 0.673 -9.000 -9.000 -999. 1330. 8888.0 0.01 1.89 0.72 11.62 304. 10.0 277.1
2.0

06 01 01 1 18 0.0 0.546 -9.000 -9.000 -999. 987. 8888.0 0.01 1.89 1.00 9.43 293. 10.0 275.9
2.0

06 01 01 1 19 -46.9 0.630 -9.000 -9.000 -999. 1199. 388.5 0.01 1.89 1.00 11.09 294. 10.0 276.2
2.0

06 01 01 1 20 -49.7 0.337 -9.000 -9.000 -999. 566. 55.9 0.01 1.89 1.00 6.57 310. 10.0 275.6
2.0

06 01 01 1 21 -29.5 0.194 -9.000 -9.000 -999. 235. 17.9 0.01 1.89 1.00 4.69 313. 10.0 274.4
2.0

06 01 01 1 22 -29.9 0.238 -9.000 -9.000 -999. 279. 32.8 0.01 1.89 1.00 5.32 338. 10.0 275.8
2.0

06 01 01 1 23 -15.8 0.134 -9.000 -9.000 -999. 123. 11.1 0.01 1.89 1.00 3.67 241. 10.0 274.5
2.0

06 01 01 1 24 -19.1 0.117 -9.000 -9.000 -999. 96. 6.1 0.01 1.89 1.00 3.98 279. 10.0 273.6
2.0

First hour of profile data

YR MO DY HR HEIGHT F WDIR WSPD AMB_TMP sigmaA sigmaW sigmaV

06 01 01 01 2.0 0 -999. -99.00 280.1 99.0 -99.00 -99.00

06 01 01 01 10.0 0 326. 4.43 282.0 5.4 -99.00 0.42

06 01 01 01 60.0 1 316. 5.10 283.1 6.1 -99.00 0.54

F indicates top of profile (=1) or below (=0)

*** AERMOD - VERSION 22112 *** *** Title One *** 05/09/23

*** AERMET - VERSION 22112 *** *** *** 15:21:01

PAGE 4

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF QUINONE IN MICROGRAMS/M**3 **

NETWORK

GROUP ID AVERAGE CONC RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL 1ST HIGHEST VALUE IS 0.00051 AT (499450.00, 4508500.00, 1603.57, 1603.57, 0.00) DC

2ND HIGHEST VALUE IS 0.00049 AT (499450.00, 4508450.00, 1603.33, 1603.33, 0.00) DC

3RD HIGHEST VALUE IS 0.00049 AT (499700.00, 4508150.00, 1610.72, 1610.72, 0.00) DC

4TH HIGHEST VALUE IS 0.00048 AT (499450.00, 4508550.00, 1603.86, 1603.86, 0.00) DC

5TH HIGHEST VALUE IS 0.00048 AT (499750.00, 4508100.00, 1608.86, 1608.86, 0.00) DC

6TH HIGHEST VALUE IS 0.00047 AT (499750.00, 4508150.00, 1610.15, 1610.15, 0.00) DC

7TH HIGHEST VALUE IS 0.00047 AT (499700.00, 4508100.00, 1609.85, 1609.85, 0.00) DC

8TH HIGHEST VALUE IS 0.00047 AT (499400.00, 4508500.00, 1603.34, 1603.34, 0.00) DC

9TH HIGHEST VALUE IS 0.00046 AT (499800.00, 4508100.00, 1606.47, 1606.47, 0.00) DC

10TH HIGHEST VALUE IS 0.00046 AT (499400.00, 4508550.00, 1603.60, 1603.60, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF QUINONE IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	NETWORK RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL HIGH 1ST HIGH VALUE IS 0.03479 ON 06102824: AT (499600.00, 4508200.00, 1608.71, 1608.71, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)

A Total of 624 Warning Message(s)

A Total of 142 Informational Message(s)

A Total of 8760 Hours Were Processed

A Total of 1 Calm Hours Identified

A Total of 141 Missing Hours Identified (1.61 Percent)

******** FATAL ERROR MESSAGES ********

*** NONE ***

******** WARNING MESSAGES ********

ME W181 3169 MEOPEN: BULKRN Delta-T & SolarRad option for SBL was used in AERMET

MX W403 3169 PFLCNV: Turbulence data is being used w/o ADJ_U* option SigA Data

MX W479 24 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 29 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 30 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 31 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.712

MX W479 48 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 51 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 52 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 53 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 141 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 143 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.877

MX W479 147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 151 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479	215	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	216	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.734
MX W479	221	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.535
MX W479	222	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.604
MX W479	243	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.588
MX W479	244	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	291	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	296	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	308	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.572
MX W479	312	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	313	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.700
MX W479	314	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.658
MX W479	316	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.735
MX W479	317	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.795
MX W479	318	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.549
MX W479	320	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	321	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.644
MX W479	340	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	342	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	344	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.561
MX W479	475	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.580
MX W479	479	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	482	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.746
MX W479	483	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	484	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	486	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	487	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.681
MX W479	488	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.697
MX W479	489	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.921

MX W479	509	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.586
MX W479	524	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	525	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	526	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	527	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	528	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.926
MX W479	529	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.676
MX W479	530	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.808
MX W479	531	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.740
MX W479	532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.537
MX W479	533	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.621
MX W479	534	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.830
MX W479	535	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.510
MX W479	550	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.611
MX W479	554	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.558
MX W479	555	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.719
MX W479	556	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.743
MX W479	573	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.536
MX W479	574	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.241
MX W479	575	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.721
MX W479	576	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.562
MX W479	577	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	578	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.213
MX W479	579	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.698
MX W479	580	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	581	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.713
MX W479	582	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.678
MX W479	583	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.869
MX W479	584	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.806

MX W479 595 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 597 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.667

MX W479 599 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.596

MX W479 600 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 601 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.705

MX W479 605 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 629 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.665

MX W479 632 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.505

MX W479 724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 725 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 727 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 775 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 822 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 835 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 836 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.517

MX W479 837 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 838 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 839 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 932 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 941 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 1029 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.735

MX W479 1031 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479 1034 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 1035 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 1051 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 1052 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500

MX W479 1053 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.884

MX W479 1054 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.859

MX W479 1055 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.766

MX W479 1056 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.677

MX W479 1060 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 1061 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.639

MX W479 1197 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1198 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.709

MX W479 1199 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 1200 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.530

MX W479 1201 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 1203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.590

MX W479 1204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.726

MX W479 1205 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.750

MX W479 1206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.700

MX W479 1208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1218 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 1219 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.824

MX W479 1220 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 1221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 1222 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 1223 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 1224 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 1225 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 1226 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1227 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.778

MX W479 1228 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 1229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 1231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 1244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 1245 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 1276 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 1277 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 1278 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.729

MX W479 1293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.683

MX W479 1294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.851

MX W479 1295 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1296 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 1297 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 1300 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.634

MX W479 1301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.723

MX W479 1302 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 1303 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 1316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.692

MX W479 1343 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 1344 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.720

MX W479 1345 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1346 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 1347 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 1365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.696

MX W479 1373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 1374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1375 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.622

MX W479 1392 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 1394 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.577

MX W479 1395 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 1396 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 1397 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 1441 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.508

MX W479 1442 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1483 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.647

MX W479 1532 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 1537 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1539 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 1540 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 1541 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 1543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 1566 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.569

MX W479 1661 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 1989 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 1990 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 1991 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.509

MX W479 1993 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.563

MX W479 1994 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.534

MX W479 2086 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 2088 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 2089 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 2093 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 2228 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.579

MX W479 2229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 2230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.693

MX W479 2231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.634

MX W479 2232 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.632

MX W479 2234 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 2235 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 2253 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 2254 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 2255 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.755

MX W479 2262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 2348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 2349 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2350 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 2351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2352 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.834

MX W479 2353 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.525

MX W479 2354 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2355 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.560

MX W479 2356 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 2373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.752

MX W479 2374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.569

MX W479 2378 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 2379 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.647

MX W479 2380 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 2382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 2399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.920

MX W479 2421 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2422 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 2424 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 2425 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 2428 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 2429 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.578

MX W479 2430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 2445 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.748

MX W479 2446 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 2447 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

MX W479 2448 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.743

MX W479 2449 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.733

MX W479 2450 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 2468 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2469 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.019

MX W479 2470 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.976

MX W479 2471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.882

MX W479 2472 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 2542 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.826

MX W479 2544 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.734

MX W479 2545 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.629

MX W479 2546 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.769

MX W479 2547 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.656

MX W479 2548 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.679

MX W479 2549 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.853

MX W479 2550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 2615 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 2616 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 2617 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 2639 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 2640 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 2641 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.777

MX W479 2643 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 2645 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 2646 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 2663 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.896

MX W479 2664 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 2666 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 2669 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 2670 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500

MX W479 2763 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.504

MX W479 2783 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.567

MX W479 2786 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.588

MX W479 2788 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.748

MX W479 2789 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2832 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 2833 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.506

MX W479 2900 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 2901 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.673

MX W479 2902 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.730

MX W479 2903 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 2905 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 2906 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 2907 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 3045 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 3047 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.554

MX W479 3048 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.508

MX W479 3148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 3149 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 3168 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 3169 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 3170 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.601

MX W479 3171 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.796

MX W479 3172 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 3173 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.889

MX W479 3174 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 3239 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 3262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 3263 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 3289 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 3290 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 3291 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 3293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 3294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 3313 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 3316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 3337 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 3338 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.521

MX W479 3339 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 3363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.584

MX W479 3364 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 3365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 3366 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 3382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 3383 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 3384 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.606

MX W479 3453 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 3454 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.711

MX W479 3457 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 3509 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.654

MX W479 3525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 3671 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.541

MX W479 3674 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 3693 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 3748 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.562

MX W479 3792 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.536

MX W479 3796 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 4029 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.848

MX W479 4030 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.707

MX W479 4031 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 4035 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 4036 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 4037 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 4057 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.502

MX W479 4080 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 4101 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.545

MX W479 4102 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 4103 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.847

MX W479 4104 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 4105 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 4172 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.682

MX W479 4173 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.824

MX W479 4227 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 4297 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.508

MX W479 4298 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.590

MX W479 4301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 4493 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 4586 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 4629 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.548

MX W479 4630 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.517

MX W479 4652 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 4653 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.685

MX W479 4654 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 4656 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 4657 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.903

MX W479 4658 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.975

MX W479 4659 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.826

MX W479 4660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.741

MX W479 4661 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.888

MX W479 4677 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.524

MX W479 4679 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 4680 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.591

MX W479 4685 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 4724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 4996 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.544

MX W479 5331 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.662

MX W479 5332 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 5471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 5472 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 5475 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 5614 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.669

MX W479 5615 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 5621 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 5622 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.623

MX W479 5790 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 5804 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 5805 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 5809 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 5812 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.675

MX W479 5813 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 5814 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 5979 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 5980 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 6120 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 6121 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 6125 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 6126 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 6142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 6146 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 6147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

MX W479 6148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

MX W479 6149 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.883

MX W479 6150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.860

MX W479 6267 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 6268 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 6271 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 6286 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 6292 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.577

MX W479 6294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.615

MX W479 6405 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 6406 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.887

MX W479 6407 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 6408 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.541

MX W479 6409 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 6410 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.740

MX W479 6411 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 6413 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 6430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479 6431 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.841

MX W479 6435 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.023

MX W479 6436 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.778

MX W479 6486 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 6501 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.822

MX W479 6524 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 6525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.600

MX W479 6526 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.566

MX W479 6528 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.612

MX W479 6529 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.627

MX W479 6530 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 6531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.662

MX W479 6532 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.680

MX W479 6548 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.718

MX W479 6549 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.739

MX W479 6550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.767

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MX W479 6554 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.776

MX W479 6555 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 6556 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 6558 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.988

MX W479 6559 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.766

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MX W479 6574 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.705

MX W479 6577 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.791

MX W479 6578 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

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MX W479 6836 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 6868 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 6870 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 6890 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 6912 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 6913 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 6914 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.591

MX W479 6915 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 6917 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

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MX W479 7127 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 7129 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.509

MX W479 7130 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.683

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MX W479 7132 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.525

MX W479 7195 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.554

MX W479 7196 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 7199 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.566

MX W479 7207 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

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MX W479 7243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.628

MX W479 7244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 7246 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.712

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MX W479 7253 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 7255 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.681

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MX W479 7318 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.570

MX W479 7319 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 7321 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 7323 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 7324 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.578

MX W479 7326 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 7340 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.691

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MX W479 7345 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.627

MX W479 7346 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 7351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 7363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 7364 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.215

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MX W479 7369 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.518

MX W479 7388 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 7389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 7390 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 7391 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.797

MX W479 7393 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 7395 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 7396 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 7397 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 7399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.656

MX W479 7400 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.686

MX W479 7446 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.641

MX W479 7462 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.761

MX W479 7468 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

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MX W479 7470 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.856

MX W479 7471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.803

MX W479 7484 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 7513 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 7514 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 7531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.594

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MX W479 7585 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.532

MX W479 7586 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.831

MX W479 7587 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

MX W479 7602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 7603 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 7660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.708

MX W479 7661 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 7681 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 7682 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 7683 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.707

MX W479 7684 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.628

MX W479 7753 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.641

MX W479 7755 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.502

MX W479 7794 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 7796 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.032

MX W479 7797 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.212

MX W479 7798 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.800

MX W479 7801 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.637

MX W479 7802 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.906

MX W479 7803 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 7804 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.841

MX W479 7805 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.048

MX W479 7806 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.021

MX W479 7807 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.755

MX W479 7819 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.902

MX W479 7867 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.583

MX W479 7869 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 7873 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 7878 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 7879 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 7891 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 7892 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.532

MX W479 7894 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.509

MX W479 7896 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 7897 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.506

MX W479 7898 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.761

MX W479 7899 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.773

MX W479 7900 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 7901 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.852

MX W479 7941 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 7948 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 7989 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 7990 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 7991 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.627

MX W479 7992 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.622

MX W479 7993 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.288

MX W479 7994 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 7996 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.606

MX W479 8011 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 8041 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.505

MX W479 8042 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 8062 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 8067 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 8086 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 8087 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.504

MX W479 8088 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.618

MX W479 8089 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 8090 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 8091 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 8107 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 8108 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 8111 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.564

MX W479 8112 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 8116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 8117 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.838

MX W479 8118 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 8119 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.001

MX W479 8120 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.649

MX W479 8190 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 8191 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 8192 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 8202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.572

MX W479 8203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.563

MX W479 8204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.511

MX W479 8206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 8208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.642

MX W479 8209 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.717

MX W479 8210 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.670

MX W479 8211 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 8213 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.701

MX W479 8214 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.584

MX W479 8215 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.714

MX W479 8216 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.687

MX W479 8229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 8230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 8231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 8235 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 8238 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 8301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.642

MX W479 8304 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 8306 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.685

MX W479 8307 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 8311 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.550

MX W479 8350 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.596

MX W479 8356 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.511

MX W479 8358 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 8360 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 8427 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.593

MX W479 8428 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.548

MX W479 8442 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.566

MX W479 8445 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 8447 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 8448 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.591

MX W479 8450 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.583

MX W479 8451 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.695

MX W479 8452 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.533

MX W479 8514 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 8553 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.944

MX W479 8567 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.619

MX W479 8570 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 8571 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.544

MX W479 8595 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.626

MX W479 8646 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 8660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.567

MX W479 8730 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 8734 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 8735 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.560

MX W479 8760 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.626

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** MODEL SETUP OPTIONS SUMMARY ***

** Model Options Selected:

* Model Uses Regulatory DEFAULT Options

* Model Is Setup For Calculation of Average CONCentration Values.

* NO GAS DEPOSITION Data Provided.

* NO PARTICLE DEPOSITION Data Provided.

* Model Uses NO DRY DEPLETION. DDPLETE = F

* Model Uses NO WET DEPLETION. WETDPLT = F

* Stack-tip Downwash.

* Model Accounts for ELEVated Terrain Effects.

* Use Calms Processing Routine.

* Use Missing Data Processing Routine.

* No Exponential Decay.

* Model Uses RURAL Dispersion Only.

* BULKRN - Use BULKRN Delta-T and SolarRad option for SBL in AERMET

* Model Assumes No FLAGPOLE Receptor Heights.

* The User Specified a Pollutant Type of: BENZENE

**Model Calculates 1 Short Term Average(s) of: 1-HR

and Calculates ANNUAL Averages

**This Run Includes: 1 Source(s); 1 Source Group(s); and 3106 Receptor(s)

with: 1 POINT(s), including

0 POINTCAP(s) and 0 POINTHOR(s)

and: 0 VOLUME source(s)

and: 0 AREA type source(s)

and: 0 LINE source(s)

and: 0 RLINE/RLINEXT source(s)

and: 0 OPENPIT source(s)

and: 0 BUOYANT LINE source(s) with a total of 0 line(s)

and: 0 SWPOINT source(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 22112

**Output Options Selected:

Model Outputs Tables of ANNUAL Averages by Receptor

Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)

Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours

m for Missing Hours

b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 1730.68 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0

Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07

```
           Output Units   = MICROGRAMS/M**3


 **Approximate Storage Requirements of Model =     3.9 MB of RAM.


 **Input Runstream File:         C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi

 **Output Print File:           C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi


 **File for Summary of Results:   C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi

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 *** AERMET - VERSION  22112 ***   ***                                                    ***       15:21:42

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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  BULKRN  SigA Data


                              *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***

                                              (1=YES; 0=NO)


      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1


          NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS
INCLUDED IN THE DATA FILE.
```

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

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*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling Met Version: 22112

Profile file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling

Surface format: FREE

Profile format: FREE

Surface station no.: 0 Upper air station no.: 23062

Name: UNKNOWN Name: DENVER WSFO, CO

Year: 2006 Year: 2006

First 24 hours of scalar data

YR MO DY JDY HR H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS WD HT REF TA HT

---

06 01 01 1 01 -26.0 0.162 -9.000 -9.000 -999. 157. 11.8 0.01 1.89 1.00 4.43 326. 10.0 280.1 2.0

06 01 01 1 02 -58.1 0.325 -9.000 -9.000 -999. 445. 42.5 0.01 1.89 1.00 6.57 310. 10.0 281.4
2.0

06 01 01 1 03 -33.0 0.292 -9.000 -9.000 -999. 380. 54.5 0.01 1.89 1.00 5.72 272. 10.0 281.0
2.0

06 01 01 1 04 -14.9 0.128 -9.000 -9.000 -999. 134. 10.2 0.01 1.89 1.00 3.67 320. 10.0 279.8
2.0

06 01 01 1 05 -13.5 0.124 -9.000 -9.000 -999. 105. 10.1 0.01 1.89 1.00 3.71 337. 10.0 279.0
2.0

06 01 01 1 06 -18.3 0.176 -9.000 -9.000 -999. 177. 21.3 0.01 1.89 1.00 4.29 344. 10.0 278.3
2.0

06 01 01 1 07 -34.9 0.286 -9.000 -9.000 -999. 367. 48.1 0.01 1.89 1.00 5.68 327. 10.0 279.3
2.0

06 01 01 1 08 -39.7 0.440 -9.000 -9.000 -999. 701. 154.4 0.01 1.89 1.00 7.96 307. 10.0 279.8
2.0

06 01 01 1 09 -17.3 0.580 -9.000 -9.000 -999. 1058. 810.0 0.01 1.89 0.43 10.10 287. 10.0 279.4
2.0

06 01 01 1 10 38.3 0.682 0.602 0.005 164. 1349. -597.0 0.01 1.89 0.31 11.67 301. 10.0 280.9
2.0

06 01 01 1 11 83.4 0.893 1.120 0.005 486. 2020. -616.6 0.01 1.89 0.26 15.29 291. 10.0 281.4
2.0

06 01 01 1 12 97.2 0.889 1.326 0.005 693. 2013. -521.8 0.01 1.89 0.24 15.20 293. 10.0 281.3
2.0

06 01 01 1 13 137.5 0.968 1.629 0.005 909. 2279. -476.9 0.01 1.89 0.24 16.54 291. 10.0
281.3 2.0

06 01 01 1 14 122.9 0.912 1.653 0.005 1063. 2100. -445.7 0.01 1.89 0.25 15.56 290. 10.0
281.0 2.0

06 01 01 1 15 67.7 0.795 1.385 0.005 1138. 1727. -536.6 0.01 1.89 0.30 13.59 295. 10.0
280.1 2.0

06 01 01 1 16 0.0 0.715 -9.000 -9.000 -999. 1464. 8888.0 0.01 1.89 0.41 12.34 301. 10.0 279.0
2.0

06 01 01 1 17 0.0 0.673 -9.000 -9.000 -999. 1330. 8888.0 0.01 1.89 0.72 11.62 304. 10.0 277.1
2.0

06 01 01 1 18 0.0 0.546 -9.000 -9.000 -999. 987. 8888.0 0.01 1.89 1.00 9.43 293. 10.0 275.9
2.0

06 01 01 1 19 -46.9 0.630 -9.000 -9.000 -999. 1199. 388.5 0.01 1.89 1.00 11.09 294. 10.0 276.2
2.0

06 01 01 1 20 -49.7 0.337 -9.000 -9.000 -999. 566. 55.9 0.01 1.89 1.00 6.57 310. 10.0 275.6
2.0

06 01 01 1 21 -29.5 0.194 -9.000 -9.000 -999. 235. 17.9 0.01 1.89 1.00 4.69 313. 10.0 274.4
2.0

06 01 01 1 22 -29.9 0.238 -9.000 -9.000 -999. 279. 32.8 0.01 1.89 1.00 5.32 338. 10.0 275.8
2.0

06 01 01 1 23 -15.8 0.134 -9.000 -9.000 -999. 123. 11.1 0.01 1.89 1.00 3.67 241. 10.0 274.5
2.0

06 01 01 1 24 -19.1 0.117 -9.000 -9.000 -999. 96. 6.1 0.01 1.89 1.00 3.98 279. 10.0 273.6
2.0

First hour of profile data

YR MO DY HR HEIGHT F WDIR WSPD AMB_TMP sigmaA sigmaW sigmaV

06 01 01 01 2.0 0 -999. -99.00 280.1 99.0 -99.00 -99.00

06 01 01 01 10.0 0 326. 4.43 282.0 5.4 -99.00 0.42

06 01 01 01 60.0 1 316. 5.10 283.1 6.1 -99.00 0.54

F indicates top of profile (=1) or below (=0)

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*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF BENZENE IN MICROGRAMS/M**3 **

NETWORK

GROUP ID AVERAGE CONC RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL 1ST HIGHEST VALUE IS 0.00052 AT (499450.00, 4508500.00, 1603.57, 1603.57, 0.00) DC

2ND HIGHEST VALUE IS 0.00051 AT (499450.00, 4508450.00, 1603.33, 1603.33, 0.00) DC

3RD HIGHEST VALUE IS 0.00051 AT (499700.00, 4508150.00, 1610.72, 1610.72, 0.00) DC

4TH HIGHEST VALUE IS 0.00050 AT (499450.00, 4508550.00, 1603.86, 1603.86, 0.00) DC

5TH HIGHEST VALUE IS 0.00049 AT (499750.00, 4508100.00, 1608.86, 1608.86, 0.00) DC

6TH HIGHEST VALUE IS 0.00049 AT (499750.00, 4508150.00, 1610.15, 1610.15, 0.00) DC

7TH HIGHEST VALUE IS 0.00049 AT (499700.00, 4508100.00, 1609.85, 1609.85, 0.00) DC

8TH HIGHEST VALUE IS 0.00048 AT (499400.00, 4508500.00, 1603.34, 1603.34, 0.00) DC

9TH HIGHEST VALUE IS 0.00048 AT (499800.00, 4508100.00, 1606.47, 1606.47, 0.00) DC

10TH HIGHEST VALUE IS 0.00047 AT (499400.00, 4508550.00, 1603.60, 1603.60, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF BENZENE IN MICROGRAMS/M**3 **

DATE NETWORK

GROUP ID AVERAGE CONC (YYMMDDHH) RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

- -

ALL HIGH 1ST HIGH VALUE IS 0.03608 ON 06102824: AT (499600.00, 4508200.00, 1608.71, 1608.71, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** AERMOD - VERSION 22112 *** *** Title One *** 05/09/23

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*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)

A Total of 624 Warning Message(s)

A Total of 142 Informational Message(s)

A Total of 8760 Hours Were Processed

A Total of 1 Calm Hours Identified

A Total of 141 Missing Hours Identified (1.61 Percent)

******** FATAL ERROR MESSAGES ********

*** NONE ***

******** WARNING MESSAGES ********

ME W181 3169 MEOPEN: BULKRN Delta-T & SolarRad option for SBL was used in AERMET

MX W403 3169 PFLCNV: Turbulence data is being used w/o ADJ_U* option SigA Data

MX W479 24 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 29 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 30 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 31 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.712

MX W479 48 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 51 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 52 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 53 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 141 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 143 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.877

MX W479 147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 151 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479	215	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	216	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.734
MX W479	221	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.535
MX W479	222	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.604
MX W479	243	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.588
MX W479	244	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	291	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	296	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	308	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.572
MX W479	312	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	313	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.700
MX W479	314	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.658
MX W479	316	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.735
MX W479	317	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.795
MX W479	318	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.549
MX W479	320	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	321	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.644
MX W479	340	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	342	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	344	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.561
MX W479	475	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.580
MX W479	479	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	482	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.746
MX W479	483	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	484	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	486	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	487	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.681
MX W479	488	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.697
MX W479	489	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.921

MX W479	509	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.586
MX W479	524	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	525	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	526	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	527	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	528	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.926
MX W479	529	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.676
MX W479	530	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.808
MX W479	531	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.740
MX W479	532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.537
MX W479	533	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.621
MX W479	534	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.830
MX W479	535	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.510
MX W479	550	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.611
MX W479	554	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.558
MX W479	555	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.719
MX W479	556	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.743
MX W479	573	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.536
MX W479	574	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.241
MX W479	575	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.721
MX W479	576	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.562
MX W479	577	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	578	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.213
MX W479	579	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.698
MX W479	580	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	581	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.713
MX W479	582	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.678
MX W479	583	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.869
MX W479	584	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.806

MX W479	595	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.603
MX W479	597	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.667
MX W479	599	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.596
MX W479	600	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.602
MX W479	601	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.561
MX W479	602	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.705
MX W479	605	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.535
MX W479	629	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.665
MX W479	632	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.505
MX W479	724	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.529
MX W479	725	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.592
MX W479	727	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.557
MX W479	775	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.558
MX W479	822	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.620
MX W479	835	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	836	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.517
MX W479	837	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	838	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	839	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.607
MX W479	932	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.608
MX W479	941	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.557
MX W479	1029	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.735
MX W479	1031	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.587
MX W479	1034	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	1035	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.595
MX W479	1051	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.585
MX W479	1052	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.500
MX W479	1053	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.884
MX W479	1054	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.859

MX W479 1055 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.766

MX W479 1056 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.677

MX W479 1060 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 1061 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.639

MX W479 1197 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1198 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.709

MX W479 1199 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 1200 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.530

MX W479 1201 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 1203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.590

MX W479 1204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.726

MX W479 1205 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.750

MX W479 1206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.700

MX W479 1208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1218 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 1219 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.824

MX W479 1220 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 1221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 1222 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 1223 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 1224 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 1225 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 1226 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1227 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.778

MX W479 1228 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 1229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 1231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 1244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 1245 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 1276 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 1277 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 1278 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.729

MX W479 1293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.683

MX W479 1294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.851

MX W479 1295 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1296 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 1297 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 1300 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.634

MX W479 1301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.723

MX W479 1302 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 1303 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 1316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.692

MX W479 1343 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 1344 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.720

MX W479 1345 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1346 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 1347 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 1365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.696

MX W479 1373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 1374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1375 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.622

MX W479 1392 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 1394 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.577

MX W479 1395 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 1396 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 1397 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 1441 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.508

MX W479 1442 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1483 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.647

MX W479 1532 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 1537 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1539 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 1540 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 1541 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 1543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 1566 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.569

MX W479 1661 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 1989 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 1990 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 1991 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.509

MX W479 1993 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.563

MX W479 1994 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.534

MX W479 2086 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 2088 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 2089 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 2093 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 2228 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.579

MX W479 2229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 2230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.693

MX W479 2231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.634

MX W479 2232 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.632

MX W479 2234 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 2235 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 2253 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 2254 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 2255 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.755

MX W479 2262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 2348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 2349 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2350 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 2351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2352 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.834

MX W479 2353 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.525

MX W479 2354 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2355 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.560

MX W479 2356 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 2373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.752

MX W479 2374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.569

MX W479 2378 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 2379 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.647

MX W479 2380 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 2382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 2399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.920

MX W479 2421 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2422 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 2424 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 2425 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 2428 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 2429 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.578

MX W479 2430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 2445 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.748

MX W479 2446 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 2447 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

MX W479 2448 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.743

MX W479 2449 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.733

MX W479 2450 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 2468 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2469 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.019

MX W479 2470 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.976

MX W479 2471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.882

MX W479 2472 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 2542 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.826

MX W479 2544 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.734

MX W479 2545 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.629

MX W479 2546 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.769

MX W479 2547 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.656

MX W479 2548 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.679

MX W479 2549 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.853

MX W479 2550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 2615 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 2616 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 2617 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 2639 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 2640 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 2641 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.777

MX W479 2643 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 2645 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 2646 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 2663 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.896

MX W479 2664 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 2666 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 2669 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 2670 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500

MX W479 2763 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.504

MX W479 2783 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.567

MX W479 2786 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.588

MX W479 2788 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.748

MX W479 2789 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2832 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 2833 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.506

MX W479 2900 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 2901 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.673

MX W479 2902 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.730

MX W479 2903 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 2905 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 2906 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 2907 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 3045 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 3047 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.554

MX W479 3048 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.508

MX W479 3148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 3149 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 3168 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 3169 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 3170 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.601

MX W479 3171 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.796

MX W479 3172 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 3173 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.889

MX W479 3174 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 3239 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 3262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 3263 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 3289 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 3290 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 3291 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 3293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 3294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 3313 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 3316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 3337 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 3338 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.521

MX W479 3339 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 3363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.584

MX W479 3364 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 3365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 3366 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 3382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 3383 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 3384 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.606

MX W479 3453 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 3454 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.711

MX W479 3457 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 3509 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.654

MX W479 3525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 3671 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.541

MX W479 3674 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 3693 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 3748 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.562

MX W479 3792 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.536

MX W479 3796 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 4029 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.848

MX W479 4030 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.707

MX W479 4031 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 4035 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 4036 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 4037 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 4057 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.502

MX W479 4080 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 4101 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.545

MX W479 4102 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 4103 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.847

MX W479 4104 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 4105 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 4172 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.682

MX W479 4173 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.824

MX W479 4227 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 4297 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.508

MX W479 4298 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.590

MX W479 4301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 4493 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 4586 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 4629 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.548

MX W479 4630 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.517

MX W479 4652 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 4653 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.685

MX W479 4654 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 4656 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 4657 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.903

MX W479 4658 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.975

MX W479 4659 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.826

MX W479 4660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.741

MX W479 4661 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.888

MX W479 4677 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.524

MX W479 4679 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 4680 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.591

MX W479 4685 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 4724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 4996 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.544

MX W479 5331 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.662

MX W479 5332 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 5471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 5472 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 5475 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 5614 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.669

MX W479 5615 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 5621 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 5622 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.623

MX W479 5790 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 5804 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 5805 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 5809 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 5812 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.675

MX W479 5813 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 5814 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 5979 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 5980 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 6120 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 6121 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 6125 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 6126 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 6142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 6146 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 6147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

MX W479 6148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

MX W479 6149 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.883

MX W479 6150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.860

MX W479 6267 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 6268 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 6271 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 6286 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 6292 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.577

MX W479 6294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.615

MX W479 6405 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 6406 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.887

MX W479 6407 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 6408 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.541

MX W479 6409 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 6410 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.740

MX W479 6411 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 6413 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 6430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479 6431 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.841

MX W479 6435 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.023

MX W479 6436 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.778

MX W479 6486 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 6501 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.822

MX W479 6524 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 6525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.600

MX W479 6526 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.566

MX W479 6528 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.612

MX W479 6529 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.627

MX W479 6530 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 6531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.662

MX W479 6532 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.680

MX W479 6548 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.718

MX W479 6549 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.739

MX W479 6550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.767

MX W479 6553 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 6554 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.776

MX W479 6555 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 6556 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 6558 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.988

MX W479 6559 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.766

MX W479 6571 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 6572 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.870

MX W479 6573 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.668

MX W479 6574 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.705

MX W479 6577 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.791

MX W479 6578 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 6579 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.622

MX W479 6580 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 6581 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.872

MX W479 6582 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.704

MX W479 6583 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 6596 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 6602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 6791 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.545

MX W479 6835 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.564

MX W479 6836 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 6868 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 6870 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 6890 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 6912 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 6913 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 6914 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.591

MX W479 6915 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 6917 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 6918 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 7014 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 7099 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.534

MX W479 7100 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.759

MX W479 7101 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 7103 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 7111 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 7123 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 7126 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 7127 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 7129 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.509

MX W479 7130 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.683

MX W479 7131 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 7132 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.525

MX W479 7195 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.554

MX W479 7196 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 7199 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.566

MX W479 7207 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 7220 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 7243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.628

MX W479 7244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 7246 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.712

MX W479 7252 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.629

MX W479 7253 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 7255 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.681

MX W479 7316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.757

MX W479 7317 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 7318 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.570

MX W479 7319 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 7321 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 7323 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 7324 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.578

MX W479 7326 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 7340 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.691

MX W479 7343 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 7345 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.627

MX W479 7346 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 7351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 7363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 7364 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.215

MX W479 7366 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479	7367	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.612
MX W479	7368	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.799
MX W479	7369	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.518
MX W479	7388	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.589
MX W479	7389	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.553
MX W479	7390	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.725
MX W479	7391	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.797
MX W479	7393	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7395	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	7396	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	7397	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	7399	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.656
MX W479	7400	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.686
MX W479	7446	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.641
MX W479	7462	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.761
MX W479	7468	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.636
MX W479	7469	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.811
MX W479	7470	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.856
MX W479	7471	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.803
MX W479	7484	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.540
MX W479	7513	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.558
MX W479	7514	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.585
MX W479	7531	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.594
MX W479	7543	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	7585	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.532
MX W479	7586	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.831
MX W479	7587	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.573
MX W479	7602	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.586
MX W479	7603	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.561

MX W479	7660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.708
MX W479	7661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7681	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	7682	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7683	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.707
MX W479	7684	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.628
MX W479	7753	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.641
MX W479	7755	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.502
MX W479	7794	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.607
MX W479	7796	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.032
MX W479	7797	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.212
MX W479	7798	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.800
MX W479	7801	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.637
MX W479	7802	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.906
MX W479	7803	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	7804	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.841
MX W479	7805	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.048
MX W479	7806	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.021
MX W479	7807	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.755
MX W479	7819	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.902
MX W479	7867	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.583
MX W479	7869	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	7873	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	7878	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.513
MX W479	7879	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	7891	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.666
MX W479	7892	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.532
MX W479	7894	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	7896	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556

MX W479 7897 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.506

MX W479 7898 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.761

MX W479 7899 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.773

MX W479 7900 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 7901 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.852

MX W479 7941 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 7948 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 7989 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 7990 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 7991 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.627

MX W479 7992 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.622

MX W479 7993 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.288

MX W479 7994 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 7996 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.606

MX W479 8011 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 8041 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.505

MX W479 8042 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 8062 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 8067 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 8086 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 8087 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.504

MX W479 8088 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.618

MX W479 8089 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 8090 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 8091 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 8107 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 8108 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 8111 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.564

MX W479 8112 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 8116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 8117 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.838

MX W479 8118 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 8119 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.001

MX W479 8120 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.649

MX W479 8190 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 8191 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 8192 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 8202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.572

MX W479 8203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.563

MX W479 8204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.511

MX W479 8206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 8208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.642

MX W479 8209 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.717

MX W479 8210 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.670

MX W479 8211 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 8213 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.701

MX W479 8214 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.584

MX W479 8215 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.714

MX W479 8216 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.687

MX W479 8229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 8230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 8231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 8235 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 8238 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 8301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.642

MX W479 8304 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 8306 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.685

MX W479 8307 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479	8311	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.550
MX W479	8350	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.596
MX W479	8356	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.511
MX W479	8358	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	8360	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	8427	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.593
MX W479	8428	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.548
MX W479	8442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	8445	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	8447	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	8448	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	8450	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.583
MX W479	8451	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.695
MX W479	8452	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.533
MX W479	8514	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	8553	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.944
MX W479	8567	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.619
MX W479	8570	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.535
MX W479	8571	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	8595	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626
MX W479	8646	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	8660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.567
MX W479	8730	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	8734	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	8735	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.560
MX W479	8760	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** MODEL SETUP OPTIONS SUMMARY ***

** Model Options Selected:

* Model Uses Regulatory DEFAULT Options
* Model Is Setup For Calculation of Average CONCentration Values.
* NO GAS DEPOSITION Data Provided.
* NO PARTICLE DEPOSITION Data Provided.
* Model Uses NO DRY DEPLETION. DDPLETE = F
* Model Uses NO WET DEPLETION. WETDPLT = F
* Stack-tip Downwash.
* Model Accounts for ELEVated Terrain Effects.
* Use Calms Processing Routine.
* Use Missing Data Processing Routine.
* No Exponential Decay.
* Model Uses RURAL Dispersion Only.
* BULKRN - Use BULKRN Delta-T and SolarRad option for SBL in AERMET
* Model Assumes No FLAGPOLE Receptor Heights.
* The User Specified a Pollutant Type of: ETHYLBEN

**Model Calculates 1 Short Term Average(s) of: 1-HR
and Calculates ANNUAL Averages

**This Run Includes: 1 Source(s); 1 Source Group(s); and 3106 Receptor(s)

with: 1 POINT(s), including

0 POINTCAP(s) and 0 POINTHOR(s)

and: 0 VOLUME source(s)

and: 0 AREA type source(s)

and: 0 LINE source(s)

and: 0 RLINE/RLINEXT source(s)

and: 0 OPENPIT source(s)

and: 0 BUOYANT LINE source(s) with a total of 0 line(s)

and: 0 SWPOINT source(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 22112

**Output Options Selected:

Model Outputs Tables of ANNUAL Averages by Receptor

Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)

Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours

m for Missing Hours

b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 1730.68 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0

Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07

```
              Output Units   = MICROGRAMS/M**3


 **Approximate Storage Requirements of Model =      3.9 MB of RAM.


 **Input Runstream File:          C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi

 **Output Print File:           C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi


 **File for Summary of Results:   C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi

 *** AERMOD - VERSION 22112  ***   *** Title One                                   ***       05/09/23

 *** AERMET - VERSION  22112 ***   ***                                         ***       15:22:23

                                                                     PAGE   2

 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  BULKRN  SigA Data


                         *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***

                                          (1=YES; 0=NO)


       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1


            NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS
INCLUDED IN THE DATA FILE.
```

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** AERMOD - VERSION 22112 *** *** Title One *** 05/09/23

*** AERMET - VERSION 22112 *** *** *** 15:22:23

PAGE 3

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling Met Version: 22112

Profile file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling

Surface format: FREE

Profile format: FREE

Surface station no.: 0 Upper air station no.: 23062

Name: UNKNOWN Name: DENVER WSFO, CO

Year: 2006 Year: 2006

First 24 hours of scalar data

YR MO DY JDY HR H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS WD HT REF TA HT

---

06 01 01 1 01 -26.0 0.162 -9.000 -9.000 -999. 157. 11.8 0.01 1.89 1.00 4.43 326. 10.0 280.1 2.0

06 01 01 1 02 -58.1 0.325 -9.000 -9.000 -999. 445. 42.5 0.01 1.89 1.00 6.57 310. 10.0 281.4
2.0

06 01 01 1 03 -33.0 0.292 -9.000 -9.000 -999. 380. 54.5 0.01 1.89 1.00 5.72 272. 10.0 281.0
2.0

06 01 01 1 04 -14.9 0.128 -9.000 -9.000 -999. 134. 10.2 0.01 1.89 1.00 3.67 320. 10.0 279.8
2.0

06 01 01 1 05 -13.5 0.124 -9.000 -9.000 -999. 105. 10.1 0.01 1.89 1.00 3.71 337. 10.0 279.0
2.0

06 01 01 1 06 -18.3 0.176 -9.000 -9.000 -999. 177. 21.3 0.01 1.89 1.00 4.29 344. 10.0 278.3
2.0

06 01 01 1 07 -34.9 0.286 -9.000 -9.000 -999. 367. 48.1 0.01 1.89 1.00 5.68 327. 10.0 279.3
2.0

06 01 01 1 08 -39.7 0.440 -9.000 -9.000 -999. 701. 154.4 0.01 1.89 1.00 7.96 307. 10.0 279.8
2.0

06 01 01 1 09 -17.3 0.580 -9.000 -9.000 -999. 1058. 810.0 0.01 1.89 0.43 10.10 287. 10.0 279.4
2.0

06 01 01 1 10 38.3 0.682 0.602 0.005 164. 1349. -597.0 0.01 1.89 0.31 11.67 301. 10.0 280.9
2.0

06 01 01 1 11 83.4 0.893 1.120 0.005 486. 2020. -616.6 0.01 1.89 0.26 15.29 291. 10.0 281.4
2.0

06 01 01 1 12 97.2 0.889 1.326 0.005 693. 2013. -521.8 0.01 1.89 0.24 15.20 293. 10.0 281.3
2.0

06 01 01 1 13 137.5 0.968 1.629 0.005 909. 2279. -476.9 0.01 1.89 0.24 16.54 291. 10.0
281.3 2.0

06 01 01 1 14 122.9 0.912 1.653 0.005 1063. 2100. -445.7 0.01 1.89 0.25 15.56 290. 10.0
281.0 2.0

06 01 01 1 15 67.7 0.795 1.385 0.005 1138. 1727. -536.6 0.01 1.89 0.30 13.59 295. 10.0
280.1 2.0

06 01 01 1 16 0.0 0.715 -9.000 -9.000 -999. 1464. 8888.0 0.01 1.89 0.41 12.34 301. 10.0 279.0
2.0

06 01 01 1 17 0.0 0.673 -9.000 -9.000 -999. 1330. 8888.0 0.01 1.89 0.72 11.62 304. 10.0 277.1
2.0

06 01 01 1 18 0.0 0.546 -9.000 -9.000 -999. 987. 8888.0 0.01 1.89 1.00 9.43 293. 10.0 275.9
2.0

06 01 01 1 19 -46.9 0.630 -9.000 -9.000 -999. 1199. 388.5 0.01 1.89 1.00 11.09 294. 10.0 276.2
2.0

06 01 01 1 20 -49.7 0.337 -9.000 -9.000 -999. 566. 55.9 0.01 1.89 1.00 6.57 310. 10.0 275.6
2.0

06 01 01 1 21 -29.5 0.194 -9.000 -9.000 -999. 235. 17.9 0.01 1.89 1.00 4.69 313. 10.0 274.4
2.0

06 01 01 1 22 -29.9 0.238 -9.000 -9.000 -999. 279. 32.8 0.01 1.89 1.00 5.32 338. 10.0 275.8
2.0

06 01 01 1 23 -15.8 0.134 -9.000 -9.000 -999. 123. 11.1 0.01 1.89 1.00 3.67 241. 10.0 274.5
2.0

06 01 01 1 24 -19.1 0.117 -9.000 -9.000 -999. 96. 6.1 0.01 1.89 1.00 3.98 279. 10.0 273.6
2.0

First hour of profile data

YR MO DY HR HEIGHT F WDIR WSPD AMB_TMP sigmaA sigmaW sigmaV

06 01 01 01 2.0 0 -999. -99.00 280.1 99.0 -99.00 -99.00

06 01 01 01 10.0 0 326. 4.43 282.0 5.4 -99.00 0.42

06 01 01 01 60.0 1 316. 5.10 283.1 6.1 -99.00 0.54

F indicates top of profile (=1) or below (=0)

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF ETHYLBEN IN MICROGRAMS/M**3 **

NETWORK

GROUP ID AVERAGE CONC RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL 1ST HIGHEST VALUE IS 0.00412 AT (499450.00, 4508500.00, 1603.57, 1603.57, 0.00) DC

2ND HIGHEST VALUE IS 0.00403 AT (499450.00, 4508450.00, 1603.33, 1603.33, 0.00) DC

3RD HIGHEST VALUE IS 0.00400 AT (499700.00, 4508150.00, 1610.72, 1610.72, 0.00) DC

4TH HIGHEST VALUE IS 0.00392 AT (499450.00, 4508550.00, 1603.86, 1603.86, 0.00) DC

5TH HIGHEST VALUE IS 0.00388 AT (499750.00, 4508100.00, 1608.86, 1608.86, 0.00) DC

6TH HIGHEST VALUE IS 0.00383 AT (499750.00, 4508150.00, 1610.15, 1610.15, 0.00) DC

7TH HIGHEST VALUE IS 0.00381 AT (499700.00, 4508100.00, 1609.85, 1609.85, 0.00) DC

8TH HIGHEST VALUE IS 0.00379 AT (499400.00, 4508500.00, 1603.34, 1603.34, 0.00) DC

9TH HIGHEST VALUE IS 0.00377 AT (499800.00, 4508100.00, 1606.47, 1606.47, 0.00) DC

10TH HIGHEST VALUE IS 0.00371 AT (499400.00, 4508550.00, 1603.60, 1603.60, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF ETHYLBEN IN MICROGRAMS/M**3 **

DATE NETWORK

GROUP ID AVERAGE CONC (YYMMDDHH) RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL HIGH 1ST HIGH VALUE IS 0.28349 ON 06102824: AT (499600.00, 4508200.00, 1608.71, 1608.71, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)

A Total of 624 Warning Message(s)

A Total of 142 Informational Message(s)

A Total of 8760 Hours Were Processed

A Total of 1 Calm Hours Identified

A Total of 141 Missing Hours Identified (1.61 Percent)

******** FATAL ERROR MESSAGES ********

*** NONE ***

******** WARNING MESSAGES ********

ME W181 3169 MEOPEN: BULKRN Delta-T & SolarRad option for SBL was used in AERMET

MX W403 3169 PFLCNV: Turbulence data is being used w/o ADJ_U* option SigA Data

MX W479 24 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 29 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 30 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 31 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.712

MX W479 48 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 51 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 52 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 53 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 141 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 143 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.877

MX W479 147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 151 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479	215	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	216	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.734
MX W479	221	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.535
MX W479	222	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.604
MX W479	243	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.588
MX W479	244	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	291	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	296	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	308	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.572
MX W479	312	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	313	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.700
MX W479	314	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.658
MX W479	316	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.735
MX W479	317	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.795
MX W479	318	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.549
MX W479	320	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	321	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.644
MX W479	340	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	342	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	344	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.561
MX W479	475	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.580
MX W479	479	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	482	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.746
MX W479	483	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	484	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	486	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	487	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.681
MX W479	488	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.697
MX W479	489	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.921

MX W479	509	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.586
MX W479	524	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	525	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	526	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	527	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	528	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.926
MX W479	529	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.676
MX W479	530	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.808
MX W479	531	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.740
MX W479	532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.537
MX W479	533	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.621
MX W479	534	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.830
MX W479	535	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.510
MX W479	550	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.611
MX W479	554	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.558
MX W479	555	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.719
MX W479	556	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.743
MX W479	573	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.536
MX W479	574	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.241
MX W479	575	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.721
MX W479	576	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.562
MX W479	577	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	578	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.213
MX W479	579	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.698
MX W479	580	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	581	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.713
MX W479	582	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.678
MX W479	583	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.869
MX W479	584	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.806

MX W479 595 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 597 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.667

MX W479 599 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.596

MX W479 600 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 601 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.705

MX W479 605 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 629 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.665

MX W479 632 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.505

MX W479 724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 725 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 727 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 775 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 822 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 835 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 836 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.517

MX W479 837 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 838 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 839 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 932 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 941 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 1029 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.735

MX W479 1031 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479 1034 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 1035 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 1051 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 1052 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500

MX W479 1053 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.884

MX W479 1054 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.859

MX W479 1055 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.766

MX W479 1056 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.677

MX W479 1060 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 1061 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.639

MX W479 1197 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1198 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.709

MX W479 1199 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 1200 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.530

MX W479 1201 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 1203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.590

MX W479 1204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.726

MX W479 1205 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.750

MX W479 1206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.700

MX W479 1208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1218 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 1219 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.824

MX W479 1220 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 1221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 1222 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 1223 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 1224 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 1225 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 1226 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1227 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.778

MX W479 1228 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 1229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 1231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 1244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 1245 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 1276 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 1277 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 1278 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.729

MX W479 1293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.683

MX W479 1294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.851

MX W479 1295 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1296 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 1297 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 1300 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.634

MX W479 1301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.723

MX W479 1302 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 1303 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 1316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.692

MX W479 1343 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 1344 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.720

MX W479 1345 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1346 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 1347 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 1365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.696

MX W479 1373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 1374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1375 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.622

MX W479 1392 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 1394 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.577

MX W479 1395 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 1396 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 1397 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 1441 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.508

MX W479 1442 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1483 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.647

MX W479 1532 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 1537 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1539 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 1540 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 1541 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 1543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 1566 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.569

MX W479 1661 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 1989 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 1990 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 1991 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.509

MX W479 1993 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.563

MX W479 1994 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.534

MX W479 2086 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 2088 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 2089 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 2093 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 2228 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.579

MX W479 2229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 2230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.693

MX W479 2231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.634

MX W479 2232 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.632

MX W479 2234 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 2235 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 2253 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 2254 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 2255 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.755

MX W479 2262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 2348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 2349 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2350 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 2351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2352 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.834

MX W479 2353 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.525

MX W479 2354 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2355 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.560

MX W479 2356 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 2373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.752

MX W479 2374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.569

MX W479 2378 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 2379 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.647

MX W479 2380 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 2382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 2399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.920

MX W479 2421 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2422 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 2424 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 2425 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 2428 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 2429 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.578

MX W479 2430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 2445 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.748

MX W479 2446 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 2447 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

MX W479 2448 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.743

MX W479 2449 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.733

MX W479 2450 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 2468 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2469 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.019

MX W479 2470 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.976

MX W479 2471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.882

MX W479 2472 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 2542 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.826

MX W479 2544 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.734

MX W479 2545 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.629

MX W479 2546 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.769

MX W479 2547 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.656

MX W479 2548 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.679

MX W479 2549 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.853

MX W479 2550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 2615 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 2616 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 2617 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

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MX W479 2640 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 2641 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.777

MX W479 2643 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 2645 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 2646 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 2663 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.896

MX W479 2664 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 2666 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 2669 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 2670 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500

MX W479 2763 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.504

MX W479 2783 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.567

MX W479 2786 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.588

MX W479 2788 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.748

MX W479 2789 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2832 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 2833 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.506

MX W479 2900 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 2901 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.673

MX W479 2902 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.730

MX W479 2903 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 2905 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 2906 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 2907 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 3045 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

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MX W479 3048 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.508

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MX W479 3169 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 3170 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.601

MX W479 3171 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.796

MX W479 3172 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 3173 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.889

MX W479 3174 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 3239 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 3262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 3263 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 3289 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 3290 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 3291 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 3293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 3294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 3313 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

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MX W479 3338 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.521

MX W479 3339 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 3363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.584

MX W479 3364 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 3365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 3366 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 3382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 3383 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 3384 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.606

MX W479 3453 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 3454 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.711

MX W479 3457 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 3509 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.654

MX W479 3525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

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MX W479 3693 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

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MX W479 4030 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.707

MX W479 4031 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 4035 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 4036 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 4037 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 4057 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.502

MX W479 4080 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 4101 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.545

MX W479 4102 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 4103 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.847

MX W479 4104 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 4105 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 4172 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.682

MX W479 4173 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.824

MX W479 4227 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 4297 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.508

MX W479 4298 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.590

MX W479 4301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 4493 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 4586 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 4629 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.548

MX W479 4630 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.517

MX W479 4652 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 4653 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.685

MX W479 4654 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 4656 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 4657 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.903

MX W479 4658 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.975

MX W479 4659 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.826

MX W479 4660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.741

MX W479 4661 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.888

MX W479 4677 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.524

MX W479 4679 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 4680 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.591

MX W479 4685 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 4724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 4996 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.544

MX W479 5331 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.662

MX W479 5332 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 5471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 5472 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 5475 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 5614 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.669

MX W479 5615 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 5621 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 5622 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.623

MX W479 5790 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 5804 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 5805 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 5809 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 5812 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.675

MX W479 5813 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 5814 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 5979 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 5980 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 6120 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 6121 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 6125 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 6126 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 6142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 6146 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 6147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

MX W479 6148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

MX W479 6149 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.883

MX W479 6150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.860

MX W479 6267 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 6268 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 6271 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 6286 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 6292 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.577

MX W479 6294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.615

MX W479 6405 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 6406 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.887

MX W479 6407 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 6408 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.541

MX W479 6409 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 6410 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.740

MX W479 6411 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 6413 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 6430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479 6431 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.841

MX W479 6435 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.023

MX W479 6436 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.778

MX W479 6486 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 6501 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.822

MX W479 6524 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 6525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.600

MX W479 6526 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.566

MX W479 6528 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.612

MX W479 6529 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.627

MX W479 6530 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 6531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.662

MX W479 6532 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.680

MX W479 6548 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.718

MX W479 6549 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.739

MX W479 6550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.767

MX W479 6553 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 6554 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.776

MX W479 6555 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 6556 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 6558 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.988

MX W479 6559 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.766

MX W479 6571 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 6572 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.870

MX W479 6573 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.668

MX W479 6574 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.705

MX W479 6577 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.791

MX W479 6578 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 6579 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.622

MX W479 6580 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 6581 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.872

MX W479 6582 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.704

MX W479 6583 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 6596 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 6602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 6791 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.545

MX W479 6835 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.564

MX W479 6836 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 6868 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 6870 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 6890 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 6912 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 6913 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 6914 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.591

MX W479 6915 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 6917 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 6918 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 7014 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 7099 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.534

MX W479 7100 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.759

MX W479 7101 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 7103 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 7111 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 7123 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 7126 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 7127 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 7129 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.509

MX W479 7130 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.683

MX W479 7131 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 7132 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.525

MX W479 7195 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.554

MX W479 7196 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 7199 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.566

MX W479 7207 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 7220 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 7243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.628

MX W479 7244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 7246 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.712

MX W479 7252 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.629

MX W479 7253 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 7255 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.681

MX W479 7316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.757

MX W479 7317 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 7318 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.570

MX W479 7319 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 7321 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 7323 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 7324 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.578

MX W479 7326 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 7340 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.691

MX W479 7343 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 7345 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.627

MX W479 7346 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 7351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 7363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 7364 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.215

MX W479 7366 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 7367 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.612

MX W479 7368 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.799

MX W479 7369 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.518

MX W479 7388 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 7389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 7390 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 7391 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.797

MX W479 7393 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 7395 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 7396 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 7397 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 7399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.656

MX W479 7400 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.686

MX W479 7446 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.641

MX W479 7462 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.761

MX W479 7468 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 7469 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.811

MX W479 7470 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.856

MX W479 7471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.803

MX W479 7484 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 7513 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 7514 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 7531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.594

MX W479 7543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 7585 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.532

MX W479 7586 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.831

MX W479 7587 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

MX W479 7602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 7603 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 7660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.708

MX W479 7661 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 7681 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 7682 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 7683 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.707

MX W479 7684 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.628

MX W479 7753 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.641

MX W479 7755 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.502

MX W479 7794 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 7796 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.032

MX W479 7797 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.212

MX W479 7798 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.800

MX W479 7801 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.637

MX W479 7802 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.906

MX W479 7803 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 7804 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.841

MX W479 7805 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.048

MX W479 7806 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.021

MX W479 7807 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.755

MX W479 7819 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.902

MX W479 7867 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.583

MX W479 7869 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 7873 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 7878 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 7879 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 7891 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 7892 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.532

MX W479 7894 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.509

MX W479 7896 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 7897 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.506

MX W479 7898 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.761

MX W479 7899 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.773

MX W479 7900 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 7901 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.852

MX W479 7941 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 7948 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 7989 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 7990 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 7991 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.627

MX W479 7992 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.622

MX W479 7993 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.288

MX W479 7994 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 7996 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.606

MX W479 8011 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 8041 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.505

MX W479 8042 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 8062 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 8067 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 8086 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 8087 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.504

MX W479 8088 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.618

MX W479 8089 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 8090 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 8091 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 8107 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 8108 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 8111 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.564

MX W479 8112 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 8116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 8117 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.838

MX W479 8118 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 8119 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.001

MX W479 8120 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.649

MX W479 8190 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 8191 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 8192 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 8202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.572

MX W479 8203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.563

MX W479 8204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.511

MX W479 8206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 8208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.642

MX W479 8209 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.717

MX W479 8210 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.670

MX W479 8211 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 8213 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.701

MX W479 8214 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.584

MX W479 8215 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.714

MX W479 8216 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.687

MX W479 8229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 8230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 8231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 8235 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 8238 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 8301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.642

MX W479 8304 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 8306 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.685

MX W479 8307 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479	8311	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.550
MX W479	8350	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.596
MX W479	8356	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.511
MX W479	8358	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	8360	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	8427	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.593
MX W479	8428	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.548
MX W479	8442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	8445	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	8447	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	8448	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	8450	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.583
MX W479	8451	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.695
MX W479	8452	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.533
MX W479	8514	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	8553	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.944
MX W479	8567	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.619
MX W479	8570	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.535
MX W479	8571	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	8595	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626
MX W479	8646	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	8660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.567
MX W479	8730	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	8734	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	8735	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.560
MX W479	8760	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** MODEL SETUP OPTIONS SUMMARY ***

** Model Options Selected:

* Model Uses Regulatory DEFAULT Options
* Model Is Setup For Calculation of Average CONCentration Values.
* NO GAS DEPOSITION Data Provided.
* NO PARTICLE DEPOSITION Data Provided.
* Model Uses NO DRY DEPLETION. DDPLETE = F
* Model Uses NO WET DEPLETION. WETDPLT = F
* Stack-tip Downwash.
* Model Accounts for ELEVated Terrain Effects.
* Use Calms Processing Routine.
* Use Missing Data Processing Routine.
* No Exponential Decay.
* Model Uses RURAL Dispersion Only.
* BULKRN - Use BULKRN Delta-T and SolarRad option for SBL in AERMET
* Model Assumes No FLAGPOLE Receptor Heights.
* The User Specified a Pollutant Type of: XYLENE

**Model Calculates 1 Short Term Average(s) of: 1-HR
and Calculates ANNUAL Averages

**This Run Includes: 1 Source(s); 1 Source Group(s); and 3106 Receptor(s)

with: 1 POINT(s), including

0 POINTCAP(s) and 0 POINTHOR(s)

and: 0 VOLUME source(s)

and: 0 AREA type source(s)

and: 0 LINE source(s)

and: 0 RLINE/RLINEXT source(s)

and: 0 OPENPIT source(s)

and: 0 BUOYANT LINE source(s) with a total of 0 line(s)

and: 0 SWPOINT source(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 22112

**Output Options Selected:

Model Outputs Tables of ANNUAL Averages by Receptor

Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)

Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours

m for Missing Hours

b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 1730.68 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0

Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07

```
           Output Units   = MICROGRAMS/M**3


 **Approximate Storage Requirements of Model =      3.9 MB of RAM.


 **Input Runstream File:          C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi

 **Output Print File:           C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi


 **File for Summary of Results:   C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi

 *** AERMOD - VERSION 22112  ***   *** Title One                                  ***       05/09/23

 *** AERMET - VERSION  22112 ***   ***                                            ***       15:23:03

                                                                       PAGE   2

 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  BULKRN  SigA Data


                    *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***

                                  (1=YES; 0=NO)


     1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

     1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

     1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

     1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

     1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

     1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

     1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

     1 1 1 1 1 1 1 1 1 1  1 1 1 1 1


          NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS
INCLUDED IN THE DATA FILE.
```

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

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*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling Met Version: 22112

Profile file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling

Surface format: FREE

Profile format: FREE

Surface station no.: 0 Upper air station no.: 23062

Name: UNKNOWN Name: DENVER WSFO, CO

Year: 2006 Year: 2006

First 24 hours of scalar data

YR MO DY JDY HR H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS WD HT REF TA HT

- -

06 01 01 1 01 -26.0 0.162 -9.000 -9.000 -999. 157. 11.8 0.01 1.89 1.00 4.43 326. 10.0 280.1 2.0

06 01 01 1 02 -58.1 0.325 -9.000 -9.000 -999. 445. 42.5 0.01 1.89 1.00 6.57 310. 10.0 281.4
2.0

06 01 01 1 03 -33.0 0.292 -9.000 -9.000 -999. 380. 54.5 0.01 1.89 1.00 5.72 272. 10.0 281.0
2.0

06 01 01 1 04 -14.9 0.128 -9.000 -9.000 -999. 134. 10.2 0.01 1.89 1.00 3.67 320. 10.0 279.8
2.0

06 01 01 1 05 -13.5 0.124 -9.000 -9.000 -999. 105. 10.1 0.01 1.89 1.00 3.71 337. 10.0 279.0
2.0

06 01 01 1 06 -18.3 0.176 -9.000 -9.000 -999. 177. 21.3 0.01 1.89 1.00 4.29 344. 10.0 278.3
2.0

06 01 01 1 07 -34.9 0.286 -9.000 -9.000 -999. 367. 48.1 0.01 1.89 1.00 5.68 327. 10.0 279.3
2.0

06 01 01 1 08 -39.7 0.440 -9.000 -9.000 -999. 701. 154.4 0.01 1.89 1.00 7.96 307. 10.0 279.8
2.0

06 01 01 1 09 -17.3 0.580 -9.000 -9.000 -999. 1058. 810.0 0.01 1.89 0.43 10.10 287. 10.0 279.4
2.0

06 01 01 1 10 38.3 0.682 0.602 0.005 164. 1349. -597.0 0.01 1.89 0.31 11.67 301. 10.0 280.9
2.0

06 01 01 1 11 83.4 0.893 1.120 0.005 486. 2020. -616.6 0.01 1.89 0.26 15.29 291. 10.0 281.4
2.0

06 01 01 1 12 97.2 0.889 1.326 0.005 693. 2013. -521.8 0.01 1.89 0.24 15.20 293. 10.0 281.3
2.0

06 01 01 1 13 137.5 0.968 1.629 0.005 909. 2279. -476.9 0.01 1.89 0.24 16.54 291. 10.0
281.3 2.0

06 01 01 1 14 122.9 0.912 1.653 0.005 1063. 2100. -445.7 0.01 1.89 0.25 15.56 290. 10.0
281.0 2.0

06 01 01 1 15 67.7 0.795 1.385 0.005 1138. 1727. -536.6 0.01 1.89 0.30 13.59 295. 10.0
280.1 2.0

06 01 01 1 16 0.0 0.715 -9.000 -9.000 -999. 1464. 8888.0 0.01 1.89 0.41 12.34 301. 10.0 279.0
2.0

06 01 01 1 17 0.0 0.673 -9.000 -9.000 -999. 1330. 8888.0 0.01 1.89 0.72 11.62 304. 10.0 277.1
2.0

06 01 01 1 18 0.0 0.546 -9.000 -9.000 -999. 987. 8888.0 0.01 1.89 1.00 9.43 293. 10.0 275.9
2.0

06 01 01 1 19 -46.9 0.630 -9.000 -9.000 -999. 1199. 388.5 0.01 1.89 1.00 11.09 294. 10.0 276.2
2.0

06 01 01 1 20 -49.7 0.337 -9.000 -9.000 -999. 566. 55.9 0.01 1.89 1.00 6.57 310. 10.0 275.6
2.0

06 01 01 1 21 -29.5 0.194 -9.000 -9.000 -999. 235. 17.9 0.01 1.89 1.00 4.69 313. 10.0 274.4
2.0

06 01 01 1 22 -29.9 0.238 -9.000 -9.000 -999. 279. 32.8 0.01 1.89 1.00 5.32 338. 10.0 275.8
2.0

06 01 01 1 23 -15.8 0.134 -9.000 -9.000 -999. 123. 11.1 0.01 1.89 1.00 3.67 241. 10.0 274.5
2.0

06 01 01 1 24 -19.1 0.117 -9.000 -9.000 -999. 96. 6.1 0.01 1.89 1.00 3.98 279. 10.0 273.6
2.0

First hour of profile data

YR MO DY HR HEIGHT F WDIR WSPD AMB_TMP sigmaA sigmaW sigmaV

06 01 01 01 2.0 0 -999. -99.00 280.1 99.0 -99.00 -99.00

06 01 01 01 10.0 0 326. 4.43 282.0 5.4 -99.00 0.42

06 01 01 01 60.0 1 316. 5.10 283.1 6.1 -99.00 0.54

F indicates top of profile (=1) or below (=0)

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*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF XYLENE IN MICROGRAMS/M**3 **

NETWORK

GROUP ID AVERAGE CONC RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL 1ST HIGHEST VALUE IS 0.00505 AT (499450.00, 4508500.00, 1603.57, 1603.57, 0.00) DC

2ND HIGHEST VALUE IS 0.00494 AT (499450.00, 4508450.00, 1603.33, 1603.33, 0.00) DC

3RD HIGHEST VALUE IS 0.00491 AT (499700.00, 4508150.00, 1610.72, 1610.72, 0.00) DC

4TH HIGHEST VALUE IS 0.00481 AT (499450.00, 4508550.00, 1603.86, 1603.86, 0.00) DC

5TH HIGHEST VALUE IS 0.00476 AT (499750.00, 4508100.00, 1608.86, 1608.86, 0.00) DC

6TH HIGHEST VALUE IS 0.00470 AT (499750.00, 4508150.00, 1610.15, 1610.15, 0.00) DC

7TH HIGHEST VALUE IS 0.00468 AT (499700.00, 4508100.00, 1609.85, 1609.85, 0.00) DC

8TH HIGHEST VALUE IS 0.00465 AT (499400.00, 4508500.00, 1603.34, 1603.34, 0.00) DC

9TH HIGHEST VALUE IS 0.00463 AT (499800.00, 4508100.00, 1606.47, 1606.47, 0.00) DC

10TH HIGHEST VALUE IS 0.00455 AT (499400.00, 4508550.00, 1603.60, 1603.60, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF XYLENE IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	NETWORK RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL HIGH 1ST HIGH VALUE IS 0.34792 ON 06102824: AT (499600.00, 4508200.00, 1608.71, 1608.71, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)

A Total of 624 Warning Message(s)

A Total of 142 Informational Message(s)

A Total of 8760 Hours Were Processed

A Total of 1 Calm Hours Identified

A Total of 141 Missing Hours Identified (1.61 Percent)

******** FATAL ERROR MESSAGES ********

*** NONE ***

******** WARNING MESSAGES ********

ME W181 3169 MEOPEN: BULKRN Delta-T & SolarRad option for SBL was used in AERMET

MX W403 3169 PFLCNV: Turbulence data is being used w/o ADJ_U* option SigA Data

MX W479 24 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 29 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 30 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 31 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.712

MX W479 48 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 51 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 52 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 53 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 141 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 143 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.877

MX W479 147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 151 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479	215	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	216	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.734
MX W479	221	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.535
MX W479	222	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.604
MX W479	243	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.588
MX W479	244	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	291	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	296	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	308	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.572
MX W479	312	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	313	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.700
MX W479	314	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.658
MX W479	316	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.735
MX W479	317	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.795
MX W479	318	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.549
MX W479	320	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	321	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.644
MX W479	340	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	342	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	344	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.561
MX W479	475	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.580
MX W479	479	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	482	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.746
MX W479	483	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	484	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	486	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	487	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.681
MX W479	488	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.697
MX W479	489	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.921

MX W479	509	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.586
MX W479	524	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	525	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	526	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	527	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	528	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.926
MX W479	529	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.676
MX W479	530	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.808
MX W479	531	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.740
MX W479	532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.537
MX W479	533	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.621
MX W479	534	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.830
MX W479	535	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.510
MX W479	550	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.611
MX W479	554	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.558
MX W479	555	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.719
MX W479	556	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.743
MX W479	573	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.536
MX W479	574	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.241
MX W479	575	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.721
MX W479	576	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.562
MX W479	577	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	578	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.213
MX W479	579	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.698
MX W479	580	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	581	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.713
MX W479	582	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.678
MX W479	583	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.869
MX W479	584	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.806

MX W479 595 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 597 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.667

MX W479 599 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.596

MX W479 600 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 601 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.705

MX W479 605 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 629 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.665

MX W479 632 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.505

MX W479 724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 725 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 727 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 775 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 822 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 835 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 836 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.517

MX W479 837 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 838 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 839 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 932 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 941 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 1029 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.735

MX W479 1031 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479 1034 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 1035 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 1051 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 1052 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500

MX W479 1053 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.884

MX W479 1054 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.859

MX W479 1055 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.766

MX W479 1056 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.677

MX W479 1060 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 1061 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.639

MX W479 1197 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1198 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.709

MX W479 1199 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 1200 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.530

MX W479 1201 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 1203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.590

MX W479 1204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.726

MX W479 1205 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.750

MX W479 1206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.700

MX W479 1208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1218 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 1219 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.824

MX W479 1220 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 1221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 1222 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 1223 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 1224 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 1225 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 1226 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1227 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.778

MX W479 1228 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 1229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 1231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 1244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 1245 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 1276 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 1277 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 1278 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.729

MX W479 1293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.683

MX W479 1294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.851

MX W479 1295 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1296 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 1297 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 1300 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.634

MX W479 1301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.723

MX W479 1302 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 1303 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 1316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.692

MX W479 1343 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 1344 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.720

MX W479 1345 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1346 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 1347 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 1365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.696

MX W479 1373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 1374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1375 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.622

MX W479 1392 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 1394 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.577

MX W479 1395 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 1396 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 1397 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 1441 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.508

MX W479 1442 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1483 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.647

MX W479 1532 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 1537 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1539 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 1540 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 1541 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 1543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 1566 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.569

MX W479 1661 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 1989 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 1990 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 1991 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.509

MX W479 1993 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.563

MX W479 1994 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.534

MX W479 2086 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 2088 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 2089 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 2093 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 2228 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.579

MX W479 2229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 2230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.693

MX W479 2231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.634

MX W479 2232 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.632

MX W479 2234 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 2235 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 2253 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 2254 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 2255 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.755

MX W479 2262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 2348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 2349 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2350 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 2351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2352 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.834

MX W479 2353 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.525

MX W479 2354 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2355 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.560

MX W479 2356 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 2373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.752

MX W479 2374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.569

MX W479 2378 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 2379 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.647

MX W479 2380 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 2382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 2399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.920

MX W479 2421 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2422 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 2424 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 2425 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 2428 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 2429 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.578

MX W479 2430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 2445 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.748

MX W479 2446 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 2447 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

MX W479 2448 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.743

MX W479 2449 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.733

MX W479 2450 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 2468 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2469 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.019

MX W479 2470 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.976

MX W479 2471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.882

MX W479 2472 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 2542 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.826

MX W479 2544 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.734

MX W479 2545 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.629

MX W479 2546 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.769

MX W479 2547 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.656

MX W479 2548 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.679

MX W479 2549 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.853

MX W479 2550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 2615 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 2616 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 2617 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 2639 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 2640 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 2641 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.777

MX W479 2643 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 2645 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 2646 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 2663 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.896

MX W479 2664 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 2666 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 2669 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 2670 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500

MX W479 2763 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.504

MX W479 2783 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.567

MX W479 2786 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.588

MX W479 2788 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.748

MX W479 2789 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2832 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 2833 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.506

MX W479 2900 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 2901 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.673

MX W479 2902 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.730

MX W479 2903 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 2905 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 2906 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 2907 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

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MX W479 3047 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.554

MX W479 3048 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.508

MX W479 3148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 3149 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 3168 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 3169 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 3170 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.601

MX W479 3171 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.796

MX W479 3172 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 3173 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.889

MX W479 3174 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 3239 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 3262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 3263 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 3289 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 3290 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 3291 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 3293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 3294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 3313 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 3316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 3337 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 3338 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.521

MX W479 3339 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 3363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.584

MX W479 3364 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 3365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 3366 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 3382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 3383 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 3384 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.606

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MX W479 3454 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.711

MX W479 3457 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 3509 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.654

MX W479 3525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

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MX W479 3674 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 3693 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

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MX W479 4030 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.707

MX W479 4031 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

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MX W479 4036 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 4037 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 4057 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.502

MX W479 4080 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 4101 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.545

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MX W479 4105 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

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MX W479 4173 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.824

MX W479 4227 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

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MX W479 4298 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.590

MX W479 4301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

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MX W479 4630 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.517

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MX W479 4654 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

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MX W479 4659 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.826

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MX W479 4677 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.524

MX W479 4679 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 4680 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.591

MX W479 4685 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 4724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

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MX W479 5615 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

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MX W479 5622 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.623

MX W479 5790 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 5804 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 5805 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

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MX W479 5813 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 5814 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 5979 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 5980 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 6120 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

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MX W479 6125 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

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MX W479 6147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

MX W479 6148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

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MX W479 6486 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 6501 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.822

MX W479 6524 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 6525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.600

MX W479 6526 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.566

MX W479 6528 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.612

MX W479 6529 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.627

MX W479 6530 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 6531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.662

MX W479 6532 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.680

MX W479 6548 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.718

MX W479 6549 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.739

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MX W479 6556 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

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MX W479 6559 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.766

MX W479 6571 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

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MX W479 6574 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.705

MX W479 6577 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.791

MX W479 6578 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 6579 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.622

MX W479 6580 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

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MX W479 6582 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.704

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MX W479 6602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

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MX W479 6835 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.564

MX W479 6836 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 6868 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 6870 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 6890 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 6912 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 6913 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 6914 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.591

MX W479 6915 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 6917 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 6918 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 7014 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 7099 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.534

MX W479 7100 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.759

MX W479 7101 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 7103 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 7111 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 7123 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 7126 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 7127 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 7129 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.509

MX W479 7130 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.683

MX W479 7131 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 7132 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.525

MX W479 7195 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.554

MX W479 7196 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 7199 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.566

MX W479 7207 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 7220 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 7243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.628

MX W479 7244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 7246 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.712

MX W479 7252 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.629

MX W479 7253 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 7255 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.681

MX W479 7316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.757

MX W479 7317 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 7318 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.570

MX W479 7319 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 7321 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 7323 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 7324 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.578

MX W479 7326 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 7340 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.691

MX W479 7343 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 7345 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.627

MX W479 7346 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 7351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 7363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 7364 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.215

MX W479 7366 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479	7367	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.612
MX W479	7368	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.799
MX W479	7369	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.518
MX W479	7388	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.589
MX W479	7389	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.553
MX W479	7390	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.725
MX W479	7391	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.797
MX W479	7393	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7395	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	7396	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	7397	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	7399	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.656
MX W479	7400	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.686
MX W479	7446	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.641
MX W479	7462	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.761
MX W479	7468	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.636
MX W479	7469	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.811
MX W479	7470	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.856
MX W479	7471	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.803
MX W479	7484	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.540
MX W479	7513	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.558
MX W479	7514	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.585
MX W479	7531	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.594
MX W479	7543	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	7585	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.532
MX W479	7586	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.831
MX W479	7587	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.573
MX W479	7602	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.586
MX W479	7603	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.561

MX W479 7660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.708

MX W479 7661 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 7681 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 7682 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 7683 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.707

MX W479 7684 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.628

MX W479 7753 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.641

MX W479 7755 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.502

MX W479 7794 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 7796 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.032

MX W479 7797 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.212

MX W479 7798 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.800

MX W479 7801 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.637

MX W479 7802 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.906

MX W479 7803 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 7804 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.841

MX W479 7805 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.048

MX W479 7806 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.021

MX W479 7807 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.755

MX W479 7819 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.902

MX W479 7867 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.583

MX W479 7869 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 7873 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 7878 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 7879 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 7891 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 7892 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.532

MX W479 7894 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.509

MX W479 7896 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 7897 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.506

MX W479 7898 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.761

MX W479 7899 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.773

MX W479 7900 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 7901 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.852

MX W479 7941 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 7948 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 7989 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 7990 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 7991 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.627

MX W479 7992 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.622

MX W479 7993 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.288

MX W479 7994 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 7996 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.606

MX W479 8011 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 8041 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.505

MX W479 8042 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 8062 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 8067 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 8086 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 8087 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.504

MX W479 8088 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.618

MX W479 8089 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 8090 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 8091 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 8107 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 8108 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 8111 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.564

MX W479 8112 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 8116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 8117 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.838

MX W479 8118 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 8119 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.001

MX W479 8120 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.649

MX W479 8190 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 8191 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 8192 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 8202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.572

MX W479 8203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.563

MX W479 8204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.511

MX W479 8206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 8208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.642

MX W479 8209 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.717

MX W479 8210 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.670

MX W479 8211 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 8213 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.701

MX W479 8214 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.584

MX W479 8215 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.714

MX W479 8216 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.687

MX W479 8229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 8230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 8231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 8235 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 8238 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 8301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.642

MX W479 8304 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 8306 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.685

MX W479 8307 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479	8311	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.550
MX W479	8350	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.596
MX W479	8356	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.511
MX W479	8358	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	8360	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	8427	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.593
MX W479	8428	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.548
MX W479	8442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	8445	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	8447	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	8448	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	8450	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.583
MX W479	8451	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.695
MX W479	8452	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.533
MX W479	8514	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	8553	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.944
MX W479	8567	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.619
MX W479	8570	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.535
MX W479	8571	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	8595	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626
MX W479	8646	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	8660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.567
MX W479	8730	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	8734	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	8735	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.560
MX W479	8760	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** MODEL SETUP OPTIONS SUMMARY ***

** Model Options Selected:

* Model Uses Regulatory DEFAULT Options
* Model Is Setup For Calculation of Average CONCentration Values.
* NO GAS DEPOSITION Data Provided.
* NO PARTICLE DEPOSITION Data Provided.
* Model Uses NO DRY DEPLETION. DDPLETE = F
* Model Uses NO WET DEPLETION. WETDPLT = F
* Stack-tip Downwash.
* Model Accounts for ELEVated Terrain Effects.
* Use Calms Processing Routine.
* Use Missing Data Processing Routine.
* No Exponential Decay.
* Model Uses RURAL Dispersion Only.
* BULKRN - Use BULKRN Delta-T and SolarRad option for SBL in AERMET
* Model Assumes No FLAGPOLE Receptor Heights.
* The User Specified a Pollutant Type of: TOTALPAH

**Model Calculates 1 Short Term Average(s) of: 1-HR
and Calculates ANNUAL Averages

**This Run Includes: 1 Source(s); 1 Source Group(s); and 3106 Receptor(s)

with: 1 POINT(s), including

0 POINTCAP(s) and 0 POINTHOR(s)

and: 0 VOLUME source(s)

and: 0 AREA type source(s)

and: 0 LINE source(s)

and: 0 RLINE/RLINEXT source(s)

and: 0 OPENPIT source(s)

and: 0 BUOYANT LINE source(s) with a total of 0 line(s)

and: 0 SWPOINT source(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 22112

**Output Options Selected:

Model Outputs Tables of ANNUAL Averages by Receptor

Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)

Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours

m for Missing Hours

b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 1730.68 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0

Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07

```
              Output Units   = MICROGRAMS/M**3


 **Approximate Storage Requirements of Model =      3.9 MB of RAM.


 **Input Runstream File:          C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi

 **Output Print File:            C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi


 **File for Summary of Results:   C:\Users\jonahl\OneDrive - Antea USA,
Inc\Desktop\Modeling\Connell\Revision 50\Connell_BEEST_Emi

 *** AERMOD - VERSION 22112  ***   *** Title One                                  ***       05/09/23

 *** AERMET - VERSION  22112 ***   ***                                         ***       15:23:44

                                                                     PAGE   2

 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  BULKRN  SigA Data


                              *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***

                                                   (1=YES; 0=NO)


      1111111111 1111111111 1111111111 1111111111 1111111111

      1111111111 1111111111 1111111111 1111111111 1111111111

      1111111111 1111111111 1111111111 1111111111 1111111111

      1111111111 1111111111 1111111111 1111111111 1111111111

      1111111111 1111111111 1111111111 1111111111 1111111111

      1111111111 1111111111 1111111111 1111111111 1111111111

      1111111111 1111111111 1111111111 1111111111 1111111111

      1111111111 11111


          NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS
INCLUDED IN THE DATA FILE.
```

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** AERMOD - VERSION 22112 *** *** Title One *** 05/09/23

*** AERMET - VERSION 22112 *** *** *** 15:23:44

PAGE 3

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling Met Version: 22112

Profile file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling

Surface format: FREE

Profile format: FREE

Surface station no.: 0 Upper air station no.: 23062

Name: UNKNOWN Name: DENVER WSFO, CO

Year: 2006 Year: 2006

First 24 hours of scalar data

YR MO DY JDY HR H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS WD HT REF TA HT

- -

06 01 01 1 01 -26.0 0.162 -9.000 -9.000 -999. 157. 11.8 0.01 1.89 1.00 4.43 326. 10.0 280.1 2.0

06 01 01 1 02 -58.1 0.325 -9.000 -9.000 -999. 445. 42.5 0.01 1.89 1.00 6.57 310. 10.0 281.4
2.0

06 01 01 1 03 -33.0 0.292 -9.000 -9.000 -999. 380. 54.5 0.01 1.89 1.00 5.72 272. 10.0 281.0
2.0

06 01 01 1 04 -14.9 0.128 -9.000 -9.000 -999. 134. 10.2 0.01 1.89 1.00 3.67 320. 10.0 279.8
2.0

06 01 01 1 05 -13.5 0.124 -9.000 -9.000 -999. 105. 10.1 0.01 1.89 1.00 3.71 337. 10.0 279.0
2.0

06 01 01 1 06 -18.3 0.176 -9.000 -9.000 -999. 177. 21.3 0.01 1.89 1.00 4.29 344. 10.0 278.3
2.0

06 01 01 1 07 -34.9 0.286 -9.000 -9.000 -999. 367. 48.1 0.01 1.89 1.00 5.68 327. 10.0 279.3
2.0

06 01 01 1 08 -39.7 0.440 -9.000 -9.000 -999. 701. 154.4 0.01 1.89 1.00 7.96 307. 10.0 279.8
2.0

06 01 01 1 09 -17.3 0.580 -9.000 -9.000 -999. 1058. 810.0 0.01 1.89 0.43 10.10 287. 10.0 279.4
2.0

06 01 01 1 10 38.3 0.682 0.602 0.005 164. 1349. -597.0 0.01 1.89 0.31 11.67 301. 10.0 280.9
2.0

06 01 01 1 11 83.4 0.893 1.120 0.005 486. 2020. -616.6 0.01 1.89 0.26 15.29 291. 10.0 281.4
2.0

06 01 01 1 12 97.2 0.889 1.326 0.005 693. 2013. -521.8 0.01 1.89 0.24 15.20 293. 10.0 281.3
2.0

06 01 01 1 13 137.5 0.968 1.629 0.005 909. 2279. -476.9 0.01 1.89 0.24 16.54 291. 10.0
281.3 2.0

06 01 01 1 14 122.9 0.912 1.653 0.005 1063. 2100. -445.7 0.01 1.89 0.25 15.56 290. 10.0
281.0 2.0

06 01 01 1 15 67.7 0.795 1.385 0.005 1138. 1727. -536.6 0.01 1.89 0.30 13.59 295. 10.0
280.1 2.0

06 01 01 1 16 0.0 0.715 -9.000 -9.000 -999. 1464. 8888.0 0.01 1.89 0.41 12.34 301. 10.0 279.0
2.0

06 01 01 1 17 0.0 0.673 -9.000 -9.000 -999. 1330. 8888.0 0.01 1.89 0.72 11.62 304. 10.0 277.1
2.0

06 01 01 1 18 0.0 0.546 -9.000 -9.000 -999. 987. 8888.0 0.01 1.89 1.00 9.43 293. 10.0 275.9
2.0

06 01 01 1 19 -46.9 0.630 -9.000 -9.000 -999. 1199. 388.5 0.01 1.89 1.00 11.09 294. 10.0 276.2
2.0

06 01 01 1 20 -49.7 0.337 -9.000 -9.000 -999. 566. 55.9 0.01 1.89 1.00 6.57 310. 10.0 275.6
2.0

06 01 01 1 21 -29.5 0.194 -9.000 -9.000 -999. 235. 17.9 0.01 1.89 1.00 4.69 313. 10.0 274.4
2.0

06 01 01 1 22 -29.9 0.238 -9.000 -9.000 -999. 279. 32.8 0.01 1.89 1.00 5.32 338. 10.0 275.8
2.0

06 01 01 1 23 -15.8 0.134 -9.000 -9.000 -999. 123. 11.1 0.01 1.89 1.00 3.67 241. 10.0 274.5
2.0

06 01 01 1 24 -19.1 0.117 -9.000 -9.000 -999. 96. 6.1 0.01 1.89 1.00 3.98 279. 10.0 273.6
2.0

First hour of profile data

YR MO DY HR HEIGHT F WDIR WSPD AMB_TMP sigmaA sigmaW sigmaV

06 01 01 01 2.0 0 -999. -99.00 280.1 99.0 -99.00 -99.00

06 01 01 01 10.0 0 326. 4.43 282.0 5.4 -99.00 0.42

06 01 01 01 60.0 1 316. 5.10 283.1 6.1 -99.00 0.54

F indicates top of profile (=1) or below (=0)

*** AERMOD - VERSION 22112 *** *** Title One *** 05/09/23

*** AERMET - VERSION 22112 *** *** *** 15:23:44

PAGE 4

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF TOTALPAH IN MICROGRAMS/M**3 **

NETWORK

GROUP ID AVERAGE CONC RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL 1ST HIGHEST VALUE IS 0.00043 AT (499450.00, 4508500.00, 1603.57, 1603.57, 0.00) DC

2ND HIGHEST VALUE IS 0.00042 AT (499450.00, 4508450.00, 1603.33, 1603.33, 0.00) DC

3RD HIGHEST VALUE IS 0.00042 AT (499700.00, 4508150.00, 1610.72, 1610.72, 0.00) DC

4TH HIGHEST VALUE IS 0.00041 AT (499450.00, 4508550.00, 1603.86, 1603.86, 0.00) DC

5TH HIGHEST VALUE IS 0.00041 AT (499750.00, 4508100.00, 1608.86, 1608.86, 0.00) DC

6TH HIGHEST VALUE IS 0.00040 AT (499750.00, 4508150.00, 1610.15, 1610.15, 0.00) DC

7TH HIGHEST VALUE IS 0.00040 AT (499700.00, 4508100.00, 1609.85, 1609.85, 0.00) DC

8TH HIGHEST VALUE IS 0.00040 AT (499400.00, 4508500.00, 1603.34, 1603.34, 0.00) DC

9TH HIGHEST VALUE IS 0.00039 AT (499800.00, 4508100.00, 1606.47, 1606.47, 0.00) DC

10TH HIGHEST VALUE IS 0.00039 AT (499400.00, 4508550.00, 1603.60, 1603.60, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF TOTALPAH IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	NETWORK RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL HIGH 1ST HIGH VALUE IS 0.02964 ON 06102824: AT (499600.00, 4508200.00, 1608.71, 1608.71, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)

A Total of 624 Warning Message(s)

A Total of 142 Informational Message(s)

A Total of 8760 Hours Were Processed

A Total of 1 Calm Hours Identified

A Total of 141 Missing Hours Identified (1.61 Percent)

******** FATAL ERROR MESSAGES ********

*** NONE ***

******** WARNING MESSAGES ********

ME W181 3169 MEOPEN: BULKRN Delta-T & SolarRad option for SBL was used in AERMET

MX W403 3169 PFLCNV: Turbulence data is being used w/o ADJ_U* option SigA Data

MX W479 24 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 29 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 30 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 31 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.712

MX W479 48 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 51 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 52 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 53 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 141 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 143 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.877

MX W479 147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 151 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479	215	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	216	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.734
MX W479	221	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.535
MX W479	222	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.604
MX W479	243	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.588
MX W479	244	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	291	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	296	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	308	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.572
MX W479	312	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	313	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.700
MX W479	314	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.658
MX W479	316	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.735
MX W479	317	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.795
MX W479	318	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.549
MX W479	320	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	321	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.644
MX W479	340	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	342	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	344	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.561
MX W479	475	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.580
MX W479	479	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	482	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.746
MX W479	483	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	484	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	486	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	487	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.681
MX W479	488	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.697
MX W479	489	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.921

MX W479	509	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.586
MX W479	524	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	525	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	526	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	527	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	528	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.926
MX W479	529	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.676
MX W479	530	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.808
MX W479	531	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.740
MX W479	532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.537
MX W479	533	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.621
MX W479	534	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.830
MX W479	535	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.510
MX W479	550	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.611
MX W479	554	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.558
MX W479	555	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.719
MX W479	556	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.743
MX W479	573	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.536
MX W479	574	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.241
MX W479	575	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.721
MX W479	576	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.562
MX W479	577	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	578	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.213
MX W479	579	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.698
MX W479	580	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	581	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.713
MX W479	582	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.678
MX W479	583	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.869
MX W479	584	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.806

MX W479	595	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.603
MX W479	597	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.667
MX W479	599	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.596
MX W479	600	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.602
MX W479	601	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.561
MX W479	602	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.705
MX W479	605	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.535
MX W479	629	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.665
MX W479	632	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.505
MX W479	724	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.529
MX W479	725	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.592
MX W479	727	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.557
MX W479	775	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.558
MX W479	822	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.620
MX W479	835	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	836	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.517
MX W479	837	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	838	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	839	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.607
MX W479	932	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.608
MX W479	941	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.557
MX W479	1029	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.735
MX W479	1031	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.587
MX W479	1034	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	1035	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.595
MX W479	1051	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.585
MX W479	1052	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.500
MX W479	1053	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.884
MX W479	1054	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.859

MX W479 1055 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.766

MX W479 1056 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.677

MX W479 1060 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 1061 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.639

MX W479 1197 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1198 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.709

MX W479 1199 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 1200 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.530

MX W479 1201 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 1203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.590

MX W479 1204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.726

MX W479 1205 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.750

MX W479 1206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.700

MX W479 1208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1218 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 1219 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.824

MX W479 1220 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 1221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 1222 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 1223 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 1224 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 1225 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 1226 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1227 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.778

MX W479 1228 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 1229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 1231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 1244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 1245 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 1276 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 1277 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 1278 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.729

MX W479 1293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.683

MX W479 1294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.851

MX W479 1295 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1296 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 1297 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 1300 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.634

MX W479 1301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.723

MX W479 1302 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 1303 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 1316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.692

MX W479 1343 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 1344 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.720

MX W479 1345 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1346 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 1347 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 1365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.696

MX W479 1373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 1374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1375 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.622

MX W479	1392	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	1394	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.577
MX W479	1395	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	1396	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.671
MX W479	1397	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	1441	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	1442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	1483	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.647
MX W479	1532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	1537	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	1539	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.613
MX W479	1540	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	1541	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.648
MX W479	1543	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	1566	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.569
MX W479	1661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	1989	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	1990	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	1991	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	1993	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.563
MX W479	1994	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.534
MX W479	2086	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	2088	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	2089	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	2093	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	2228	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.579
MX W479	2229	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.638
MX W479	2230	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.693
MX W479	2231	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.634

MX W479 2232 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.632

MX W479 2234 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 2235 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 2253 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 2254 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 2255 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.755

MX W479 2262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 2348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 2349 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2350 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 2351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2352 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.834

MX W479 2353 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.525

MX W479 2354 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2355 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.560

MX W479 2356 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 2373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.752

MX W479 2374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.569

MX W479 2378 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 2379 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.647

MX W479 2380 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 2382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 2399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.920

MX W479 2421 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2422 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 2424 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 2425 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 2428 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 2429 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.578

MX W479 2430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 2445 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.748

MX W479 2446 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 2447 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

MX W479 2448 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.743

MX W479 2449 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.733

MX W479 2450 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 2468 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2469 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.019

MX W479 2470 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.976

MX W479 2471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.882

MX W479 2472 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 2542 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.826

MX W479 2544 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.734

MX W479 2545 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.629

MX W479 2546 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.769

MX W479 2547 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.656

MX W479 2548 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.679

MX W479 2549 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.853

MX W479 2550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 2615 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 2616 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 2617 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 2639 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 2640 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 2641 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.777

MX W479 2643 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 2645 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 2646 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 2663 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.896

MX W479 2664 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 2666 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 2669 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 2670 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500

MX W479 2763 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.504

MX W479 2783 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.567

MX W479 2786 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.588

MX W479 2788 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.748

MX W479 2789 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2832 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 2833 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.506

MX W479 2900 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 2901 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.673

MX W479 2902 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.730

MX W479 2903 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 2905 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 2906 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 2907 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 3045 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 3047 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.554

MX W479 3048 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.508

MX W479 3148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 3149 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 3168 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 3169 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 3170 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.601

MX W479 3171 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.796

MX W479 3172 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 3173 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.889

MX W479 3174 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 3239 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 3262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 3263 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 3289 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 3290 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 3291 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 3293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 3294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 3313 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 3316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 3337 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 3338 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.521

MX W479 3339 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 3363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.584

MX W479 3364 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 3365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 3366 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 3382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 3383 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 3384 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.606

MX W479 3453 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 3454 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.711

MX W479 3457 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 3509 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.654

MX W479 3525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 3671 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.541

MX W479 3674 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 3693 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 3748 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.562

MX W479 3792 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.536

MX W479 3796 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 4029 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.848

MX W479 4030 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.707

MX W479 4031 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 4035 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 4036 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 4037 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 4057 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.502

MX W479 4080 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 4101 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.545

MX W479 4102 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 4103 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.847

MX W479 4104 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 4105 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 4172 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.682

MX W479 4173 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.824

MX W479 4227 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 4297 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.508

MX W479 4298 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.590

MX W479 4301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 4493 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 4586 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 4629 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.548

MX W479 4630 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.517

MX W479 4652 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 4653 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.685

MX W479 4654 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

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MX W479 4657 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.903

MX W479 4658 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.975

MX W479 4659 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.826

MX W479 4660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.741

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MX W479 4679 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 4680 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.591

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MX W479 4724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

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MX W479 5332 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

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MX W479 5472 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 5475 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 5614 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.669

MX W479 5615 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 5621 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 5622 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.623

MX W479 5790 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 5804 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 5805 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 5809 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 5812 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.675

MX W479 5813 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 5814 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 5979 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 5980 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

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MX W479 6125 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 6126 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

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MX W479 6146 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 6147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

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MX W479 6294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.615

MX W479 6405 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 6406 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.887

MX W479 6407 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 6408 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.541

MX W479 6409 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

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MX W479 6411 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

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MX W479 6430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479 6431 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.841

MX W479 6435 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.023

MX W479 6436 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.778

MX W479 6486 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

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MX W479 6525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.600

MX W479 6526 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.566

MX W479 6528 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.612

MX W479 6529 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.627

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MX W479 6556 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 6558 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.988

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MX W479 6579 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.622

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MX W479 6602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

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MX W479 6836 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 6868 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 6870 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 6890 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 6912 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 6913 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 6914 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.591

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MX W479 6917 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

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MX W479 7127 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 7129 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.509

MX W479 7130 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.683

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MX W479 7195 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.554

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MX W479 7207 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

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MX W479 7244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 7246 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.712

MX W479 7252 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.629

MX W479 7253 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 7255 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.681

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MX W479 7317 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 7318 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.570

MX W479 7319 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 7321 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 7323 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 7324 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.578

MX W479 7326 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 7340 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.691

MX W479 7343 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 7345 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.627

MX W479 7346 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 7351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 7363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 7364 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.215

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MX W479 7367 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.612

MX W479 7368 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.799

MX W479 7369 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.518

MX W479 7388 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 7389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 7390 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 7391 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.797

MX W479 7393 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

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MX W479 7396 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 7397 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 7399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.656

MX W479 7400 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.686

MX W479 7446 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.641

MX W479 7462 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.761

MX W479 7468 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 7469 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.811

MX W479 7470 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.856

MX W479 7471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.803

MX W479 7484 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

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MX W479 7514 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 7531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.594

MX W479 7543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 7585 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.532

MX W479 7586 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.831

MX W479 7587 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

MX W479 7602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 7603 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 7660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.708

MX W479 7661 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 7681 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 7682 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 7683 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.707

MX W479 7684 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.628

MX W479 7753 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.641

MX W479 7755 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.502

MX W479 7794 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 7796 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.032

MX W479 7797 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.212

MX W479 7798 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.800

MX W479 7801 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.637

MX W479 7802 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.906

MX W479 7803 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 7804 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.841

MX W479 7805 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.048

MX W479 7806 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.021

MX W479 7807 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.755

MX W479 7819 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.902

MX W479 7867 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.583

MX W479 7869 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 7873 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 7878 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 7879 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 7891 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 7892 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.532

MX W479 7894 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.509

MX W479 7896 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 7897 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.506

MX W479 7898 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.761

MX W479 7899 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.773

MX W479 7900 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 7901 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.852

MX W479 7941 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 7948 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 7989 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 7990 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 7991 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.627

MX W479 7992 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.622

MX W479 7993 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.288

MX W479 7994 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 7996 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.606

MX W479 8011 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 8041 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.505

MX W479 8042 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 8062 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 8067 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 8086 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 8087 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.504

MX W479 8088 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.618

MX W479 8089 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 8090 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 8091 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 8107 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 8108 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 8111 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.564

MX W479 8112 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 8116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 8117 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.838

MX W479 8118 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 8119 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.001

MX W479 8120 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.649

MX W479 8190 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 8191 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 8192 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 8202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.572

MX W479 8203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.563

MX W479 8204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.511

MX W479 8206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 8208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.642

MX W479 8209 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.717

MX W479 8210 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.670

MX W479 8211 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 8213 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.701

MX W479 8214 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.584

MX W479 8215 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.714

MX W479 8216 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.687

MX W479 8229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 8230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 8231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 8235 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 8238 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 8301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.642

MX W479 8304 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 8306 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.685

MX W479 8307 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479	8311	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.550
MX W479	8350	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.596
MX W479	8356	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.511
MX W479	8358	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	8360	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	8427	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.593
MX W479	8428	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.548
MX W479	8442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	8445	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	8447	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	8448	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	8450	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.583
MX W479	8451	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.695
MX W479	8452	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.533
MX W479	8514	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	8553	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.944
MX W479	8567	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.619
MX W479	8570	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.535
MX W479	8571	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	8595	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626
MX W479	8646	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	8660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.567
MX W479	8730	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	8734	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	8735	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.560
MX W479	8760	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** MODEL SETUP OPTIONS SUMMARY ***

** Model Options Selected:

* Model Uses Regulatory DEFAULT Options
* Model Is Setup For Calculation of Average CONCentration Values.
* NO GAS DEPOSITION Data Provided.
* NO PARTICLE DEPOSITION Data Provided.
* Model Uses NO DRY DEPLETION. DDPLETE = F
* Model Uses NO WET DEPLETION. WETDPLT = F
* Stack-tip Downwash.
* Model Accounts for ELEVated Terrain Effects.
* Use Calms Processing Routine.
* Use Missing Data Processing Routine.
* No Exponential Decay.
* Model Uses RURAL Dispersion Only.
* BULKRN - Use BULKRN Delta-T and SolarRad option for SBL in AERMET
* Model Assumes No FLAGPOLE Receptor Heights.
* The User Specified a Pollutant Type of: HCL

**Model Calculates 1 Short Term Average(s) of: 1-HR
and Calculates ANNUAL Averages

**This Run Includes: 1 Source(s); 1 Source Group(s); and 3106 Receptor(s)

with: 1 POINT(s), including

0 POINTCAP(s) and 0 POINTHOR(s)

and: 0 VOLUME source(s)

and: 0 AREA type source(s)

and: 0 LINE source(s)

and: 0 RLINE/RLINEXT source(s)

and: 0 OPENPIT source(s)

and: 0 BUOYANT LINE source(s) with a total of 0 line(s)

and: 0 SWPOINT source(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 22112

**Output Options Selected:

Model Outputs Tables of ANNUAL Averages by Receptor

Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)

Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours

m for Missing Hours

b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 1730.68 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0

Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07

```
          Output Units   = MICROGRAMS/M**3


 **Approximate Storage Requirements of Model =     3.9 MB of RAM.


 **Input Runstream File:        C:\Users\jonahl\Antea USA, Inc\Connell Resources Inc-Connell -
General\Air Modeling\BEEST Model\

 **Output Print File:          C:\Users\jonahl\Antea USA, Inc\Connell Resources Inc-Connell - General\Air
Modeling\BEEST Model\


 **File for Summary of Results:   C:\Users\jonahl\Antea USA, Inc\Connell Resources Inc-Connell -
General\Air Modeling\BEEST Model\

 *** AERMOD - VERSION 22112  ***   *** Title One                                         ***       04/20/23

 *** AERMET - VERSION  22112 ***   ***                                                   ***       22:45:15

                                                                                          PAGE   2

 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  BULKRN  SigA Data


                         *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***

                                          (1=YES; 0=NO)


       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

       1 1 1 1 1 1 1 1 1 1  1 1 1 1 1


          NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS
INCLUDED IN THE DATA FILE.
```

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** AERMOD - VERSION 22112 *** *** Title One *** 04/20/23

*** AERMET - VERSION 22112 *** *** *** 22:45:15

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling
Met Version: 22112

Profile file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling

Surface format: FREE

Profile format: FREE

Surface station no.: 0 Upper air station no.: 23062

Name: UNKNOWN Name: DENVER WSFO, CO

Year: 2006 Year: 2006

First 24 hours of scalar data

YR MO DY JDY HR H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS WD HT REF TA HT

- -

06 01 01 1 01 -26.0 0.162 -9.000 -9.000 -999. 157. 11.8 0.01 1.89 1.00 4.43 326. 10.0 280.1 2.0

06 01 01 1 02 -58.1 0.325 -9.000 -9.000 -999. 445. 42.5 0.01 1.89 1.00 6.57 310. 10.0 281.4
2.0

06 01 01 1 03 -33.0 0.292 -9.000 -9.000 -999. 380. 54.5 0.01 1.89 1.00 5.72 272. 10.0 281.0
2.0

06 01 01 1 04 -14.9 0.128 -9.000 -9.000 -999. 134. 10.2 0.01 1.89 1.00 3.67 320. 10.0 279.8
2.0

06 01 01 1 05 -13.5 0.124 -9.000 -9.000 -999. 105. 10.1 0.01 1.89 1.00 3.71 337. 10.0 279.0
2.0

06 01 01 1 06 -18.3 0.176 -9.000 -9.000 -999. 177. 21.3 0.01 1.89 1.00 4.29 344. 10.0 278.3
2.0

06 01 01 1 07 -34.9 0.286 -9.000 -9.000 -999. 367. 48.1 0.01 1.89 1.00 5.68 327. 10.0 279.3
2.0

06 01 01 1 08 -39.7 0.440 -9.000 -9.000 -999. 701. 154.4 0.01 1.89 1.00 7.96 307. 10.0 279.8
2.0

06 01 01 1 09 -17.3 0.580 -9.000 -9.000 -999. 1058. 810.0 0.01 1.89 0.43 10.10 287. 10.0 279.4
2.0

06 01 01 1 10 38.3 0.682 0.602 0.005 164. 1349. -597.0 0.01 1.89 0.31 11.67 301. 10.0 280.9
2.0

06 01 01 1 11 83.4 0.893 1.120 0.005 486. 2020. -616.6 0.01 1.89 0.26 15.29 291. 10.0 281.4
2.0

06 01 01 1 12 97.2 0.889 1.326 0.005 693. 2013. -521.8 0.01 1.89 0.24 15.20 293. 10.0 281.3
2.0

06 01 01 1 13 137.5 0.968 1.629 0.005 909. 2279. -476.9 0.01 1.89 0.24 16.54 291. 10.0
281.3 2.0

06 01 01 1 14 122.9 0.912 1.653 0.005 1063. 2100. -445.7 0.01 1.89 0.25 15.56 290. 10.0
281.0 2.0

06 01 01 1 15 67.7 0.795 1.385 0.005 1138. 1727. -536.6 0.01 1.89 0.30 13.59 295. 10.0
280.1 2.0

06 01 01 1 16 0.0 0.715 -9.000 -9.000 -999. 1464. 8888.0 0.01 1.89 0.41 12.34 301. 10.0 279.0
2.0

06 01 01 1 17 0.0 0.673 -9.000 -9.000 -999. 1330. 8888.0 0.01 1.89 0.72 11.62 304. 10.0 277.1
2.0

06 01 01 1 18 0.0 0.546 -9.000 -9.000 -999. 987. 8888.0 0.01 1.89 1.00 9.43 293. 10.0 275.9
2.0

06 01 01 1 19 -46.9 0.630 -9.000 -9.000 -999. 1199. 388.5 0.01 1.89 1.00 11.09 294. 10.0 276.2
2.0

06 01 01 1 20 -49.7 0.337 -9.000 -9.000 -999. 566. 55.9 0.01 1.89 1.00 6.57 310. 10.0 275.6
2.0

06 01 01 1 21 -29.5 0.194 -9.000 -9.000 -999. 235. 17.9 0.01 1.89 1.00 4.69 313. 10.0 274.4
2.0

06 01 01 1 22 -29.9 0.238 -9.000 -9.000 -999. 279. 32.8 0.01 1.89 1.00 5.32 338. 10.0 275.8
2.0

06 01 01 1 23 -15.8 0.134 -9.000 -9.000 -999. 123. 11.1 0.01 1.89 1.00 3.67 241. 10.0 274.5
2.0

06 01 01 1 24 -19.1 0.117 -9.000 -9.000 -999. 96. 6.1 0.01 1.89 1.00 3.98 279. 10.0 273.6
2.0

First hour of profile data

YR MO DY HR HEIGHT F WDIR WSPD AMB_TMP sigmaA sigmaW sigmaV

06 01 01 01 2.0 0 -999. -99.00 280.1 99.0 -99.00 -99.00

06 01 01 01 10.0 0 326. 4.43 282.0 5.4 -99.00 0.42

06 01 01 01 60.0 1 316. 5.10 283.1 6.1 -99.00 0.54

F indicates top of profile (=1) or below (=0)

*** AERMOD - VERSION 22112 *** *** Title One *** 04/20/23

*** AERMET - VERSION 22112 *** *** *** 22:45:15

PAGE 4

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCL IN MICROGRAMS/M**3 **

NETWORK

GROUP ID AVERAGE CONC RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL 1ST HIGHEST VALUE IS 0.02665 AT (499558.46, 4508185.11, 1604.36, 1607.87, 0.00) DC

2ND HIGHEST VALUE IS 0.02631 AT (499557.26, 4508175.42, 1604.20, 1607.87, 0.00) DC

3RD HIGHEST VALUE IS 0.02540 AT (499556.05, 4508165.74, 1604.06, 1607.87, 0.00) DC

4TH HIGHEST VALUE IS 0.02513 AT (499559.67, 4508194.79, 1604.62, 1607.87, 0.00) DC

5TH HIGHEST VALUE IS 0.02414 AT (499554.85, 4508156.06, 1603.92, 1603.92, 0.00) DC

6TH HIGHEST VALUE IS 0.02276 AT (499560.88, 4508204.47, 1604.89, 1610.23, 0.00) DC

7TH HIGHEST VALUE IS 0.02213 AT (499553.64, 4508146.37, 1603.79, 1603.79, 0.00) DC

8TH HIGHEST VALUE IS 0.02045 AT (499562.08, 4508214.16, 1605.18, 1611.24, 0.00) DC

9TH HIGHEST VALUE IS 0.01996 AT (499581.17, 4508184.30, 1606.77, 1607.87, 0.00) DC

10TH HIGHEST VALUE IS 0.01967 AT (499552.44, 4508136.69, 1603.68, 1603.68, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF HCL IN MICROGRAMS/M**3 **

DATE NETWORK

GROUP ID AVERAGE CONC (YYMMDDHH) RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL HIGH 1ST HIGH VALUE IS 0.68636 ON 06121903: AT (499556.05, 4508165.74, 1604.06, 1607.87, 0.00) DC

HIGH 2ND HIGH VALUE IS 0.64740 ON 06090703: AT (499556.05, 4508165.74, 1604.06, 1607.87, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)

A Total of 624 Warning Message(s)

A Total of 142 Informational Message(s)

A Total of 8760 Hours Were Processed

A Total of 1 Calm Hours Identified

A Total of 141 Missing Hours Identified (1.61 Percent)

******** FATAL ERROR MESSAGES ********

*** NONE ***

******** WARNING MESSAGES ********

ME W181 3169 MEOPEN: BULKRN Delta-T & SolarRad option for SBL was used in AERMET

MX W403 3169 PFLCNV: Turbulence data is being used w/o ADJ_U* option SigA Data

MX W479 24 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 29 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 30 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 31 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.712

MX W479 48 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 51 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 52 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 53 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 141 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 143 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.877

MX W479 147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479	151	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.501
MX W479	215	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	216	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.734
MX W479	221	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.535
MX W479	222	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.604
MX W479	243	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.588
MX W479	244	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	291	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	296	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	308	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.572
MX W479	312	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	313	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.700
MX W479	314	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.658
MX W479	316	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.735
MX W479	317	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.795
MX W479	318	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.549
MX W479	320	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	321	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.644
MX W479	340	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	342	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	344	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.561
MX W479	475	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.580
MX W479	479	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	482	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.746
MX W479	483	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	484	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	486	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	487	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.681
MX W479	488	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.697

MX W479	489	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.921
MX W479	509	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.586
MX W479	524	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	525	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	526	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	527	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	528	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.926
MX W479	529	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.676
MX W479	530	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.808
MX W479	531	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.740
MX W479	532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.537
MX W479	533	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.621
MX W479	534	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.830
MX W479	535	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.510
MX W479	550	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.611
MX W479	554	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.558
MX W479	555	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.719
MX W479	556	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.743
MX W479	573	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.536
MX W479	574	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.241
MX W479	575	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.721
MX W479	576	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.562
MX W479	577	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	578	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.213
MX W479	579	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.698
MX W479	580	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	581	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.713
MX W479	582	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.678
MX W479	583	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.869

MX W479 584 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 595 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 597 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.667

MX W479 599 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.596

MX W479 600 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 601 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.705

MX W479 605 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 629 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.665

MX W479 632 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.505

MX W479 724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 725 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 727 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 775 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 822 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 835 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 836 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.517

MX W479 837 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 838 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 839 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 932 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 941 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 1029 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.735

MX W479 1031 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479 1034 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 1035 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 1051 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 1052 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500

MX W479 1053 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.884

MX W479 1054 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.859

MX W479 1055 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.766

MX W479 1056 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.677

MX W479 1060 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 1061 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.639

MX W479 1197 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1198 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.709

MX W479 1199 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 1200 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.530

MX W479 1201 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 1203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.590

MX W479 1204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.726

MX W479 1205 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.750

MX W479 1206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.700

MX W479 1208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1218 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 1219 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.824

MX W479 1220 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 1221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 1222 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 1223 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 1224 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 1225 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 1226 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1227 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.778

MX W479 1228 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 1229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 1231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 1244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 1245 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 1276 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 1277 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 1278 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.729

MX W479 1293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.683

MX W479 1294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.851

MX W479 1295 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1296 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 1297 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 1300 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.634

MX W479 1301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.723

MX W479 1302 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 1303 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 1316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.692

MX W479 1343 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 1344 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.720

MX W479 1345 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1346 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 1347 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 1365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.696

MX W479 1373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 1374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1375 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479	1389	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.622
MX W479	1392	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	1394	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.577
MX W479	1395	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	1396	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.671
MX W479	1397	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	1441	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	1442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	1483	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.647
MX W479	1532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	1537	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	1539	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.613
MX W479	1540	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	1541	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.648
MX W479	1543	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	1566	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.569
MX W479	1661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	1989	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	1990	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	1991	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	1993	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.563
MX W479	1994	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.534
MX W479	2086	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	2088	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	2089	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	2093	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	2228	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.579
MX W479	2229	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.638
MX W479	2230	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.693

MX W479 2231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.634

MX W479 2232 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.632

MX W479 2234 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 2235 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 2253 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 2254 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 2255 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.755

MX W479 2262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 2348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 2349 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2350 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 2351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2352 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.834

MX W479 2353 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.525

MX W479 2354 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2355 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.560

MX W479 2356 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 2373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.752

MX W479 2374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.569

MX W479 2378 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 2379 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.647

MX W479 2380 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 2382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 2399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.920

MX W479 2421 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2422 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 2424 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 2425 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 2428 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 2429 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.578

MX W479 2430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 2445 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.748

MX W479 2446 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 2447 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

MX W479 2448 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.743

MX W479 2449 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.733

MX W479 2450 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 2468 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2469 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.019

MX W479 2470 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.976

MX W479 2471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.882

MX W479 2472 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 2542 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.826

MX W479 2544 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.734

MX W479 2545 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.629

MX W479 2546 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.769

MX W479 2547 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.656

MX W479 2548 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.679

MX W479 2549 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.853

MX W479 2550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 2615 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 2616 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 2617 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 2639 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 2640 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 2641 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.777

MX W479 2643 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 2645 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 2646 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 2663 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.896

MX W479 2664 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 2666 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 2669 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 2670 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500

MX W479 2763 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.504

MX W479 2783 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.567

MX W479 2786 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.588

MX W479 2788 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.748

MX W479 2789 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2832 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 2833 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.506

MX W479 2900 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 2901 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.673

MX W479 2902 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.730

MX W479 2903 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 2905 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 2906 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 2907 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 3045 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 3047 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.554

MX W479 3048 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.508

MX W479 3148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 3149 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 3168 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 3169 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 3170 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.601

MX W479 3171 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.796

MX W479 3172 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 3173 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.889

MX W479 3174 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 3239 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 3262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 3263 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 3289 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 3290 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 3291 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 3293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 3294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 3313 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 3316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 3337 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 3338 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.521

MX W479 3339 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 3363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.584

MX W479 3364 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 3365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 3366 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 3382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 3383 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 3384 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.606

MX W479 3453 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 3454 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.711

MX W479 3457 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 3509 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.654

MX W479 3525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 3671 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.541

MX W479 3674 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 3693 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 3748 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.562

MX W479 3792 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.536

MX W479 3796 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 4029 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.848

MX W479 4030 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.707

MX W479 4031 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 4035 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 4036 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 4037 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 4057 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.502

MX W479 4080 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 4101 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.545

MX W479 4102 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 4103 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.847

MX W479 4104 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 4105 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 4172 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.682

MX W479 4173 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.824

MX W479 4227 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 4297 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.508

MX W479 4298 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.590

MX W479 4301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 4493 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 4586 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 4629 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.548

MX W479 4630 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.517

MX W479 4652 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 4653 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.685

MX W479 4654 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 4656 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 4657 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.903

MX W479 4658 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.975

MX W479 4659 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.826

MX W479 4660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.741

MX W479 4661 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.888

MX W479 4677 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.524

MX W479 4679 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 4680 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.591

MX W479 4685 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 4724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 4996 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.544

MX W479 5331 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.662

MX W479 5332 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 5471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 5472 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 5475 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 5614 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.669

MX W479 5615 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 5621 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 5622 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.623

MX W479 5790 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 5804 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 5805 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 5809 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 5812 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.675

MX W479 5813 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 5814 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 5979 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 5980 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 6120 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 6121 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 6125 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 6126 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 6142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 6146 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 6147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

MX W479 6148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

MX W479 6149 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.883

MX W479 6150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.860

MX W479 6267 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 6268 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 6271 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 6286 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 6292 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.577

MX W479 6294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.615

MX W479 6405 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 6406 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.887

MX W479 6407 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 6408 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.541

MX W479 6409 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 6410 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.740

MX W479 6411 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 6413 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 6430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479 6431 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.841

MX W479 6435 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.023

MX W479 6436 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.778

MX W479 6486 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 6501 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.822

MX W479 6524 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 6525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.600

MX W479 6526 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.566

MX W479 6528 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.612

MX W479 6529 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.627

MX W479 6530 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 6531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.662

MX W479 6532 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.680

MX W479 6548 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.718

MX W479 6549 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.739

MX W479 6550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.767

MX W479 6553 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 6554 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.776

MX W479 6555 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 6556 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 6558 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.988

MX W479 6559 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.766

MX W479 6571 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 6572 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.870

MX W479 6573 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.668

MX W479 6574 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.705

MX W479 6577 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.791

MX W479 6578 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 6579 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.622

MX W479 6580 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 6581 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.872

MX W479 6582 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.704

MX W479 6583 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 6596 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 6602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 6791 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.545

MX W479 6835 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.564

MX W479 6836 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 6868 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 6870 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 6890 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 6912 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 6913 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 6914 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.591

MX W479 6915 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 6917 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 6918 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 7014 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 7099 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.534

MX W479 7100 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.759

MX W479 7101 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 7103 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 7111 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 7123 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 7126 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 7127 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 7129 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.509

MX W479	7130	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.683
MX W479	7131	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	7132	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.525
MX W479	7195	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.554
MX W479	7196	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	7199	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	7207	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.635
MX W479	7220	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.644
MX W479	7243	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.628
MX W479	7244	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	7246	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.712
MX W479	7252	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.629
MX W479	7253	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	7255	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.681
MX W479	7316	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.757
MX W479	7317	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.558
MX W479	7318	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.570
MX W479	7319	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	7321	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.602
MX W479	7323	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	7324	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.578
MX W479	7326	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.528
MX W479	7340	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.691
MX W479	7343	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.510
MX W479	7345	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	7346	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	7351	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	7363	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	7364	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.215

MX W479 7366 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 7367 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.612

MX W479 7368 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.799

MX W479 7369 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.518

MX W479 7388 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 7389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 7390 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 7391 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.797

MX W479 7393 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 7395 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 7396 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 7397 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 7399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.656

MX W479 7400 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.686

MX W479 7446 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.641

MX W479 7462 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.761

MX W479 7468 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 7469 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.811

MX W479 7470 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.856

MX W479 7471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.803

MX W479 7484 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 7513 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 7514 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 7531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.594

MX W479 7543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 7585 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.532

MX W479 7586 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.831

MX W479 7587 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

MX W479 7602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 7603 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 7660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.708

MX W479 7661 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 7681 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 7682 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 7683 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.707

MX W479 7684 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.628

MX W479 7753 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.641

MX W479 7755 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.502

MX W479 7794 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 7796 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.032

MX W479 7797 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.212

MX W479 7798 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.800

MX W479 7801 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.637

MX W479 7802 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.906

MX W479 7803 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 7804 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.841

MX W479 7805 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.048

MX W479 7806 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.021

MX W479 7807 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.755

MX W479 7819 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.902

MX W479 7867 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.583

MX W479 7869 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 7873 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 7878 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 7879 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 7891 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 7892 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.532

MX W479 7894 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.509

MX W479 7896 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 7897 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.506

MX W479 7898 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.761

MX W479 7899 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.773

MX W479 7900 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 7901 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.852

MX W479 7941 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 7948 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 7989 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 7990 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 7991 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.627

MX W479 7992 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.622

MX W479 7993 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.288

MX W479 7994 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 7996 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.606

MX W479 8011 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 8041 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.505

MX W479 8042 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 8062 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 8067 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 8086 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 8087 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.504

MX W479 8088 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.618

MX W479 8089 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 8090 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 8091 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 8107 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 8108 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 8111 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.564

MX W479 8112 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 8116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 8117 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.838

MX W479 8118 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 8119 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.001

MX W479 8120 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.649

MX W479 8190 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 8191 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 8192 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 8202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.572

MX W479 8203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.563

MX W479 8204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.511

MX W479 8206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 8208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.642

MX W479 8209 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.717

MX W479 8210 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.670

MX W479 8211 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 8213 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.701

MX W479 8214 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.584

MX W479 8215 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.714

MX W479 8216 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.687

MX W479 8229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 8230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 8231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 8235 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

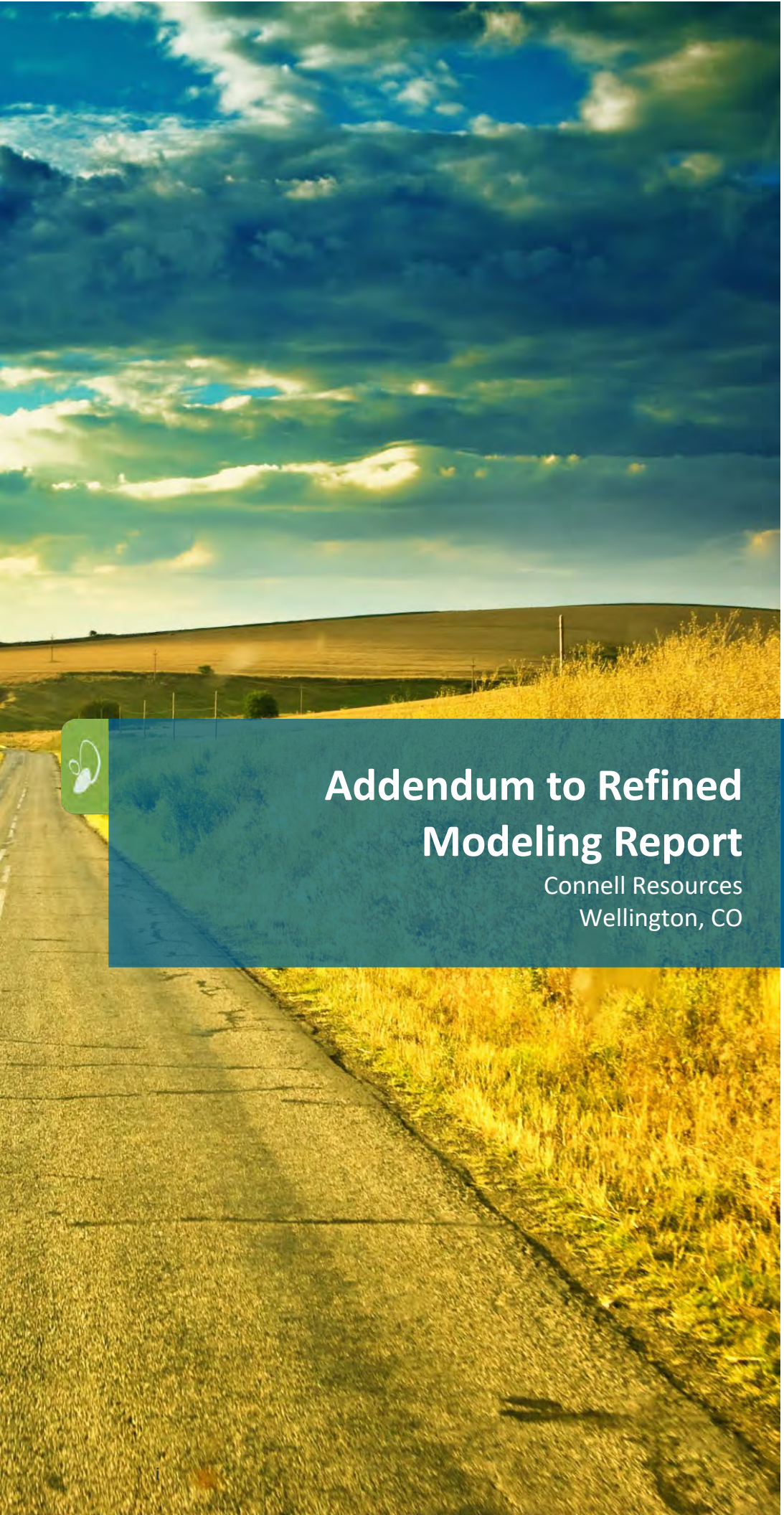
MX W479 8238 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 8301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.642

MX W479 8304 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 8306 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.685

MX W479	8307	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	8311	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.550
MX W479	8350	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.596
MX W479	8356	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.511
MX W479	8358	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	8360	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	8427	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.593
MX W479	8428	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.548
MX W479	8442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	8445	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	8447	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	8448	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	8450	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.583
MX W479	8451	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.695
MX W479	8452	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.533
MX W479	8514	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	8553	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.944
MX W479	8567	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.619
MX W479	8570	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.535
MX W479	8571	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	8595	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626
MX W479	8646	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	8660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.567
MX W479	8730	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	8734	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	8735	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.560
MX W479	8760	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626



Addendum to Refined Modeling Report

Connell Resources
Wellington, CO

Antea®Group

Understanding today.
Improving tomorrow.

PREPARED FOR
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Fort Collins, CO 80528

PREPARED BY
Antea Group Charlotte, NC

May 26, 2023

Project # 2023-01-504091

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Refined Modeling Report

Wellington, Colorado

1.0 INTRODUCTION

1.1 EXECUTIVE SUMMARY

Antea®Group was retained to complete refined air modeling for Connell Resources to assist with their planned construction of a new asphalt facility in Wellington, Colorado. Antea Group completed AERMOD modeling based on information provided by Connell Resources for their proposed facility. Antea Group modeled the following pollutants as requested by Connell Resources: Particulate Matter, Nitrogen Oxide, Sulfur Dioxide, Carbon Monoxide, Acetaldehyde, Hexane, Formaldehyde, Toluene, Quinone, Benzene, Ethylbenzene, Xylene, Total PAH, and Hydrochloric Acid. Due to requests by Larimer County, Antea Group has prepared this addendum to the refined modeling report to address the following comments:

- Model was run under conditions in the refined modeling report. Changes were made to the Hexane, Formaldehyde and Toluene emission rates. Hexane and Formaldehyde were updated to include the permit limit emission rates. Toluene was updated to correct emission rate;
- **Table 1**: added permit limit equivalent emission rate for Hexane and Formaldehyde, see footnotes 1 through 4;
- **Table 1**: corrected Toluene emission rate;
- Created **Table 3** to summarize annual and 1-hour averaged AerMod calculated maximum emission concentration per CDPHE recommendation;
- Updated applicable table numbers with **Table 3** creation;
- **Table 5**: added permit limit equivalent calculated emission concentrations for Hexane and Formaldehyde, see footnotes 6 through 9;
- **Table 6** and **Table 7**: added permit limit equivalent calculated emission concentrations for Hexane and Formaldehyde, see footnotes 4 through 7;
- **Table 5** and **Table 7**: added Chronic Screening Value for Pollutant Quinone provided by Larimer County;
- **Table 5** and **Table 6**: added Acute Screening Value for Pollutant HCl provided by Larimer County;
- **Figure 10A through 12B**: updated concentration contours;
- **Figure 13A and 18B**: updated screening concentration per Larimer County recommendation; and
- **Appendix B**: updated applicable AerMod Model Outputs.

2.0 AERMOD RESULTS

The AERMOD modeling run demonstrated that the Screening Levels would not be exceeded for chronic long-term and acute short-term. A summary of all AerMod calculated emission concentrations over different averaging periods is presented on **Table 3**. A summary of modeled emissions and NAAQS is presented in **Table 4**. A summary of screening modeled emissions and chronic/acute screening values is presented in **Table 5**. Discrete receptor HAP concentrations for acute and chronic screening values are presented in **Table 6** and **Table 7**, respectively. Pollutant concentration contour maps are provided for general NAAQS pollutant time durations, and HAP Long-Term and Short-Term averaging exposure periods. Concentration contours were drawn at the receptor elevations provided through the Terrain map processing. The contour maps are present in **Figures 4 through Figure 18** in the Refined Modeling Report and the Addendum to the Refined Modeling Report.

3.0 REMARKS

The recommendations contained in this report represent Antea USA, Inc.'s professional opinions based upon the currently available information and are arrived at in accordance with currently accepted professional standards. This report is based upon a specific scope of work requested by the client. The contract between Antea USA, Inc. and its client outlines the scope of work, and only those tasks specifically authorized by that contract or outlined in this report were performed. This report is intended only for the use of Antea USA, Inc.'s client and anyone else specifically identified in writing by Antea USA, Inc. as a user of this report. Antea USA, Inc. will not and cannot be liable for unauthorized reliance by any other third party. Other than as contained in this paragraph, Antea USA, Inc. makes no express or implied warranty as to the contents of this report.

Kara J. Van Blarcum
Senior Professional

May 26, 2023

Reviewed by:

Tony Rossano
Senior Project Manager

May 26, 2023

Tables

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Table 1: Emission Source Information

Emission Point ID	Description	Location	Elevation (ft)	Height (ft)	Termination Orientation	Temperature (F)	Equivalent Exit Diameter (ft)	Flow Rate (cfm)	Easting (m)	Northing (m)
AIRS_ID_001	Main Emission Point	Wellington	5258	45	Vertical	218.93	6.00	85,000	499457.266	4508236.216

Pollutant	Emission Rate (ton/yr)
PM	2.7
PM10	0.7
PM2_5	0.2
NOX	8.3
SO2	8.7
CO	19.5
Acetaldehyde	0.195
Hexane[1]	0.138
Hexane[2]	0.143
Formaldehyde[3]	0.103
Formaldehyde[4]	0.465
Toluene	0.435
Quinone	0.0405
Benzene	0.042
Ethylbenzene	0.33
Xylene	0.405
Total_PAH	0.0345
HCl	0.0315
VOC	4.8

Notes
1 = Hexane potential emission rate based on AP-42, Table 11.1-10 (p. 11.1-21) provided Hexane emission factor and plant production limit
2 = Hexane emission rate provided by permit limit
3 = Formaldehyde potential emission rate based on Michigan Department of Environmental Quality provided Formaldehyde emission factor and plant production limit
4 = Formaldehyde emission rate provided by permit limit

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Wellington, CO
Table 2: Building Information

Building ID	Elevation (ft)	Tier Height (ft)	Easting (m)	Northing (m)
Asphalt	5258	14	499428.373	4508275.569
PCR_1	5259	16	499440.772	4508287.410
PCR_2	5260	12	499458.147	4508287.922
ABP_3	5257	20.5	499428.192	4508254.557
ABP_5	5258	26.4	499448.104	4508243.280
Office	5255	14	499260.168	4508275.882
TW_1	5254	10	499235.319	4508220.844
TW_2	5253	10	499230.147	4508184.114
FP	5254	10	499247.353	4508221.502
FS	5254	10	499262.192	4508221.708
WS	5250	10	499230.641	4508027.037
WG	5250	10	499253.366	4508027.502
ALB	5255	17.7	499378.442	4508201.725
Storshed	5258	10	499411.400	4508290.734
QCLab	5258	14	499423.707	4508282.246
WT1	5257	9.8	499397.849	4508256.301
WT2	5256	9.8	499386.231	4508253.964
D1	5254	9	499259.783	4508194.664
D2	5254	9	499269.843	4508203.302
D3	5254	9	499281.862	4508203.510
D4	5260	8.5	499480.488	4508282.821
Gas_AST	5254	9	499294.275	4508204.457
GEN	5260	9.5	499467.318	4508284.895
ACT	5258	10.2	499459.383	4508244.054

Vertical Storage Tanks

Tank Name	Elevation (ft)	Easting (m)	Northing (m)	Height (ft)	Diameter (ft)
T1	5258	499422.699	4508265.557	44.4	12
T2	5258	499434.251	4508265.622	44.4	12
T3	5259	499446.062	4508265.365	44.4	12

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Wellington, CO
Table 3: Summary of AerMod Calculated Emission Concentrations

Pollutant	Annual Averaged AerMod Calculated Maximum Emission Concentration ($\mu g/m^3$)
PM	0.034
PM-2.5	0.0025
NOx	0.10
VOC	0.060
Acetaldehyde	0.0024
Hexane[1]	0.0017
Hexane[2]	0.0018
Formaldehyde[3]	0.0013
Formaldehyde[4]	0.0058
Toluene	0.0054
Quinone	0.00051
Benzene	0.00052
Ethylbenzene	0.0041
Xylene	0.0051
Total PAH	0.00043
HCl	0.00039

Pollutant	1-Hour Averaged AerMod Calculated Maximum Emission Concentration ($\mu g/m^3$)
PM	2.3
NOX	7.1
SO_2	7.5
VOC	4.1
CO	17
Acetaldehyde	0.17
Hexane[1]	0.12
Hexane[2]	0.12
Formaldehyde[3]	0.088
Formaldehyde[4]	0.40
Toluene	0.37
Quinone	0.035
Benzene	0.036
Ethylbenzene	0.28
Xylene	0.35
Total PAH	0.030
HCl	0.027

Pollutant	Averaging Period	Averaged AerMod Calculated Maximum Emission Concentration ($\mu g/m^3$)
PM-10	24-hour	0.15
PM-2.5	24-hour	0.042
CO	8-hour	10

Notes
$\mu g/m^3$ = micrograms per cubic meter
1 = Hexane value from potential emission rate based on AP-42, Table 11.1-10 (p. 11.1-21) provided Hexane emission factor and plant production limit
2 = Hexane value from emission rate provided by permit limit
3 = Formaldehyde value from potential emission rate based on Michigan Department of Environmental Quality provided Formaldehyde emission factor and plant production limit
4 = Formaldehyde emission rate provided by permit limit

Connell Resources
Wellington, CO
Table 4: Summary of AerMod Calculated Emissions and NAAQS

Pollutant	Averaging Period	AerMod Concentration for Wellington Location ($\mu g/m^3$)	NAAQS Primary Concentration[1] ($\mu g/m^3$)	AerMod Wellington Percent of NAAQS
PM-10	24-hour	0.15	150	0.1%
PM-2.5	24-hour	0.042	35	0.1%
	1-year	0.0025	12	0.02%
NOx	1-hour	7.1	188 ab	4%
	1-year	0.10	100 ab	0.1%
SO2	1-hour	7.5	196 a	4%
CO	1-hour	17	40,000 a	0.0%
	8-hour	10	10,000 a	0.1%

Notes
$\mu g/m^3$ = micrograms per cubic meter
1 = National Ambient Air Quality Standards (NAAQS) for public health protection, including the health of sensitive populations
a = Conversion of units from ppm provided by NAAQS to $\mu g/m^3$ provided by California Air Resource Board
b = Standard provided for NO_2

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Wellington, CO
Table 5: Summary of Screening Analysis for AerMod Calculated HAP Emissions

Pollutant (CAS Number)	Emission Rate (ton/yr)	AerMod Long-Term[1] Average Concentration; ($\mu g/m^3$)	AerMod Short-Term[2] Average Concentration; ($\mu g/m^3$)	Chronic Screening Value[3] ($\mu g/m^3$)	Acute Screening Value[4] ($\mu g/m^3$)	AerMod Long-Term Percent of Acute NAAQS[5] (%)	AerMod Short-Term Percent of Acute NAAQS[5] (%)	Maximum Concentration is Greater than Chronic Screening Value (Yes/No)	Maximum Concentration is Greater than Acute Screening Value (Yes/No)
Acetaldehyde (75-07-0)	0.195	0.0024	0.17	0.45	470 a	5.4E-01	3.6E-02	No	No
Hexane[6] (110-54-3)	0.138	0.0017	0.12	70	390,000 b	2.5E-03	3.0E-05	No	No
Hexane[7] (110-54-3)	0.143	0.0018	0.12	70	390,000 b	2.5E-03	3.1E-05	No	No
Formaldehyde[8] (50-00-0)	0.103	0.0013	0.088	0.077	55 a	1.7E+00	1.6E-01	No	No
Formaldehyde[9] (50-00-0)	0.465	0.0058	0.3995	0.077	55 a	7.5E+00	7.3E-01	No	No
Toluene (108-88-3)	0.435	0.0054	0.37	40	37,000 a	1.4E-02	1.0E-03	No	No
Quinone (106-51-4)	0.0405	0.00051	0.035	0.4 c	10,000 b	1.3E-01	3.5E-04	No	No
Benzene (71-43-2)	0.0420	0.00052	0.036	0.13	1,300 a	4.0E-01	2.8E-03	No	No
Ethylbenzene (100-41-4)	0.330	0.0041	0.28	0.40	140,000 d	1.0E+00	2.0E-04	No	No
Xylene (1330-20-7)	0.405	0.0051	0.35	10	8,700 e	5.1E-02	4.0E-03	No	No
Total PAH[10]	0.0345	0.00043	0.030	0.11 f	0.75 g	3.9E-01	4.0E+00	No	No
HCl (7647-01-0)	0.0315	0.00039	0.027	2	190 h	2.0E-02	1.4E-02	No	No

Notes
ton/yr = ton per year
$\mu g/m^3$ = micrograms per cubic meter
-- = No value provided
1 = Averaging period of 1-year
2 = Averaging period of 1-hour
3 = Chronic screening values provided by EPA's Appendix A of the Preliminary Risk-Based Screening Approach for Air Toxics Moniotring Data Sets
4 = Acute screening values provided by EPA's Appendix B of the Preliminary Risk-Based Screening Approach for Air Toxics Moniotring Data Sets
5 = Percent calculated as (AerMod Concentration) / (NAAQS Screening Value) * 100
6 = Hexane value from potential emission rate based on AP-42, Table 11.1-10 (p. 11.1-21) provided Hexane emission factor and plant production limit
7 = Hexane value from emission rate provided by permit limit
8 = Formaldehyde value from potential emission rate based on Michigan Department of Environmental Quality provided Formaldehyde emission factor and plant production limit
9 = Formaldehyde emission rate provided by permit limit
10 = All relavent PAHs accounted for to calculate emission rate
a = Reference Exposure Level (REL) screening value developed by CalEPA
b = Immediately Dangerous to Life or Health divided by 10 (IDLH/10) screening value developed by NIOSH
c = Texas Commission of Environmental Quality Effects Screening Levels and NIOSH
d = Acute Exposure Guideline Levels (AEGL) screening value developed by NAC
e = Minimum Risk Levels (MRL) screening value developed by ATSDR
f = Average screening value for all PAHs provided in EPA's Appendix A of the Preliminary Risk-Based Screening Approach for Air Toxics Moniotring Data Sets
g = Temporary Emergency Exposure Limits with no effects (TEEL-0) screening value provided by DOE for the PAH Carbazole. The Carbazole screening value is used, because the average PAH chronic screening value most closely matched the chronic Carbazole screening value.
h = Texas Commission of Environmental Quality Effects Screening Levels

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Wellington, CO
Table 6: AerMod Calculated HAP Emissions and Discrete Receptors - Acute Values

Pollutant (CAS No.)	Emission Rate (ton/yr)	Acute Screening Value (µg/m^3)	Calculated 1-Hour Average HAP Exposure (µg/m3)					
			Receptor 1: Residential[1]	Receptor 1 Above Screening Value (Yes/No)	Receptor 2: Park[2]	Receptor 2 Above Screening Value (Yes/No)	Receptor 3: School[3]	Receptor 3 Above Screening Value (Yes/No)
Acetaldehyde (75-07-0)	0.195	470 a	0.17	No	0.241	No	0.030	No
Hexane[4] (110-54-3)	0.138	390,000 b	0.12	No	0.017	No	0.021	No
Hexane[5] (110-54-3)	0.143	390,000 b	0.12	No	0.018	No	0.022	No
Formaldehyde[6] (50-00-0)	0.103	55 a	0.09	No	0.013	No	0.016	No
Formaldehyde[7] (50-00-0)	0.465	55 a	0.40	No	0.057	No	0.072	No
Toluene (108-88-3)	0.435	37,000 a	0.37	No	0.054	No	0.068	No
Quinone (106-51-4)	0.0405	10,000 b	0.035	No	0.0050	No	0.0063	No
Benzene (71-43-2)	0.0420	1,300 a	0.036	No	0.0052	No	0.0065	No
Ethylbenzene (100-41-4)	0.330	140,000 c	0.28	No	0.041	No	0.051	No
Xylene (1330-20-7)	0.405	8,700 d	0.35	No	0.050	No	0.063	No
Total PAH	0.0345	0.75 e	0.030	No	0.0043	No	0.0054	No
HCl (7647-01-0)	0.0315	190 f	0.027	No	0.0039	No	0.0049	No

Notes
ton/yr = ton per year
µg/m^3 = micrograms per cubic meter
-- = No value provided
1 = Address is 9581 Brome Ct, Wellington, CO 80549
2 = Address is 8760 Buffalo Creek Pky Wellington, CO 80549
3 = Address is 4000 Wilson Avenue Wellington, CO 80549
4 = Hexane value from potential emission rate based on AP-42, Table 11.1-10 (p. 11.1-21) provided Hexane emission factor and plant production limit
5 = Hexane value from emission rate provided by permit limit
6 = Formaldehyde value from potential emission rate based on Michigan Department of Environmental Quality provided Formaldehyde emission factor and plant production limit
7 = Formaldehyde emission rate provided by permit limit
a = Reference Exposure Level (REL) screening value developed by CalEPA
b = Immediately Dangerous to Life or Health (IDLH) divided by 10 screening value developed by NIOSH
c = Acute Exposure Guideline Levels (AEGL) screening value developed by NAC
d = Minimum Risk Levels (MRL) screening value developed by ATSDR
e = Temporary Emergency Exposure Limits with no effects (TEEL-0) screening value provided by DOE for the PAH Carbazole. The Carbazole screening value is used, because the average PAH chronic screening value most closely matched the chronic Carbazole screening value.
f = Texas Commission of Environmental Quality Effects Screening Levels

Connell Resources
Wellington, CO
Table 7: AerMod Calculated HAP Emissions and Discrete Receptors - Chronic Values

Pollutant (CAS No.)	Emission Rate (ton/yr)	Chronic Screening Value ($\mu g/m^3$)	Calculated Annual Average HAP Exposure (µg/m3)					
			Receptor 1: Residential[1]	Receptor 1 Above Screening Value (Yes/No)	Receptor 2: Park[2]	Receptor 2 Above Screening Value (Yes/No)	Receptor 3: School[3]	Receptor 3 Above Screening Value (Yes/No)
Acetaldehyde (75-07-0)	0.195	0.45	0.0024	No	0.00026	No	0.00022	No
Hexane[4] (110-54-3)	0.138	70	0.0017	No	0.00019	No	0.00016	No
Hexane[5] (110-54-3)	0.143	70	0.0017	No	0.00021	No	0.00016	No
Formaldehyde[6] (50-00-0)	0.103	0.077	0.0013	No	0.00014	No	0.00012	No
Formaldehyde[7] (50-00-0)	0.465	0.077	0.0056	No	0.00069	No	0.00053	No
Toluene (108-88-3)	0.435	40	0.0053	No	0.00064	No	0.00050	No
Quinone (106-51-4)	0.0405	0.4 a	0.00049	No	0.000050	No	0.000050	No
Benzene (71-43-2)	0.0420	0.13	0.00051	No	0.000060	No	0.000050	No
Ethylbenzene (100-41-4)	0.330	0.40	0.0040	No	0.00044	No	0.00038	No
Xylene (1330-20-7)	0.405	10	0.0049	No	0.00054	No	0.00047	No
Total PAH	0.0345	0.11 b	0.00042	No	0.000050	No	0.000040	No
HCl (7647-01-0)	0.0315	2	0.00038	No	0.000040	No	0.000040	No

Notes
ton/yr = ton per year
$\mu g/m^3$ = micrograms per cubic meter
-- = No value provided
1 = Address is 9581 Brome Ct, Wellington, CO 80549
2 = Address is 8760 Buffalo Creek Pky Wellington, CO 80549
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4 = Hexane value from potential emission rate based on AP-42, Table 11.1-10 (p. 11.1-21) provided Hexane emission factor and plant production limit
5 = Hexane value from emission rate provided by permit limit
6 = Formaldehyde value from potential emission rate based on Michigan Department of Environmental Quality provided Formaldehyde emission factor and plant production limit
7 = Formaldehyde emission rate provided by permit limit
a = Texas Commission of Environmental Quality Effects Screening Levels and NIOSH
b = Average screening value for all PAHs provided in EPA's Appendix A of the Preliminary Risk-Based Screening Approach for Air Toxics Moniotring Data Sets

Figures

Figure 10A - Hexane Map (Long-Term) Potential
Figure 10B - Hexane Map (Short-Term) Potential
Figure 10C - Hexane Map (Long-Term) Permit
Figure 10D - Hexane Map (Short-Term) Permit
Figure 11A - Formaldehyde Map (Long-Term) Potential
Figure 11B - Formaldehyde Map (Short-Term) Potential
Figure 11C - Formaldehyde Map (Long-Term) Permit
Figure 11D - Formaldehyde Map (Short-Term) Permit
Figure 12A - Toluene Map (Long-Term)
Figure 12B - Toluene Map (Short-Term)
Figure 13A - Quinone Map (Long-Term)
Figure 18B - HCl Map (Short-Term)

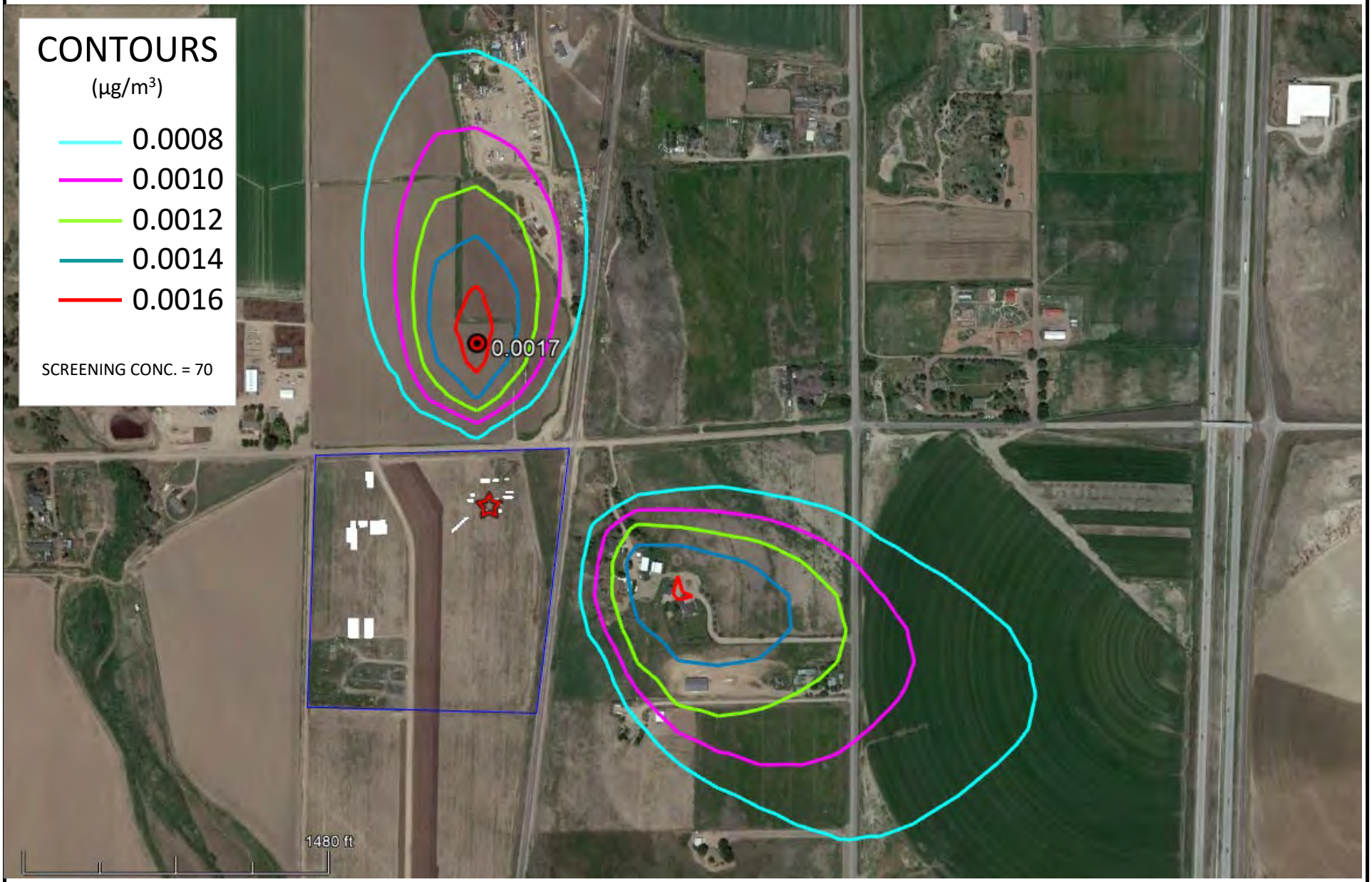

FIGURE 10A - HEXANE MAP (LONG-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
AIRS ID 001
MAX CONCENTRATION

NOTES
SCREENING CONC. = 70
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

antea group
11325 N Community House Rd, Suite 420
Charlotte, North Carolina 28277

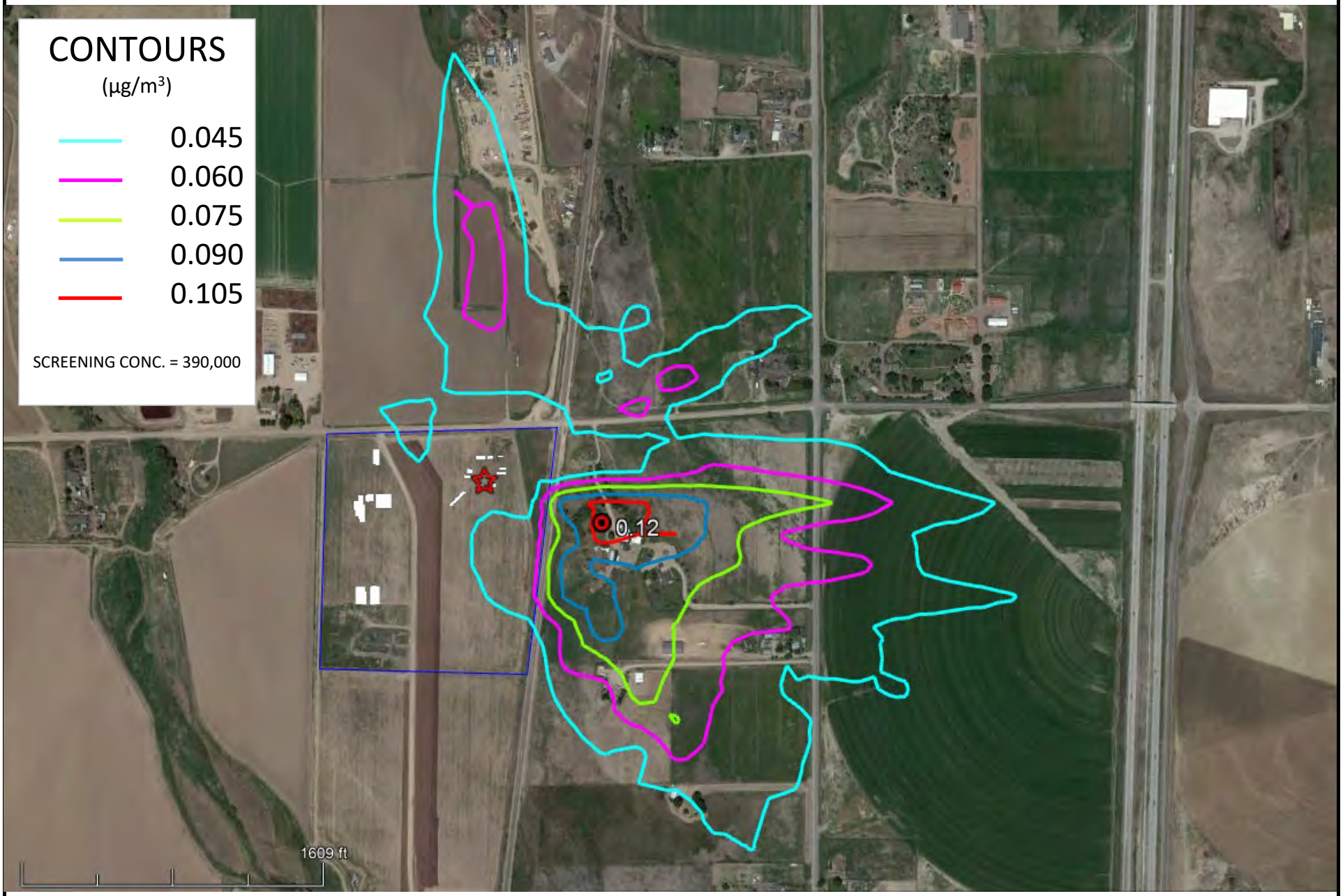

FIGURE 10B - HEXANE MAP (SHORT-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
AIRS ID 001
MAX CONCENTRATION

NOTES
SCREENING CONC. = 390,000
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

antea group
11325 N Community House Rd, Suite 420
Charlotte, North Carolina 28277

FIGURE 10C - HEXANE MAP (LONG-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
AIRS ID 001
MAX CONCENTRATION

NOTES
SCREENING CONC. = 70
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/26/2023
SCALE: See Above
DRAWN BY: JL

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Charlotte, North Carolina 28277

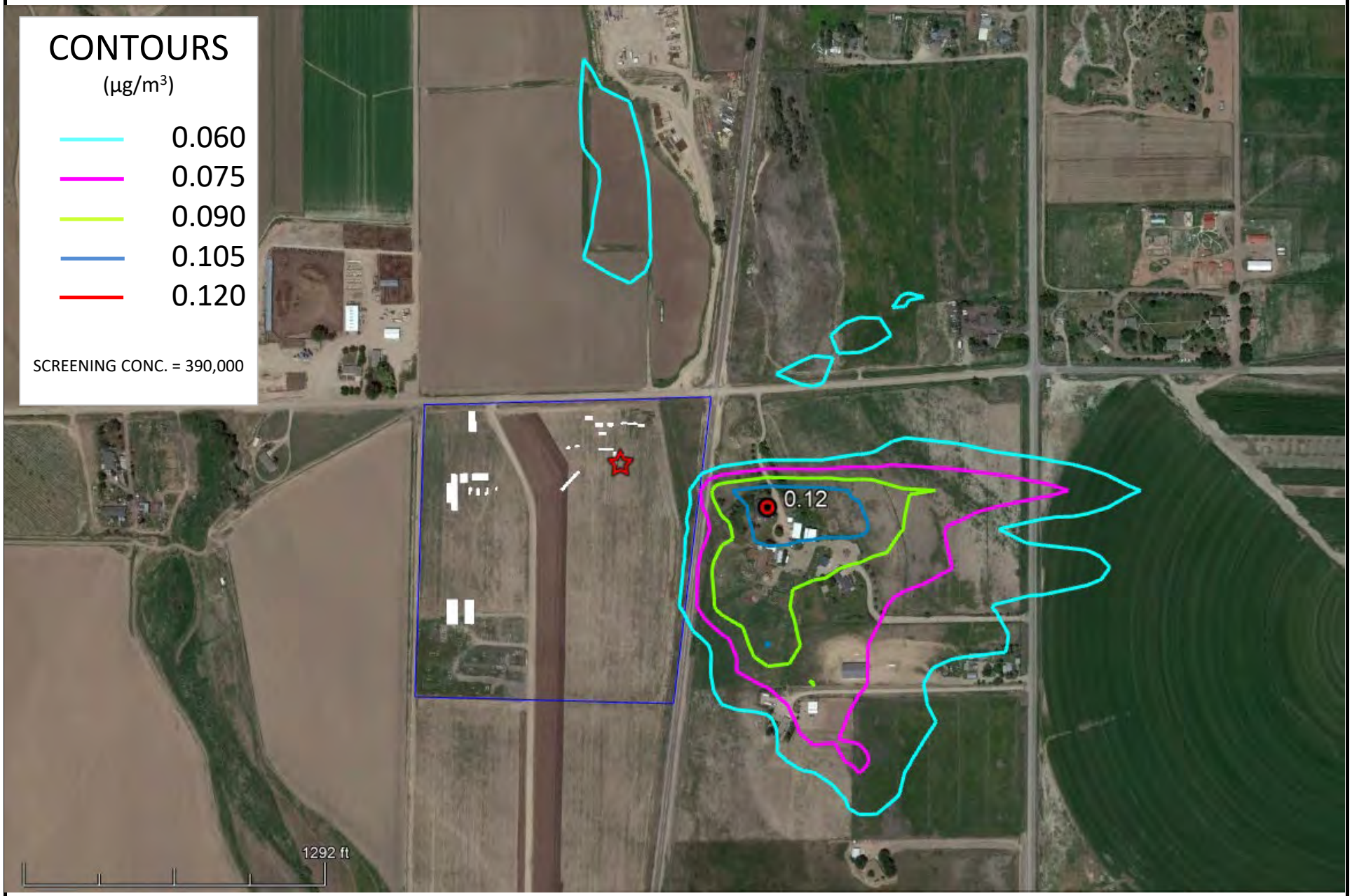

FIGURE 10D - HEXANE MAP (SHORT-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
AIRS ID 001
MAX CONCENTRATION

NOTES
SCREENING CONC. = 390,000
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/26/2023
SCALE: See Above
DRAWN BY: JL

antea group
11325 N Community House Rd, Suite 420
Charlotte, North Carolina 28277

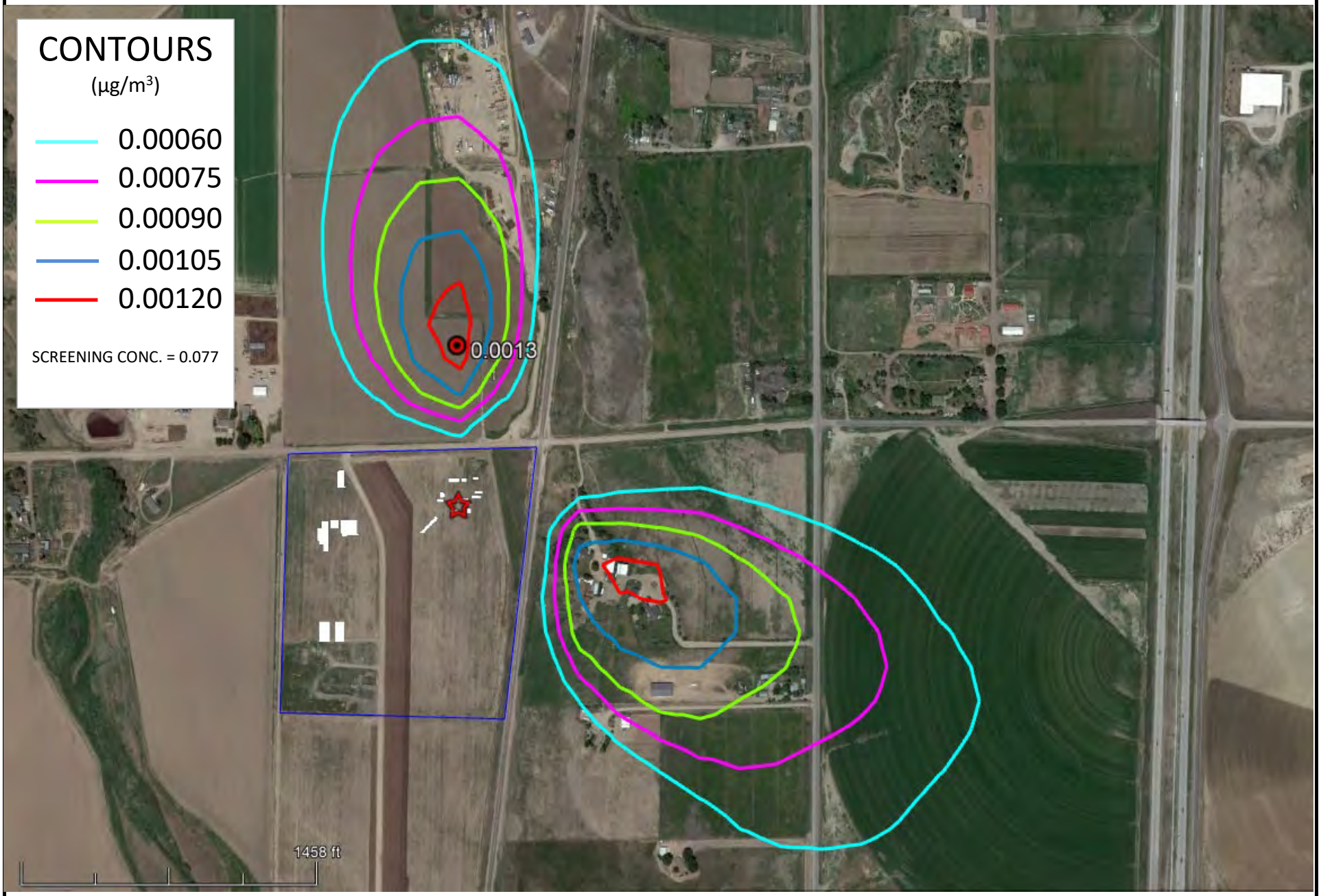

FIGURE 11A - FORMALDEHYDE MAP (LONG-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
AIRS ID 001
MAX CONCENTRATION

NOTES
SCREENING CONC. = 0.077
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

antea group
11325 N Community House Rd, Suite 420
Charlotte, North Carolina 28277

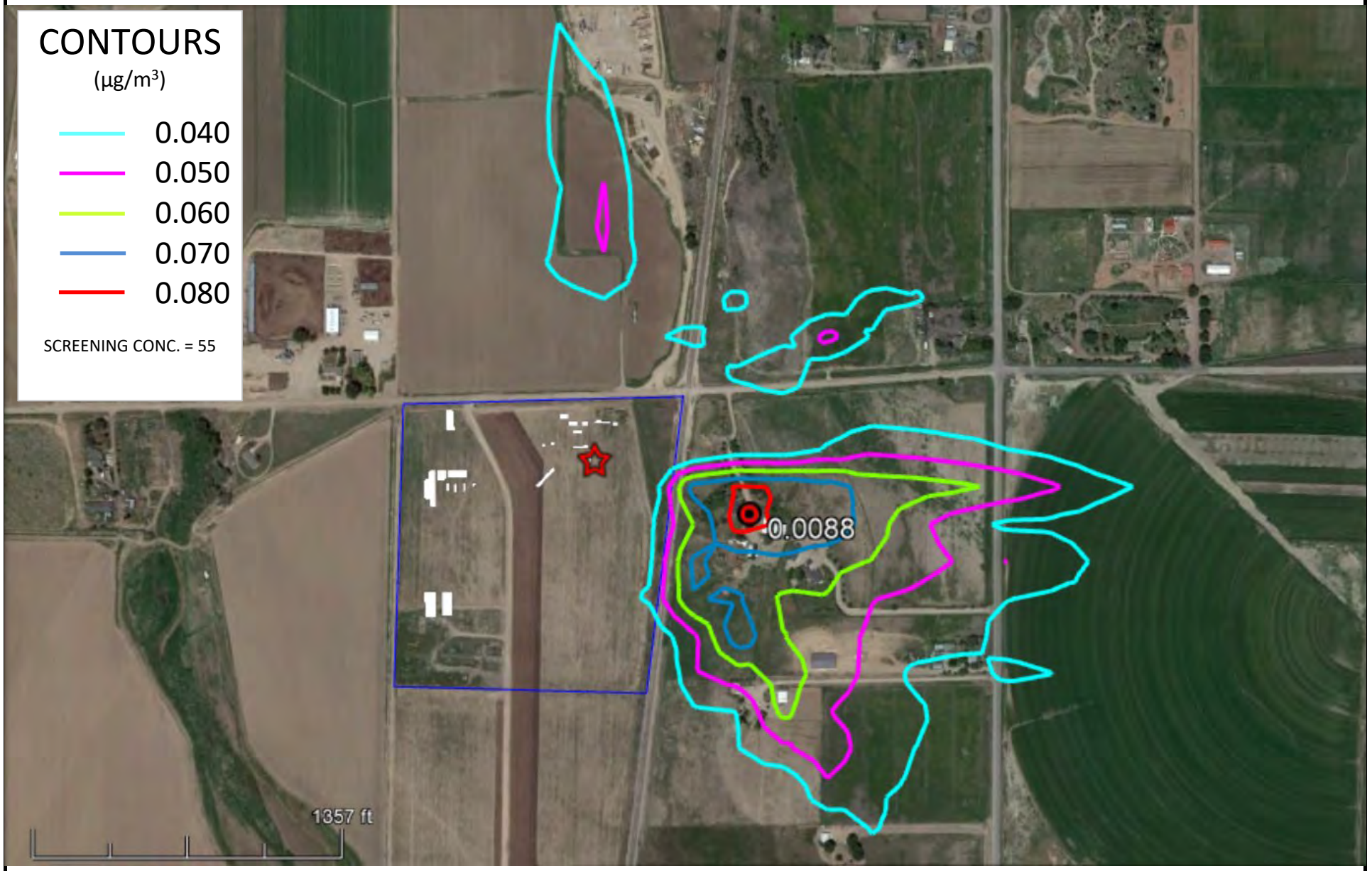

FIGURE 11B - FORMALDEHYDE MAP (SHORT-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
- AIRS ID 001
- MAX CONCENTRATION

NOTES
SCREENING CONC. = 55
UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/24/2023
SCALE: See Above
DRAWN BY: JL

antea group
11325 N Community House Rd, Suite 420
Charlotte, North Carolina 28277

FIGURE 11C - FORMALDEHYDE MAP (LONG-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND	NOTES
☆ AIRS ID 001	SCREENING CONC. = 0.077
◉ MAX CONCENTRATION	FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/24/2023
SCALE: See Above
DRAWN BY: JL

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Charlotte, North Carolina 28277

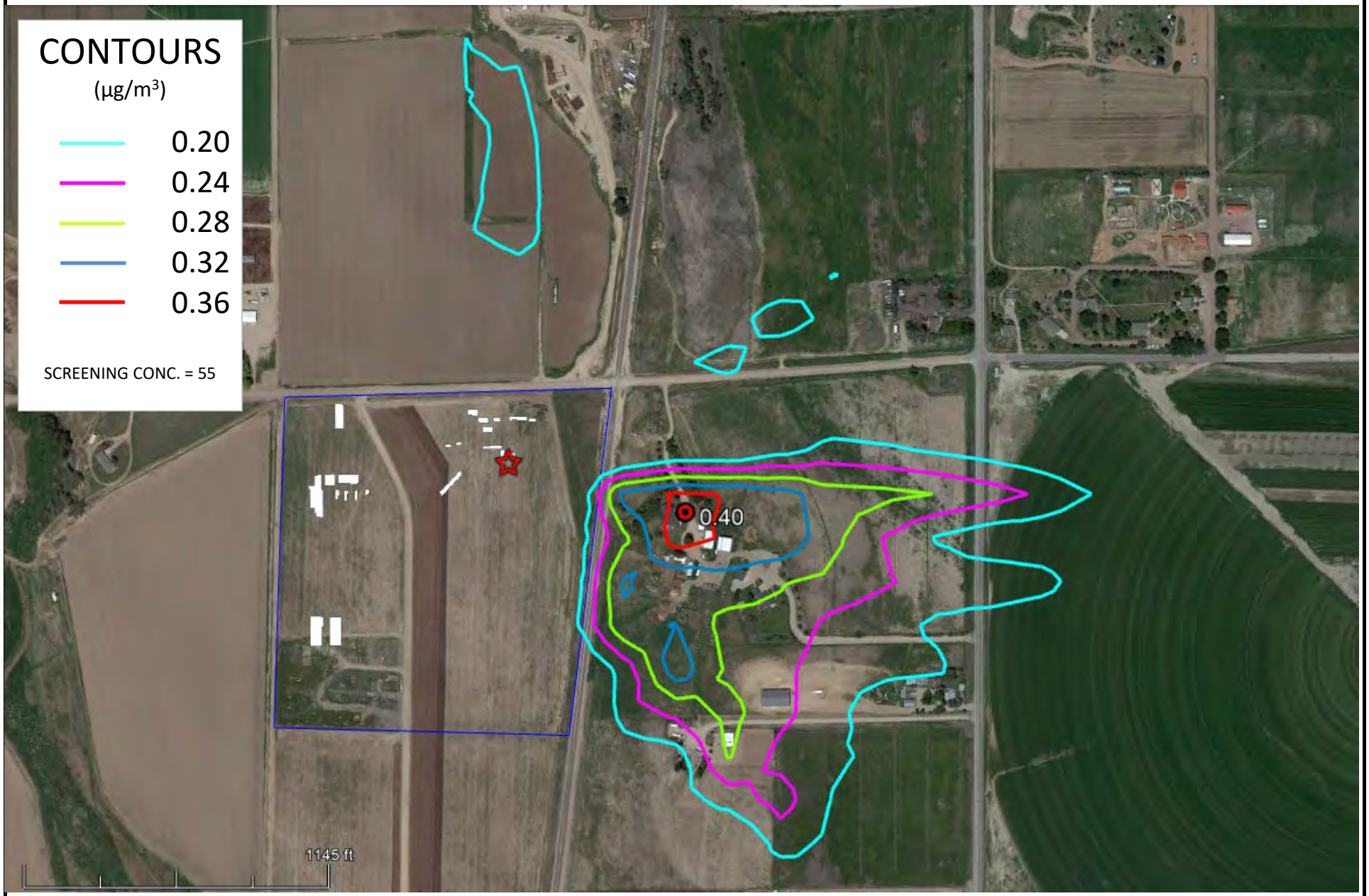

FIGURE 11D - FORMALDEHYDE MAP (SHORT-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
- AIRS ID 001
- MAX CONCENTRATION

NOTES
SCREENING CONC. = 55
UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/24/2023
SCALE: See Above
DRAWN BY: JL

antea group
11325 N Community House Rd, Suite 420
Charlotte, North Carolina 28277

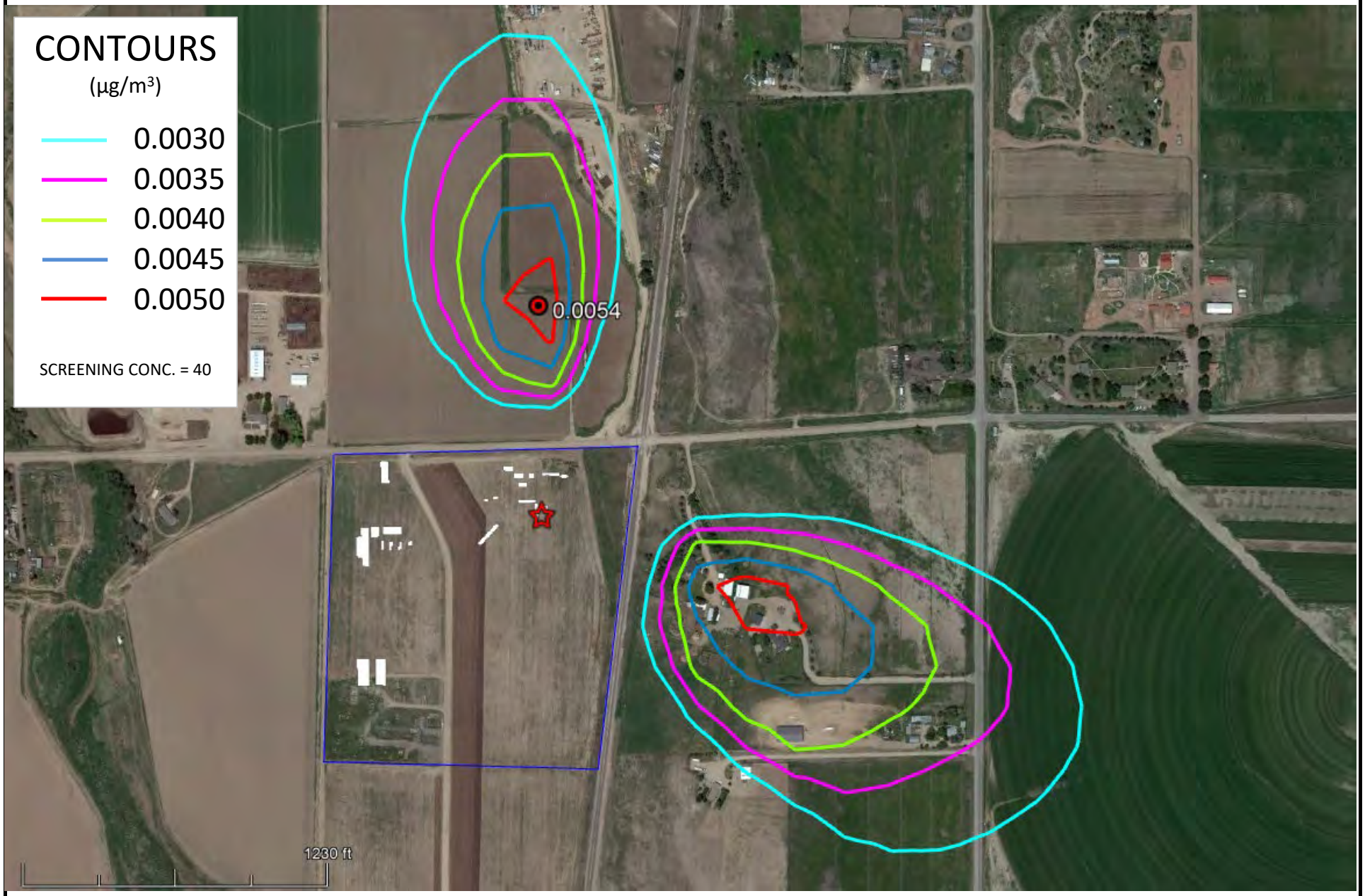

FIGURE 12A - TOLUENE MAP (LONG-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
- AIRS ID 001
- MAX CONCENTRATION

NOTES
SCREENING CONC. = 40
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/24/2023
SCALE: See Above
DRAWN BY: JL

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Charlotte, North Carolina 28277

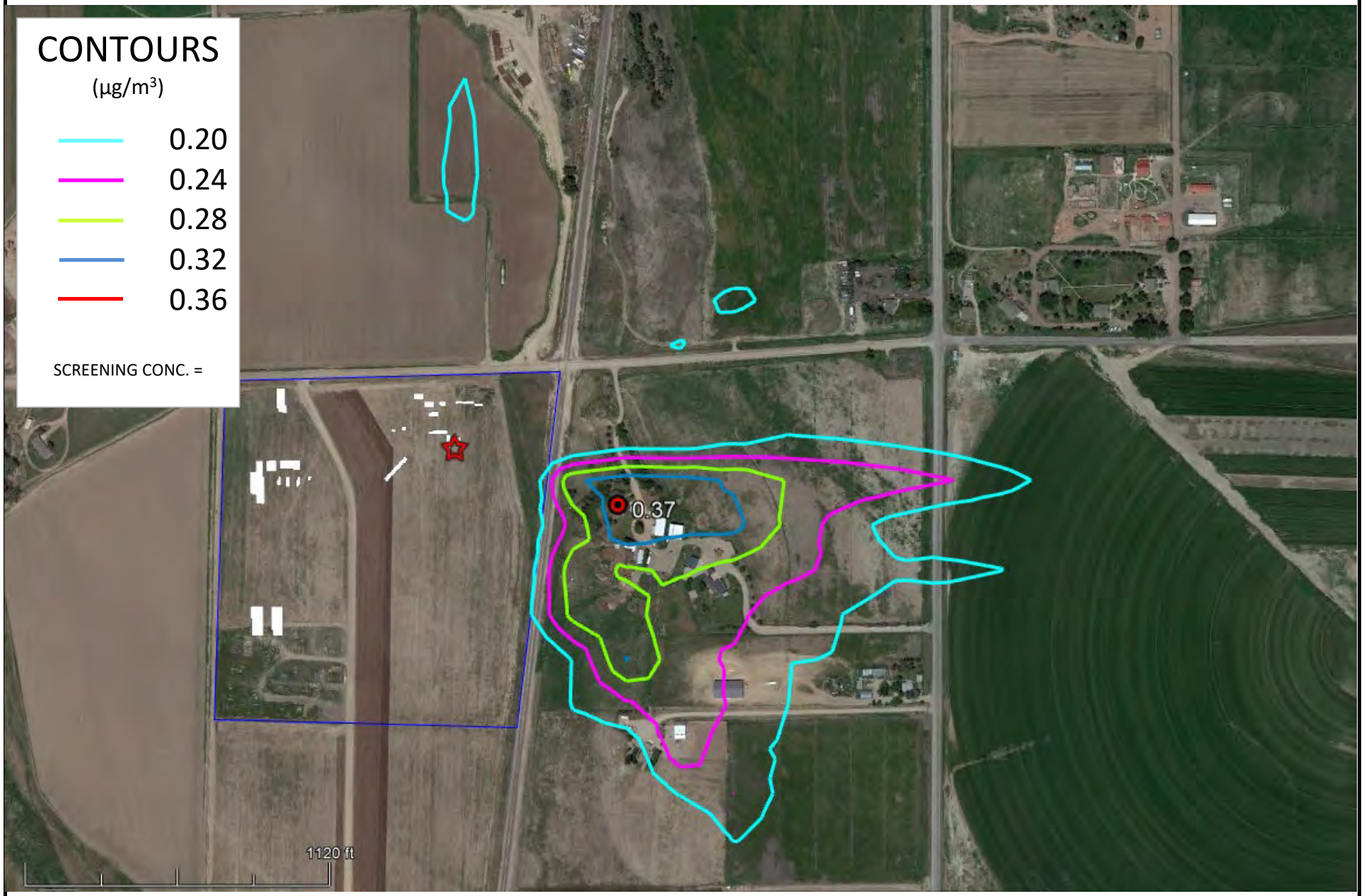

FIGURE 12B - TOLUENE MAP (SHORT-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND	NOTES
☆ AIRS ID 001	SCREENING CONC. = 37,000
◎ MAX CONCENTRATION	

PROJECT NO: Connell Air Model
DATE: 5/24/2023
SCALE: See Above
DRAWN BY: JL

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Charlotte, North Carolina 28277

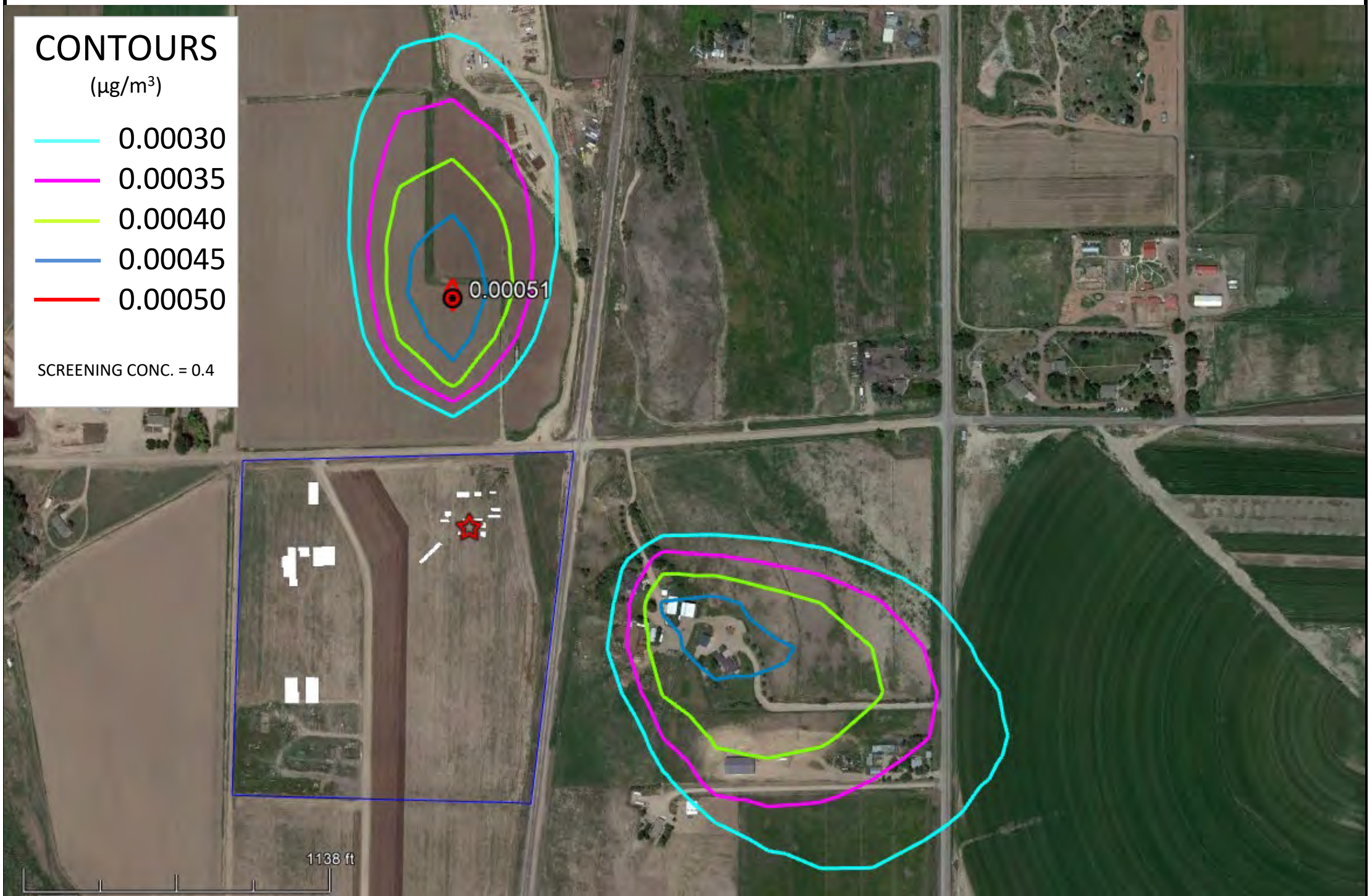

FIGURE 13A - QUINONE MAP (LONG-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
- AIRS ID 001
- MAX CONCENTRATION

NOTES
SCREENING CONC. = 0.4
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

anteagroup
11325 N Community House Rd, Suite 420
Charlotte, North Carolina 28277

FIGURE 18B - HCL MAP (SHORT-TERM)

Connell Resources Inc
E County Rd 66
Wellington, CO 80549
Source: Google Earth Pro, 2021

LEGEND
AIRS ID 001
MAX CONCENTRATION

NOTES
SCREENING CONC. = 190
FIGURE UNITS = µg/m³

PROJECT NO: Connell Air Model
DATE: 5/10/2023
SCALE: See Above
DRAWN BY: JL

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Charlotte, North Carolina 28277

Appendix A – Emission Calculations and Supporting Documentation

Emission Calculations for Modeling
Connell Resources
Fort Collins, CO and Wellington, CO

Permit Limits

Drum Mixer:	400	tons per hour
HMA Production Limit (tons/yr):	300,000	Air Construction Permit OOLR076
HMA Production Limit (hrs/yr):	750	(@maximum production rate w/ maximum Drum Mixer rate)
HMA Production Limit (hrs/yr):	1,154	(@nominal actual production rate)
Nominal Production Rate:	260	tons per hr

Natural Gas or Propane

Criteria Pollutant	Emission Factor (lb/ton asphalt produced) (Ctl)	Emission Factor Reference	Actual (lbs/hr)	Potential (lbs/hr)	Actual (tpy)	Potential (tpy)	Permit Limits (tpy)
PM	0.0177	AP-42, Table 11.1-3	4.60	7.08	2.7	2.7	2.7
PM-10	0.0041	AP-42, Table 11.1-3	1.07	1.64	0.6	0.6	0.7
PM-2.5	0.0010	AP-42, Table 11.1-4	0.26	0.40	0.2	0.2	0.2
NOx	0.026	AP-42, Table 11.1-7	6.76	10.40	3.9	3.9	8.3
SO_2	0.0034	AP-42, Table 11.1-8	0.88	1.36	0.5	0.5	8.7
VOC	0.0320	AP-42, Table 11.1-7	8.32	12.80	4.8	4.8	4.8
CO	0.13	stack tests	33.80	52.00	19.5	19.5	19.5

- Actual Emissions (tpy) = Actual (lbs/hr) x Nominal Production Rate (hrs/yr) / 2,000 lbs/yr
- Potential Emissions (tpy) = Potential (lbs/hr) x Maximum Production Rate (hrs/yr) / 2,000 lbs/yr

Waste Oil

Criteria Pollutant	Emission Factor (lb/ton asphalt produced) (Ctl)	Emission Factor Reference	Actual (lbs/hr)	Potential (lbs/hr)	Actual (tpy)	Potential (tpy)	Permit Limits (tpy)
PM	0.0177	AP-42, Table 11.1-3	4.60	7.08	2.7	2.7	2.7
PM-10	0.0041	AP-42, Table 11.1-3	1.07	1.64	0.6	0.6	0.7
PM-2.5	0.0010	AP-42, Table 11.1-4	0.26	0.40	0.2	0.2	0.2
NOx	0.055	AP-42, Table 11.1-7	14.30	22.00	8.3	8.3	8.3
SO_2	0.058	AP-42, Table 11.1-8	15.08	23.20	8.7	8.7	8.7
VOC	0.0320	AP-42, Table 11.1-7	8.32	12.80	4.8	4.8	4.8
CO	0.13	stack tests	33.80	52.00	19.5	19.5	19.5

HAP Pollutant	Emission Factor (lb/ton asphalt produced	Emission Factor Reference	Actual (lbs/hr)	Potential (lbs/hr)	Actual (lbs/yr)	Potential (lbs/yr)	Permit Limits (lbs/yr)
Acetaldehyde	0.0013	AP-42, Table 11.1-10 *(p. 11.1-26)*	0.338	0.520	390	390	390
Hexane	0.00092	AP-42, Table 11.1-10 *(p. 11.1-21)*	0.2392	0.368	276	276	285.9
Formaldehyde	0.000689	Michigan Department of Environmental Quality [(1)]	0.179	0.276	206.7	206.7	930
Toluene (NG)	0.00015	AP-42, Table 11.1-10 *(p. 11.1-21)*	0.039	0.060	45	45	870
Toluene (WO)	0.0029	AP-42, Table 11.1-10 *(p. 11.1-26)*	0.754	1.160	870	870	
Quinone (NG)	0.00027	AP-42, Table 11.1-9 *(p. 11.1-19)*	0.0702	0.108	81	81	
Quinone (WO)	0.00016	AP-42, Table 11.1-10 *(p. 11.1-26)*	0.0416	0.064	48	48	
Benzene (WO), (NG)	0.00028	AP-42, Table 11.1-9 *(p. 11.1-20)*	0.0728	0.112	84	84	
Ethylbenzene (WO), (NG)	0.0022	AP-42, Table 11.1-9 *(p. 11.1-19)*	0.572	0.880	660	660	
Xylene (WO), (NG)	0.0027	AP-42, Table 11.1-9 *(p. 11.1-19)*	0.702	1.080	810	810	
Total PAH (NG)	0.00011	AP-42, Table 11.1-10 *(p. 11.1-19)*	0.0286	0.044	33	33	
Total PAH (WO)	0.00023	AP-42, Table 11.1-9 *(p. 11.1-20)*	0.0598	0.092	69	69	
HCl (WO - Only)., NG - ND)	0.00021	AP-42, Table 11.1-8 *(p. 11.1-18)*	0.0546	0.084	63	63	

NG = Natural Gas
WO = Waste Oil
ND = Non Detect

[(1)] "*Eliminate the Manatory Testing Requirements for Toxic Air Contaminates for Hot Mix Asphalt Plants in Michigan* ", Michigan Department of Environmental Quality - Air Division, June 1, 2012

- Actual (lbs/hr) = EF x Nominal Production Rate (tons/hr)
- Actual (lbs/hr) = EF x Maximum Drum Mixer Production Rate (tons/hr)
- Potential (lbs/yr) = Actual (lbs/hr) x Nominal Production Rate (hrs/yr)
- Actual (lbs/yr) = Actual (lbs/hr) x Maximum Nominal Production Rate (hrs/yr)

Appendix B – AerMod Model Output

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** MODEL SETUP OPTIONS SUMMARY ***

** Model Options Selected:

* Model Uses Regulatory DEFAULT Options

* Model Is Setup For Calculation of Average CONCentration Values.

* NO GAS DEPOSITION Data Provided.

* NO PARTICLE DEPOSITION Data Provided.

* Model Uses NO DRY DEPLETION. DDPLETE = F

* Model Uses NO WET DEPLETION. WETDPLT = F

* Stack-tip Downwash.

* Model Accounts for ELEVated Terrain Effects.

* Use Calms Processing Routine.

* Use Missing Data Processing Routine.

* No Exponential Decay.

* Model Uses RURAL Dispersion Only.

* BULKRN - Use BULKRN Delta-T and SolarRad option for SBL in AERMET

* Model Assumes No FLAGPOLE Receptor Heights.

* The User Specified a Pollutant Type of: HEXANE

**Model Calculates 1 Short Term Average(s) of: 1-HR

and Calculates ANNUAL Averages

**This Run Includes: 1 Source(s); 1 Source Group(s); and 3106 Receptor(s)

with: 1 POINT(s), including

0 POINTCAP(s) and 0 POINTHOR(s)

and: 0 VOLUME source(s)

and: 0 AREA type source(s)

and: 0 LINE source(s)

and: 0 RLINE/RLINEXT source(s)

and: 0 OPENPIT source(s)

and: 0 BUOYANT LINE source(s) with a total of 0 line(s)

and: 0 SWPOINT source(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 22112

**Output Options Selected:

Model Outputs Tables of ANNUAL Averages by Receptor

Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)

Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours

m for Missing Hours

b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 1730.68 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0

Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07

```
          Output Units   = MICROGRAMS/M**3


 **Approximate Storage Requirements of Model =      3.9 MB of RAM.


 **Input Runstream File:         C:\Users\jonahl\Antea USA, Inc\Connell Resources Inc-Connell -
General\Air Modeling\BEEST Model\

 **Output Print File:           C:\Users\jonahl\Antea USA, Inc\Connell Resources Inc-Connell - General\Air
Modeling\BEEST Model\


 **File for Summary of Results:   C:\Users\jonahl\Antea USA, Inc\Connell Resources Inc-Connell -
General\Air Modeling\BEEST Model\

 *** AERMOD - VERSION 22112  ***   *** Title One                                        ***       05/26/23

 *** AERMET - VERSION  22112 ***   ***                                              ***       09:26:25

                                                                               PAGE   2

 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  BULKRN  SigA Data


                                   *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***

                                              (1=YES; 0=NO)


      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

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      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1


          NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS
INCLUDED IN THE DATA FILE.
```

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** AERMOD - VERSION 22112 *** *** Title One *** 05/26/23

*** AERMET - VERSION 22112 *** *** *** 09:26:25

PAGE 3

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling Met Version: 22112

Profile file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling

Surface format: FREE

Profile format: FREE

Surface station no.: 0 Upper air station no.: 23062

Name: UNKNOWN Name: DENVER WSFO, CO

Year: 2006 Year: 2006

First 24 hours of scalar data

YR MO DY JDY HR H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS WD HT REF TA HT

- -

06 01 01 1 01 -26.0 0.162 -9.000 -9.000 -999. 157. 11.8 0.01 1.89 1.00 4.43 326. 10.0 280.1 2.0

06 01 01 1 02 -58.1 0.325 -9.000 -9.000 -999. 445. 42.5 0.01 1.89 1.00 6.57 310. 10.0 281.4
2.0

06 01 01 1 03 -33.0 0.292 -9.000 -9.000 -999. 380. 54.5 0.01 1.89 1.00 5.72 272. 10.0 281.0
2.0

06 01 01 1 04 -14.9 0.128 -9.000 -9.000 -999. 134. 10.2 0.01 1.89 1.00 3.67 320. 10.0 279.8
2.0

06 01 01 1 05 -13.5 0.124 -9.000 -9.000 -999. 105. 10.1 0.01 1.89 1.00 3.71 337. 10.0 279.0
2.0

06 01 01 1 06 -18.3 0.176 -9.000 -9.000 -999. 177. 21.3 0.01 1.89 1.00 4.29 344. 10.0 278.3
2.0

06 01 01 1 07 -34.9 0.286 -9.000 -9.000 -999. 367. 48.1 0.01 1.89 1.00 5.68 327. 10.0 279.3
2.0

06 01 01 1 08 -39.7 0.440 -9.000 -9.000 -999. 701. 154.4 0.01 1.89 1.00 7.96 307. 10.0 279.8
2.0

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2.0

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2.0

06 01 01 1 11 83.4 0.893 1.120 0.005 486. 2020. -616.6 0.01 1.89 0.26 15.29 291. 10.0 281.4
2.0

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2.0

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281.3 2.0

06 01 01 1 14 122.9 0.912 1.653 0.005 1063. 2100. -445.7 0.01 1.89 0.25 15.56 290. 10.0
281.0 2.0

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280.1 2.0

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2.0

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2.0

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2.0

06 01 01 1 19 -46.9 0.630 -9.000 -9.000 -999. 1199. 388.5 0.01 1.89 1.00 11.09 294. 10.0 276.2
2.0

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2.0

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2.0

06 01 01 1 22 -29.9 0.238 -9.000 -9.000 -999. 279. 32.8 0.01 1.89 1.00 5.32 338. 10.0 275.8
2.0

06 01 01 1 23 -15.8 0.134 -9.000 -9.000 -999. 123. 11.1 0.01 1.89 1.00 3.67 241. 10.0 274.5
2.0

06 01 01 1 24 -19.1 0.117 -9.000 -9.000 -999. 96. 6.1 0.01 1.89 1.00 3.98 279. 10.0 273.6
2.0

First hour of profile data

YR MO DY HR HEIGHT F WDIR WSPD AMB_TMP sigmaA sigmaW sigmaV

06 01 01 01 2.0 0 -999. -99.00 280.1 99.0 -99.00 -99.00

06 01 01 01 10.0 0 326. 4.43 282.0 5.4 -99.00 0.42

06 01 01 01 60.0 1 316. 5.10 283.1 6.1 -99.00 0.54

F indicates top of profile (=1) or below (=0)

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HEXANE IN MICROGRAMS/M**3 **

NETWORK

GROUP ID AVERAGE CONC RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL 1ST HIGHEST VALUE IS 0.00178 AT (499450.00, 4508500.00, 1603.57, 1603.57, 0.00) DC

2ND HIGHEST VALUE IS 0.00174 AT (499450.00, 4508450.00, 1603.33, 1603.33, 0.00) DC

3RD HIGHEST VALUE IS 0.00173 AT (499700.00, 4508150.00, 1610.72, 1610.72, 0.00) DC

4TH HIGHEST VALUE IS 0.00170 AT (499450.00, 4508550.00, 1603.86, 1603.86, 0.00) DC

5TH HIGHEST VALUE IS 0.00168 AT (499750.00, 4508100.00, 1608.86, 1608.86, 0.00) DC

6TH HIGHEST VALUE IS 0.00166 AT (499750.00, 4508150.00, 1610.15, 1610.15, 0.00) DC

7TH HIGHEST VALUE IS 0.00165 AT (499700.00, 4508100.00, 1609.85, 1609.85, 0.00) DC

8TH HIGHEST VALUE IS 0.00164 AT (499400.00, 4508500.00, 1603.34, 1603.34, 0.00) DC

9TH HIGHEST VALUE IS 0.00164 AT (499800.00, 4508100.00, 1606.47, 1606.47, 0.00) DC

10TH HIGHEST VALUE IS 0.00161 AT (499400.00, 4508550.00, 1603.60, 1603.60, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF HEXANE IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	NETWORK RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL HIGH 1ST HIGH VALUE IS 0.12284 ON 06102824: AT (499600.00, 4508200.00, 1608.71, 1608.71, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)

A Total of 624 Warning Message(s)

A Total of 142 Informational Message(s)

A Total of 8760 Hours Were Processed

A Total of 1 Calm Hours Identified

A Total of 141 Missing Hours Identified (1.61 Percent)

******** FATAL ERROR MESSAGES ********

*** NONE ***

******** WARNING MESSAGES ********

ME W181 3169 MEOPEN: BULKRN Delta-T & SolarRad option for SBL was used in AERMET

MX W403 3169 PFLCNV: Turbulence data is being used w/o ADJ_U* option SigA Data

MX W479 24 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 29 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 30 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 31 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.712

MX W479 48 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 51 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 52 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 53 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 141 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 143 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.877

MX W479 147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 151 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 215 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 216 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.734

MX W479 221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 222 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.588

MX W479 244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 291 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.544

MX W479 296 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 308 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.572

MX W479 312 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 313 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.700

MX W479 314 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.735

MX W479 317 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.795

MX W479 318 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 320 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 321 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 340 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 342 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 344 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 475 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.580

MX W479 479 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 482 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.746

MX W479 483 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 484 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 486 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 487 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.681

MX W479 488 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.697

MX W479 489 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.921

MX W479 509 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 524 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 526 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 527 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 528 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.926

MX W479 529 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.676

MX W479 530 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.808

MX W479 531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.740

MX W479 532 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.537

MX W479 533 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.621

MX W479 534 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.830

MX W479 535 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 554 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 555 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 556 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.743

MX W479 573 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.536

MX W479 574 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.241

MX W479 575 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 576 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.562

MX W479 577 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 578 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.213

MX W479 579 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 580 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 581 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.713

MX W479 582 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.678

MX W479 583 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.869

MX W479 584 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 595 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 597 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.667

MX W479 599 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.596

MX W479 600 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 601 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.705

MX W479 605 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 629 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.665

MX W479 632 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.505

MX W479 724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 725 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 727 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 775 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 822 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 835 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 836 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.517

MX W479 837 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 838 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 839 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 932 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 941 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 1029 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.735

MX W479 1031 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479 1034 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 1035 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 1051 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 1052 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500

MX W479 1053 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.884

MX W479 1054 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.859

MX W479 1055 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.766

MX W479 1056 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.677

MX W479 1060 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 1061 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.639

MX W479 1197 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1198 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.709

MX W479 1199 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 1200 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.530

MX W479 1201 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 1203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.590

MX W479 1204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.726

MX W479 1205 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.750

MX W479 1206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.700

MX W479 1208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1218 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 1219 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.824

MX W479 1220 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 1221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 1222 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 1223 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 1224 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 1225 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 1226 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1227 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.778

MX W479 1228 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 1229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 1231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 1244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 1245 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 1276 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 1277 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 1278 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.729

MX W479 1293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.683

MX W479 1294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.851

MX W479 1295 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1296 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 1297 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 1300 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.634

MX W479 1301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.723

MX W479 1302 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 1303 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 1316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.692

MX W479 1343 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 1344 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.720

MX W479 1345 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1346 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 1347 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 1365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.696

MX W479 1373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 1374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1375 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.622

MX W479	1392	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	1394	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.577
MX W479	1395	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	1396	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.671
MX W479	1397	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	1441	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	1442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	1483	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.647
MX W479	1532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	1537	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	1539	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.613
MX W479	1540	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	1541	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.648
MX W479	1543	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	1566	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.569
MX W479	1661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	1989	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	1990	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	1991	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	1993	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.563
MX W479	1994	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.534
MX W479	2086	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	2088	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	2089	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	2093	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	2228	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.579
MX W479	2229	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.638
MX W479	2230	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.693
MX W479	2231	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.634

MX W479 2232 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.632

MX W479 2234 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 2235 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 2253 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 2254 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 2255 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.755

MX W479 2262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 2348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 2349 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2350 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 2351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2352 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.834

MX W479 2353 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.525

MX W479 2354 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2355 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.560

MX W479 2356 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 2373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.752

MX W479 2374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.569

MX W479 2378 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 2379 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.647

MX W479 2380 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 2382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 2399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.920

MX W479 2421 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2422 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 2424 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 2425 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 2428 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 2429 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.578

MX W479	2430	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.528
MX W479	2445	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.748
MX W479	2446	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	2447	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.779
MX W479	2448	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.743
MX W479	2449	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.733
MX W479	2450	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	2468	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.568
MX W479	2469	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.019
MX W479	2470	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.976
MX W479	2471	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.882
MX W479	2472	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.650
MX W479	2542	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.620
MX W479	2543	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.826
MX W479	2544	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.734
MX W479	2545	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.629
MX W479	2546	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.769
MX W479	2547	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.656
MX W479	2548	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.679
MX W479	2549	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.853
MX W479	2550	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.715
MX W479	2615	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.589
MX W479	2616	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	2617	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	2639	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	2640	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.715
MX W479	2641	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.777
MX W479	2643	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.648
MX W479	2645	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.602

MX W479 2646 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 2663 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.896

MX W479 2664 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 2666 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 2669 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 2670 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500

MX W479 2763 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.504

MX W479 2783 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.567

MX W479 2786 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.588

MX W479 2788 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.748

MX W479 2789 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2832 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 2833 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.506

MX W479 2900 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 2901 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.673

MX W479 2902 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.730

MX W479 2903 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 2905 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 2906 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 2907 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 3045 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 3047 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.554

MX W479 3048 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.508

MX W479 3148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 3149 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 3168 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 3169 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 3170 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.601

MX W479 3171 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.796

MX W479 3172 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 3173 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.889

MX W479 3174 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 3239 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 3262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 3263 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 3289 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 3290 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 3291 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 3293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 3294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 3313 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 3316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 3337 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 3338 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.521

MX W479 3339 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 3363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.584

MX W479 3364 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 3365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 3366 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 3382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 3383 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 3384 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.606

MX W479 3453 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 3454 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.711

MX W479 3457 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 3509 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.654

MX W479 3525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479	3671	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.541
MX W479	3674	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	3693	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	3748	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.562
MX W479	3792	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.536
MX W479	3796	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.568
MX W479	4029	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.848
MX W479	4030	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.707
MX W479	4031	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.721
MX W479	4035	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	4036	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.645
MX W479	4037	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	4057	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.502
MX W479	4080	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	4101	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.545
MX W479	4102	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.715
MX W479	4103	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.847
MX W479	4104	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.608
MX W479	4105	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.522
MX W479	4172	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.682
MX W479	4173	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.824
MX W479	4227	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	4297	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	4298	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.590
MX W479	4301	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.582
MX W479	4493	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.603
MX W479	4586	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	4629	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.548
MX W479	4630	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.517

MX W479 4652 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 4653 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.685

MX W479 4654 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 4656 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 4657 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.903

MX W479 4658 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.975

MX W479 4659 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.826

MX W479 4660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.741

MX W479 4661 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.888

MX W479 4677 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.524

MX W479 4679 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 4680 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.591

MX W479 4685 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 4724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 4996 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.544

MX W479 5331 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.662

MX W479 5332 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 5471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 5472 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 5475 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 5614 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.669

MX W479 5615 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 5621 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 5622 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.623

MX W479 5790 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 5804 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 5805 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 5809 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 5812 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.675

MX W479 5813 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 5814 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 5979 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 5980 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 6120 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 6121 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 6125 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 6126 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 6142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 6146 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 6147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

MX W479 6148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

MX W479 6149 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.883

MX W479 6150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.860

MX W479 6267 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 6268 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 6271 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 6286 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 6292 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.577

MX W479 6294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.615

MX W479 6405 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 6406 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.887

MX W479 6407 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 6408 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.541

MX W479 6409 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 6410 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.740

MX W479 6411 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 6413 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 6430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479	6431	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.841
MX W479	6435	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.023
MX W479	6436	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.778
MX W479	6486	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	6501	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.822
MX W479	6524	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.557
MX W479	6525	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.600
MX W479	6526	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	6528	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.612
MX W479	6529	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	6530	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	6531	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.662
MX W479	6532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.680
MX W479	6548	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.718
MX W479	6549	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.739
MX W479	6550	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.767
MX W479	6553	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.592
MX W479	6554	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.776
MX W479	6555	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.581
MX W479	6556	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	6558	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.988
MX W479	6559	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.766
MX W479	6571	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.523
MX W479	6572	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.870
MX W479	6573	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.668
MX W479	6574	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.705
MX W479	6577	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.791
MX W479	6578	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	6579	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.622

MX W479	6580	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	6581	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.872
MX W479	6582	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.704
MX W479	6583	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	6596	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	6602	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	6791	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.545
MX W479	6835	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.564
MX W479	6836	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	6868	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	6870	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.516
MX W479	6890	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	6912	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.576
MX W479	6913	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.636
MX W479	6914	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	6915	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.571
MX W479	6917	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	6918	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	7014	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7099	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.534
MX W479	7100	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.759
MX W479	7101	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7103	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	7111	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	7123	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	7126	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.603
MX W479	7127	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	7129	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	7130	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.683

MX W479	7131	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	7132	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.525
MX W479	7195	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.554
MX W479	7196	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	7199	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	7207	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.635
MX W479	7220	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.644
MX W479	7243	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.628
MX W479	7244	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	7246	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.712
MX W479	7252	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.629
MX W479	7253	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	7255	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.681
MX W479	7316	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.757
MX W479	7317	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.558
MX W479	7318	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.570
MX W479	7319	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	7321	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.602
MX W479	7323	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	7324	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.578
MX W479	7326	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.528
MX W479	7340	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.691
MX W479	7343	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.510
MX W479	7345	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	7346	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	7351	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	7363	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	7364	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.215
MX W479	7366	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.516

MX W479 7367 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.612

MX W479 7368 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.799

MX W479 7369 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.518

MX W479 7388 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 7389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 7390 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 7391 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.797

MX W479 7393 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 7395 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 7396 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 7397 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 7399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.656

MX W479 7400 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.686

MX W479 7446 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.641

MX W479 7462 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.761

MX W479 7468 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 7469 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.811

MX W479 7470 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.856

MX W479 7471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.803

MX W479 7484 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 7513 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 7514 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 7531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.594

MX W479 7543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 7585 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.532

MX W479 7586 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.831

MX W479 7587 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

MX W479 7602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 7603 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479	7660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.708
MX W479	7661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7681	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	7682	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7683	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.707
MX W479	7684	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.628
MX W479	7753	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.641
MX W479	7755	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.502
MX W479	7794	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.607
MX W479	7796	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.032
MX W479	7797	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.212
MX W479	7798	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.800
MX W479	7801	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.637
MX W479	7802	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.906
MX W479	7803	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	7804	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.841
MX W479	7805	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.048
MX W479	7806	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.021
MX W479	7807	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.755
MX W479	7819	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.902
MX W479	7867	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.583
MX W479	7869	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	7873	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	7878	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.513
MX W479	7879	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	7891	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.666
MX W479	7892	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.532
MX W479	7894	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	7896	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556

MX W479	7897	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.506
MX W479	7898	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.761
MX W479	7899	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.773
MX W479	7900	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	7901	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.852
MX W479	7941	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	7948	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7989	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.671
MX W479	7990	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	7991	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	7992	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.622
MX W479	7993	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.288
MX W479	7994	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.608
MX W479	7996	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.606
MX W479	8011	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	8041	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.505
MX W479	8042	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.604
MX W479	8062	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.522
MX W479	8067	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.589
MX W479	8086	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.668
MX W479	8087	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.504
MX W479	8088	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.618
MX W479	8089	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	8090	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.585
MX W479	8091	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.523
MX W479	8107	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.613
MX W479	8108	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.690
MX W479	8111	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.564
MX W479	8112	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.633

MX W479	8116	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	8117	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.838
MX W479	8118	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.725
MX W479	8119	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.001
MX W479	8120	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.649
MX W479	8190	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.571
MX W479	8191	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.719
MX W479	8192	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	8202	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.572
MX W479	8203	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.563
MX W479	8204	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.511
MX W479	8206	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	8208	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.642
MX W479	8209	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.717
MX W479	8210	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.670
MX W479	8211	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	8213	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.701
MX W479	8214	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.584
MX W479	8215	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.714
MX W479	8216	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.687
MX W479	8229	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.638
MX W479	8230	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	8231	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	8235	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	8238	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.571
MX W479	8301	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.642
MX W479	8304	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.555
MX W479	8306	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.685
MX W479	8307	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574

MX W479 8311 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.550

MX W479 8350 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.596

MX W479 8356 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.511

MX W479 8358 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 8360 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 8427 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.593

MX W479 8428 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.548

MX W479 8442 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.566

MX W479 8445 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 8447 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 8448 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.591

MX W479 8450 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.583

MX W479 8451 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.695

MX W479 8452 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.533

MX W479 8514 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 8553 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.944

MX W479 8567 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.619

MX W479 8570 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 8571 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.544

MX W479 8595 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.626

MX W479 8646 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 8660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.567

MX W479 8730 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 8734 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 8735 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.560

MX W479 8760 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.626

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** MODEL SETUP OPTIONS SUMMARY ***

** Model Options Selected:

* Model Uses Regulatory DEFAULT Options
* Model Is Setup For Calculation of Average CONCentration Values.
* NO GAS DEPOSITION Data Provided.
* NO PARTICLE DEPOSITION Data Provided.
* Model Uses NO DRY DEPLETION. DDPLETE = F
* Model Uses NO WET DEPLETION. WETDPLT = F
* Stack-tip Downwash.
* Model Accounts for ELEVated Terrain Effects.
* Use Calms Processing Routine.
* Use Missing Data Processing Routine.
* No Exponential Decay.
* Model Uses RURAL Dispersion Only.
* BULKRN - Use BULKRN Delta-T and SolarRad option for SBL in AERMET
* Model Assumes No FLAGPOLE Receptor Heights.
* The User Specified a Pollutant Type of: FORMALDE

**Model Calculates 1 Short Term Average(s) of: 1-HR
and Calculates ANNUAL Averages

**This Run Includes: 1 Source(s); 1 Source Group(s); and 3106 Receptor(s)

with: 1 POINT(s), including

0 POINTCAP(s) and 0 POINTHOR(s)

and: 0 VOLUME source(s)

and: 0 AREA type source(s)

and: 0 LINE source(s)

and: 0 RLINE/RLINEXT source(s)

and: 0 OPENPIT source(s)

and: 0 BUOYANT LINE source(s) with a total of 0 line(s)

and: 0 SWPOINT source(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 22112

**Output Options Selected:

Model Outputs Tables of ANNUAL Averages by Receptor

Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)

Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours

m for Missing Hours

b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 1730.68 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0

Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07

```
        Output Units   = MICROGRAMS/M**3


 **Approximate Storage Requirements of Model =      3.9 MB of RAM.


 **Input Runstream File:         C:\Users\jonahl\Antea USA, Inc\Connell Resources Inc-Connell - 
General\Air Modeling\BEEST Model\

 **Output Print File:           C:\Users\jonahl\Antea USA, Inc\Connell Resources Inc-Connell - General\Air 
Modeling\BEEST Model\


 **File for Summary of Results:   C:\Users\jonahl\Antea USA, Inc\Connell Resources Inc-Connell - 
General\Air Modeling\BEEST Model\

 *** AERMOD - VERSION 22112  ***   *** Title One                                        ***       05/24/23

 *** AERMET - VERSION  22112 ***   ***                                                 ***       14:28:58

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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  BULKRN  SigA Data


                          *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***

                                          (1=YES; 0=NO)


      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1


       NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS 
INCLUDED IN THE DATA FILE.
```

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling Met Version: 22112

Profile file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling

Surface format: FREE

Profile format: FREE

Surface station no.: 0 Upper air station no.: 23062

Name: UNKNOWN Name: DENVER WSFO, CO

Year: 2006 Year: 2006

First 24 hours of scalar data

YR MO DY JDY HR H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS WD HT REF TA HT

- -

06 01 01 1 01 -26.0 0.162 -9.000 -9.000 -999. 157. 11.8 0.01 1.89 1.00 4.43 326. 10.0 280.1 2.0

06 01 01 1 02 -58.1 0.325 -9.000 -9.000 -999. 445. 42.5 0.01 1.89 1.00 6.57 310. 10.0 281.4
2.0

06 01 01 1 03 -33.0 0.292 -9.000 -9.000 -999. 380. 54.5 0.01 1.89 1.00 5.72 272. 10.0 281.0
2.0

06 01 01 1 04 -14.9 0.128 -9.000 -9.000 -999. 134. 10.2 0.01 1.89 1.00 3.67 320. 10.0 279.8
2.0

06 01 01 1 05 -13.5 0.124 -9.000 -9.000 -999. 105. 10.1 0.01 1.89 1.00 3.71 337. 10.0 279.0
2.0

06 01 01 1 06 -18.3 0.176 -9.000 -9.000 -999. 177. 21.3 0.01 1.89 1.00 4.29 344. 10.0 278.3
2.0

06 01 01 1 07 -34.9 0.286 -9.000 -9.000 -999. 367. 48.1 0.01 1.89 1.00 5.68 327. 10.0 279.3
2.0

06 01 01 1 08 -39.7 0.440 -9.000 -9.000 -999. 701. 154.4 0.01 1.89 1.00 7.96 307. 10.0 279.8
2.0

06 01 01 1 09 -17.3 0.580 -9.000 -9.000 -999. 1058. 810.0 0.01 1.89 0.43 10.10 287. 10.0 279.4
2.0

06 01 01 1 10 38.3 0.682 0.602 0.005 164. 1349. -597.0 0.01 1.89 0.31 11.67 301. 10.0 280.9
2.0

06 01 01 1 11 83.4 0.893 1.120 0.005 486. 2020. -616.6 0.01 1.89 0.26 15.29 291. 10.0 281.4
2.0

06 01 01 1 12 97.2 0.889 1.326 0.005 693. 2013. -521.8 0.01 1.89 0.24 15.20 293. 10.0 281.3
2.0

06 01 01 1 13 137.5 0.968 1.629 0.005 909. 2279. -476.9 0.01 1.89 0.24 16.54 291. 10.0
281.3 2.0

06 01 01 1 14 122.9 0.912 1.653 0.005 1063. 2100. -445.7 0.01 1.89 0.25 15.56 290. 10.0
281.0 2.0

06 01 01 1 15 67.7 0.795 1.385 0.005 1138. 1727. -536.6 0.01 1.89 0.30 13.59 295. 10.0
280.1 2.0

06 01 01 1 16 0.0 0.715 -9.000 -9.000 -999. 1464. 8888.0 0.01 1.89 0.41 12.34 301. 10.0 279.0
2.0

06 01 01 1 17 0.0 0.673 -9.000 -9.000 -999. 1330. 8888.0 0.01 1.89 0.72 11.62 304. 10.0 277.1
2.0

06 01 01 1 18 0.0 0.546 -9.000 -9.000 -999. 987. 8888.0 0.01 1.89 1.00 9.43 293. 10.0 275.9
2.0

06 01 01 1 19 -46.9 0.630 -9.000 -9.000 -999. 1199. 388.5 0.01 1.89 1.00 11.09 294. 10.0 276.2
2.0

06 01 01 1 20 -49.7 0.337 -9.000 -9.000 -999. 566. 55.9 0.01 1.89 1.00 6.57 310. 10.0 275.6
2.0

06 01 01 1 21 -29.5 0.194 -9.000 -9.000 -999. 235. 17.9 0.01 1.89 1.00 4.69 313. 10.0 274.4
2.0

06 01 01 1 22 -29.9 0.238 -9.000 -9.000 -999. 279. 32.8 0.01 1.89 1.00 5.32 338. 10.0 275.8
2.0

06 01 01 1 23 -15.8 0.134 -9.000 -9.000 -999. 123. 11.1 0.01 1.89 1.00 3.67 241. 10.0 274.5
2.0

06 01 01 1 24 -19.1 0.117 -9.000 -9.000 -999. 96. 6.1 0.01 1.89 1.00 3.98 279. 10.0 273.6
2.0

First hour of profile data

YR MO DY HR HEIGHT F WDIR WSPD AMB_TMP sigmaA sigmaW sigmaV

06 01 01 01 2.0 0 -999. -99.00 280.1 99.0 -99.00 -99.00

06 01 01 01 10.0 0 326. 4.43 282.0 5.4 -99.00 0.42

06 01 01 01 60.0 1 316. 5.10 283.1 6.1 -99.00 0.54

F indicates top of profile (=1) or below (=0)

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*** AERMET - VERSION 22112 *** *** *** 14:28:58

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*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF FORMALDE IN MICROGRAMS/M**3 **

NETWORK

GROUP ID AVERAGE CONC RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL 1ST HIGHEST VALUE IS 0.00580 AT (499450.00, 4508500.00, 1603.57, 1603.57, 0.00) DC

2ND HIGHEST VALUE IS 0.00567 AT (499450.00, 4508450.00, 1603.33, 1603.33, 0.00) DC

3RD HIGHEST VALUE IS 0.00563 AT (499700.00, 4508150.00, 1610.72, 1610.72, 0.00) DC

4TH HIGHEST VALUE IS 0.00553 AT (499450.00, 4508550.00, 1603.86, 1603.86, 0.00) DC

5TH HIGHEST VALUE IS 0.00547 AT (499750.00, 4508100.00, 1608.86, 1608.86, 0.00) DC

6TH HIGHEST VALUE IS 0.00540 AT (499750.00, 4508150.00, 1610.15, 1610.15, 0.00) DC

7TH HIGHEST VALUE IS 0.00537 AT (499700.00, 4508100.00, 1609.85, 1609.85, 0.00) DC

8TH HIGHEST VALUE IS 0.00534 AT (499400.00, 4508500.00, 1603.34, 1603.34, 0.00) DC

9TH HIGHEST VALUE IS 0.00532 AT (499800.00, 4508100.00, 1606.47, 1606.47, 0.00) DC

10TH HIGHEST VALUE IS 0.00523 AT (499400.00, 4508550.00, 1603.60, 1603.60, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF FORMALDE IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	NETWORK RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL HIGH 1ST HIGH VALUE IS 0.39946 ON 06102824: AT (499600.00, 4508200.00, 1608.71, 1608.71, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)

A Total of 624 Warning Message(s)

A Total of 142 Informational Message(s)

A Total of 8760 Hours Were Processed

A Total of 1 Calm Hours Identified

A Total of 141 Missing Hours Identified (1.61 Percent)

******** FATAL ERROR MESSAGES ********

*** NONE ***

******** WARNING MESSAGES ********

ME W181 3169 MEOPEN: BULKRN Delta-T & SolarRad option for SBL was used in AERMET

MX W403 3169 PFLCNV: Turbulence data is being used w/o ADJ_U* option SigA Data

MX W479 24 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 29 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 30 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 31 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.712

MX W479 48 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 51 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 52 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 53 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 141 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 143 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.877

MX W479 147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 151 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 215 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 216 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.734

MX W479 221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 222 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.588

MX W479 244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 291 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.544

MX W479 296 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 308 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.572

MX W479 312 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 313 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.700

MX W479 314 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.735

MX W479 317 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.795

MX W479 318 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 320 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 321 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 340 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 342 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 344 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 475 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.580

MX W479 479 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 482 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.746

MX W479 483 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 484 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 486 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 487 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.681

MX W479 488 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.697

MX W479 489 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.921

MX W479 509 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 524 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 526 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 527 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 528 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.926

MX W479 529 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.676

MX W479 530 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.808

MX W479 531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.740

MX W479 532 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.537

MX W479 533 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.621

MX W479 534 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.830

MX W479 535 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 554 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 555 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 556 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.743

MX W479 573 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.536

MX W479 574 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.241

MX W479 575 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 576 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.562

MX W479 577 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 578 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.213

MX W479 579 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 580 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 581 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.713

MX W479 582 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.678

MX W479 583 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.869

MX W479 584 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 595 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 597 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.667

MX W479 599 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.596

MX W479 600 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 601 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.705

MX W479 605 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 629 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.665

MX W479 632 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.505

MX W479 724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 725 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 727 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 775 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 822 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 835 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 836 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.517

MX W479 837 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 838 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 839 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 932 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 941 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 1029 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.735

MX W479 1031 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479 1034 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 1035 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 1051 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 1052 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500

MX W479 1053 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.884

MX W479 1054 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.859

MX W479 1055 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.766

MX W479 1056 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.677

MX W479 1060 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 1061 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.639

MX W479 1197 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1198 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.709

MX W479 1199 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 1200 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.530

MX W479 1201 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 1203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.590

MX W479 1204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.726

MX W479 1205 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.750

MX W479 1206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.700

MX W479 1208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1218 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 1219 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.824

MX W479 1220 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 1221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 1222 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 1223 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 1224 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 1225 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 1226 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1227 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.778

MX W479 1228 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 1229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 1231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 1244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 1245 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 1276 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 1277 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 1278 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.729

MX W479 1293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.683

MX W479 1294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.851

MX W479 1295 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1296 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 1297 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 1300 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.634

MX W479 1301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.723

MX W479 1302 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 1303 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 1316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.692

MX W479 1343 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 1344 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.720

MX W479 1345 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1346 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 1347 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 1365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.696

MX W479 1373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 1374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1375 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.622

MX W479	1392	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	1394	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.577
MX W479	1395	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	1396	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.671
MX W479	1397	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	1441	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	1442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	1483	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.647
MX W479	1532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	1537	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	1539	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.613
MX W479	1540	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	1541	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.648
MX W479	1543	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	1566	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.569
MX W479	1661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	1989	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	1990	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	1991	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	1993	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.563
MX W479	1994	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.534
MX W479	2086	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	2088	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	2089	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	2093	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	2228	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.579
MX W479	2229	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.638
MX W479	2230	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.693
MX W479	2231	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.634

MX W479 2232 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.632

MX W479 2234 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 2235 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 2253 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 2254 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 2255 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.755

MX W479 2262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 2348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 2349 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2350 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 2351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2352 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.834

MX W479 2353 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.525

MX W479 2354 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2355 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.560

MX W479 2356 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 2373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.752

MX W479 2374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.569

MX W479 2378 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 2379 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.647

MX W479 2380 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 2382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 2399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.920

MX W479 2421 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2422 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 2424 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 2425 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 2428 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 2429 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.578

MX W479 2430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 2445 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.748

MX W479 2446 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 2447 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

MX W479 2448 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.743

MX W479 2449 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.733

MX W479 2450 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 2468 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2469 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.019

MX W479 2470 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.976

MX W479 2471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.882

MX W479 2472 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 2542 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.826

MX W479 2544 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.734

MX W479 2545 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.629

MX W479 2546 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.769

MX W479 2547 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.656

MX W479 2548 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.679

MX W479 2549 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.853

MX W479 2550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 2615 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 2616 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 2617 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 2639 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 2640 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 2641 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.777

MX W479 2643 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 2645 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479	2646	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	2660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	2663	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.896
MX W479	2664	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	2666	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	2669	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	2670	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.500
MX W479	2763	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.504
MX W479	2783	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.567
MX W479	2786	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.588
MX W479	2788	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.748
MX W479	2789	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	2832	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.501
MX W479	2833	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.506
MX W479	2900	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.635
MX W479	2901	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.673
MX W479	2902	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.730
MX W479	2903	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	2905	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	2906	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.753
MX W479	2907	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	3045	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.549
MX W479	3047	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.554
MX W479	3048	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	3148	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.666
MX W479	3149	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	3168	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.553
MX W479	3169	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	3170	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.601

MX W479 3171 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.796

MX W479 3172 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 3173 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.889

MX W479 3174 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 3239 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 3262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 3263 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 3289 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 3290 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 3291 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 3293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 3294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 3313 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 3316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 3337 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 3338 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.521

MX W479 3339 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 3363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.584

MX W479 3364 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 3365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 3366 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 3382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 3383 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 3384 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.606

MX W479 3453 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 3454 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.711

MX W479 3457 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 3509 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.654

MX W479 3525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 3671 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.541

MX W479 3674 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 3693 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 3748 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.562

MX W479 3792 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.536

MX W479 3796 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 4029 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.848

MX W479 4030 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.707

MX W479 4031 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 4035 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 4036 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 4037 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 4057 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.502

MX W479 4080 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 4101 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.545

MX W479 4102 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 4103 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.847

MX W479 4104 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 4105 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 4172 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.682

MX W479 4173 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.824

MX W479 4227 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 4297 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.508

MX W479 4298 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.590

MX W479 4301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 4493 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 4586 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 4629 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.548

MX W479 4630 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.517

MX W479 4652 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 4653 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.685

MX W479 4654 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 4656 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 4657 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.903

MX W479 4658 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.975

MX W479 4659 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.826

MX W479 4660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.741

MX W479 4661 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.888

MX W479 4677 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.524

MX W479 4679 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.638

MX W479 4680 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.591

MX W479 4685 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 4724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 4996 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.544

MX W479 5331 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.662

MX W479 5332 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 5471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 5472 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 5475 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 5614 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.669

MX W479 5615 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 5621 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 5622 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.623

MX W479 5790 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 5804 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 5805 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 5809 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 5812 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.675

MX W479 5813 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 5814 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 5979 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 5980 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 6120 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 6121 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 6125 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 6126 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 6142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 6146 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 6147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

MX W479 6148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

MX W479 6149 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.883

MX W479 6150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.860

MX W479 6267 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 6268 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 6271 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 6286 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 6292 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.577

MX W479 6294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.615

MX W479 6405 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 6406 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.887

MX W479 6407 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 6408 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.541

MX W479 6409 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 6410 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.740

MX W479 6411 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 6413 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 6430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479	6431	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.841
MX W479	6435	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.023
MX W479	6436	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.778
MX W479	6486	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	6501	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.822
MX W479	6524	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.557
MX W479	6525	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.600
MX W479	6526	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	6528	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.612
MX W479	6529	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	6530	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	6531	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.662
MX W479	6532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.680
MX W479	6548	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.718
MX W479	6549	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.739
MX W479	6550	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.767
MX W479	6553	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.592
MX W479	6554	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.776
MX W479	6555	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.581
MX W479	6556	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	6558	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.988
MX W479	6559	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.766
MX W479	6571	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.523
MX W479	6572	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.870
MX W479	6573	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.668
MX W479	6574	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.705
MX W479	6577	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.791
MX W479	6578	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	6579	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.622

MX W479 6580 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 6581 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.872

MX W479 6582 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.704

MX W479 6583 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 6596 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 6602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 6791 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.545

MX W479 6835 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.564

MX W479 6836 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 6868 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 6870 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 6890 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 6912 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 6913 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 6914 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.591

MX W479 6915 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.571

MX W479 6917 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 6918 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 7014 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 7099 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.534

MX W479 7100 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.759

MX W479 7101 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 7103 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 7111 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 7123 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 7126 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 7127 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 7129 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.509

MX W479 7130 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.683

MX W479	7131	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	7132	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.525
MX W479	7195	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.554
MX W479	7196	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	7199	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	7207	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.635
MX W479	7220	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.644
MX W479	7243	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.628
MX W479	7244	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	7246	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.712
MX W479	7252	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.629
MX W479	7253	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	7255	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.681
MX W479	7316	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.757
MX W479	7317	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.558
MX W479	7318	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.570
MX W479	7319	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	7321	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.602
MX W479	7323	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	7324	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.578
MX W479	7326	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.528
MX W479	7340	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.691
MX W479	7343	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.510
MX W479	7345	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	7346	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	7351	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	7363	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	7364	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.215
MX W479	7366	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.516

MX W479	7367	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.612
MX W479	7368	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.799
MX W479	7369	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.518
MX W479	7388	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.589
MX W479	7389	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.553
MX W479	7390	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.725
MX W479	7391	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.797
MX W479	7393	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7395	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	7396	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	7397	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	7399	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.656
MX W479	7400	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.686
MX W479	7446	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.641
MX W479	7462	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.761
MX W479	7468	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.636
MX W479	7469	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.811
MX W479	7470	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.856
MX W479	7471	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.803
MX W479	7484	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.540
MX W479	7513	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.558
MX W479	7514	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.585
MX W479	7531	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.594
MX W479	7543	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	7585	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.532
MX W479	7586	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.831
MX W479	7587	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.573
MX W479	7602	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.586
MX W479	7603	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.561

MX W479	7660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.708
MX W479	7661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7681	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	7682	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7683	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.707
MX W479	7684	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.628
MX W479	7753	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.641
MX W479	7755	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.502
MX W479	7794	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.607
MX W479	7796	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.032
MX W479	7797	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.212
MX W479	7798	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.800
MX W479	7801	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.637
MX W479	7802	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.906
MX W479	7803	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	7804	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.841
MX W479	7805	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.048
MX W479	7806	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.021
MX W479	7807	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.755
MX W479	7819	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.902
MX W479	7867	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.583
MX W479	7869	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	7873	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	7878	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.513
MX W479	7879	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	7891	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.666
MX W479	7892	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.532
MX W479	7894	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	7896	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556

MX W479 7897 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.506

MX W479 7898 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.761

MX W479 7899 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.773

MX W479 7900 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 7901 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.852

MX W479 7941 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 7948 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 7989 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 7990 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 7991 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.627

MX W479 7992 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.622

MX W479 7993 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.288

MX W479 7994 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 7996 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.606

MX W479 8011 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 8041 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.505

MX W479 8042 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 8062 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 8067 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 8086 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 8087 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.504

MX W479 8088 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.618

MX W479 8089 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 8090 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 8091 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 8107 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 8108 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 8111 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.564

MX W479 8112 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479	8116	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	8117	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.838
MX W479	8118	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.725
MX W479	8119	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.001
MX W479	8120	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.649
MX W479	8190	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.571
MX W479	8191	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.719
MX W479	8192	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	8202	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.572
MX W479	8203	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.563
MX W479	8204	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.511
MX W479	8206	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	8208	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.642
MX W479	8209	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.717
MX W479	8210	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.670
MX W479	8211	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	8213	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.701
MX W479	8214	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.584
MX W479	8215	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.714
MX W479	8216	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.687
MX W479	8229	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.638
MX W479	8230	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	8231	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	8235	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	8238	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.571
MX W479	8301	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.642
MX W479	8304	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.555
MX W479	8306	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.685
MX W479	8307	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574

MX W479	8311	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.550
MX W479	8350	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.596
MX W479	8356	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.511
MX W479	8358	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	8360	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	8427	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.593
MX W479	8428	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.548
MX W479	8442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	8445	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	8447	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	8448	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	8450	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.583
MX W479	8451	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.695
MX W479	8452	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.533
MX W479	8514	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	8553	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.944
MX W479	8567	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.619
MX W479	8570	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.535
MX W479	8571	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	8595	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626
MX W479	8646	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	8660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.567
MX W479	8730	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	8734	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	8735	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.560
MX W479	8760	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.626

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** MODEL SETUP OPTIONS SUMMARY ***

** Model Options Selected:

* Model Uses Regulatory DEFAULT Options
* Model Is Setup For Calculation of Average CONCentration Values.
* NO GAS DEPOSITION Data Provided.
* NO PARTICLE DEPOSITION Data Provided.
* Model Uses NO DRY DEPLETION. DDPLETE = F
* Model Uses NO WET DEPLETION. WETDPLT = F
* Stack-tip Downwash.
* Model Accounts for ELEVated Terrain Effects.
* Use Calms Processing Routine.
* Use Missing Data Processing Routine.
* No Exponential Decay.
* Model Uses RURAL Dispersion Only.
* BULKRN - Use BULKRN Delta-T and SolarRad option for SBL in AERMET
* Model Assumes No FLAGPOLE Receptor Heights.
* The User Specified a Pollutant Type of: TOLUENE

**Model Calculates 1 Short Term Average(s) of: 1-HR
and Calculates ANNUAL Averages

**This Run Includes: 1 Source(s); 1 Source Group(s); and 3106 Receptor(s)

with: 1 POINT(s), including

0 POINTCAP(s) and 0 POINTHOR(s)

and: 0 VOLUME source(s)

and: 0 AREA type source(s)

and: 0 LINE source(s)

and: 0 RLINE/RLINEXT source(s)

and: 0 OPENPIT source(s)

and: 0 BUOYANT LINE source(s) with a total of 0 line(s)

and: 0 SWPOINT source(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 22112

**Output Options Selected:

Model Outputs Tables of ANNUAL Averages by Receptor

Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)

Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours

m for Missing Hours

b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 1730.68 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0

Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07

```
          Output Units   = MICROGRAMS/M**3


 **Approximate Storage Requirements of Model =      3.9 MB of RAM.


 **Input Runstream File:         C:\Users\jonahl\Antea USA, Inc\Connell Resources Inc-Connell -
General\Air Modeling\BEEST Model\

 **Output Print File:           C:\Users\jonahl\Antea USA, Inc\Connell Resources Inc-Connell - General\Air
Modeling\BEEST Model\


 **File for Summary of Results:   C:\Users\jonahl\Antea USA, Inc\Connell Resources Inc-Connell -
General\Air Modeling\BEEST Model\

 *** AERMOD - VERSION 22112  ***   *** Title One                                        ***       05/24/23

 *** AERMET - VERSION  22112 ***   ***                                                 ***       14:29:38

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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL  BULKRN  SigA Data


                          *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***

                                            (1=YES; 0=NO)


      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1

      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1


         NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS
INCLUDED IN THE DATA FILE.
```

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling
Met Version: 22112

Profile file: C:\Users\jonahl\OneDrive - Antea USA, Inc\Desktop\Modeling\Connell\BEEST Welling

Surface format: FREE

Profile format: FREE

Surface station no.: 0 Upper air station no.: 23062

Name: UNKNOWN Name: DENVER WSFO, CO

Year: 2006 Year: 2006

First 24 hours of scalar data

YR MO DY JDY HR H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS WD HT REF TA HT

---

06 01 01 1 01 -26.0 0.162 -9.000 -9.000 -999. 157. 11.8 0.01 1.89 1.00 4.43 326. 10.0 280.1 2.0

06 01 01 1 02 -58.1 0.325 -9.000 -9.000 -999. 445. 42.5 0.01 1.89 1.00 6.57 310. 10.0 281.4
2.0

06 01 01 1 03 -33.0 0.292 -9.000 -9.000 -999. 380. 54.5 0.01 1.89 1.00 5.72 272. 10.0 281.0
2.0

06 01 01 1 04 -14.9 0.128 -9.000 -9.000 -999. 134. 10.2 0.01 1.89 1.00 3.67 320. 10.0 279.8
2.0

06 01 01 1 05 -13.5 0.124 -9.000 -9.000 -999. 105. 10.1 0.01 1.89 1.00 3.71 337. 10.0 279.0
2.0

06 01 01 1 06 -18.3 0.176 -9.000 -9.000 -999. 177. 21.3 0.01 1.89 1.00 4.29 344. 10.0 278.3
2.0

06 01 01 1 07 -34.9 0.286 -9.000 -9.000 -999. 367. 48.1 0.01 1.89 1.00 5.68 327. 10.0 279.3
2.0

06 01 01 1 08 -39.7 0.440 -9.000 -9.000 -999. 701. 154.4 0.01 1.89 1.00 7.96 307. 10.0 279.8
2.0

06 01 01 1 09 -17.3 0.580 -9.000 -9.000 -999. 1058. 810.0 0.01 1.89 0.43 10.10 287. 10.0 279.4
2.0

06 01 01 1 10 38.3 0.682 0.602 0.005 164. 1349. -597.0 0.01 1.89 0.31 11.67 301. 10.0 280.9
2.0

06 01 01 1 11 83.4 0.893 1.120 0.005 486. 2020. -616.6 0.01 1.89 0.26 15.29 291. 10.0 281.4
2.0

06 01 01 1 12 97.2 0.889 1.326 0.005 693. 2013. -521.8 0.01 1.89 0.24 15.20 293. 10.0 281.3
2.0

06 01 01 1 13 137.5 0.968 1.629 0.005 909. 2279. -476.9 0.01 1.89 0.24 16.54 291. 10.0
281.3 2.0

06 01 01 1 14 122.9 0.912 1.653 0.005 1063. 2100. -445.7 0.01 1.89 0.25 15.56 290. 10.0
281.0 2.0

06 01 01 1 15 67.7 0.795 1.385 0.005 1138. 1727. -536.6 0.01 1.89 0.30 13.59 295. 10.0
280.1 2.0

06 01 01 1 16 0.0 0.715 -9.000 -9.000 -999. 1464. 8888.0 0.01 1.89 0.41 12.34 301. 10.0 279.0
2.0

06 01 01 1 17 0.0 0.673 -9.000 -9.000 -999. 1330. 8888.0 0.01 1.89 0.72 11.62 304. 10.0 277.1
2.0

06 01 01 1 18 0.0 0.546 -9.000 -9.000 -999. 987. 8888.0 0.01 1.89 1.00 9.43 293. 10.0 275.9
2.0

06 01 01 1 19 -46.9 0.630 -9.000 -9.000 -999. 1199. 388.5 0.01 1.89 1.00 11.09 294. 10.0 276.2
2.0

06 01 01 1 20 -49.7 0.337 -9.000 -9.000 -999. 566. 55.9 0.01 1.89 1.00 6.57 310. 10.0 275.6
2.0

06 01 01 1 21 -29.5 0.194 -9.000 -9.000 -999. 235. 17.9 0.01 1.89 1.00 4.69 313. 10.0 274.4
2.0

06 01 01 1 22 -29.9 0.238 -9.000 -9.000 -999. 279. 32.8 0.01 1.89 1.00 5.32 338. 10.0 275.8
2.0

06 01 01 1 23 -15.8 0.134 -9.000 -9.000 -999. 123. 11.1 0.01 1.89 1.00 3.67 241. 10.0 274.5
2.0

06 01 01 1 24 -19.1 0.117 -9.000 -9.000 -999. 96. 6.1 0.01 1.89 1.00 3.98 279. 10.0 273.6
2.0

First hour of profile data

YR MO DY HR HEIGHT F WDIR WSPD AMB_TMP sigmaA sigmaW sigmaV

06 01 01 01 2.0 0 -999. -99.00 280.1 99.0 -99.00 -99.00

06 01 01 01 10.0 0 326. 4.43 282.0 5.4 -99.00 0.42

06 01 01 01 60.0 1 316. 5.10 283.1 6.1 -99.00 0.54

F indicates top of profile (=1) or below (=0)

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*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF TOLUENE IN MICROGRAMS/M**3 **

NETWORK

GROUP ID AVERAGE CONC RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

ALL 1ST HIGHEST VALUE IS 0.00543 AT (499450.00, 4508500.00, 1603.57, 1603.57, 0.00) DC

2ND HIGHEST VALUE IS 0.00531 AT (499450.00, 4508450.00, 1603.33, 1603.33, 0.00) DC

3RD HIGHEST VALUE IS 0.00527 AT (499700.00, 4508150.00, 1610.72, 1610.72, 0.00) DC

4TH HIGHEST VALUE IS 0.00517 AT (499450.00, 4508550.00, 1603.86, 1603.86, 0.00) DC

5TH HIGHEST VALUE IS 0.00512 AT (499750.00, 4508100.00, 1608.86, 1608.86, 0.00) DC

6TH HIGHEST VALUE IS 0.00505 AT (499750.00, 4508150.00, 1610.15, 1610.15, 0.00) DC

7TH HIGHEST VALUE IS 0.00502 AT (499700.00, 4508100.00, 1609.85, 1609.85, 0.00) DC

8TH HIGHEST VALUE IS 0.00500 AT (499400.00, 4508500.00, 1603.34, 1603.34, 0.00) DC

9TH HIGHEST VALUE IS 0.00497 AT (499800.00, 4508100.00, 1606.47, 1606.47, 0.00) DC

10TH HIGHEST VALUE IS 0.00489 AT (499400.00, 4508550.00, 1603.60, 1603.60, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF TOLUENE IN MICROGRAMS/M**3 **

DATE NETWORK

GROUP ID AVERAGE CONC (YYMMDDHH) RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

- -

ALL HIGH 1ST HIGH VALUE IS 0.37369 ON 06102824: AT (499600.00, 4508200.00, 1608.71, 1608.71, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART

GP = GRIDPOLR

DC = DISCCART

DP = DISCPOLR

*** AERMOD - VERSION 22112 *** *** Title One *** 05/24/23

*** AERMET - VERSION 22112 *** *** *** 14:29:38

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*** MODELOPTs: RegDFAULT CONC ELEV NODRYDPLT NOWETDPLT RURAL BULKRN SigA Data

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)

A Total of 624 Warning Message(s)

A Total of 142 Informational Message(s)

A Total of 8760 Hours Were Processed

A Total of 1 Calm Hours Identified

A Total of 141 Missing Hours Identified (1.61 Percent)

******** FATAL ERROR MESSAGES ********

*** NONE ***

******** WARNING MESSAGES ********

ME W181 3169 MEOPEN: BULKRN Delta-T & SolarRad option for SBL was used in AERMET

MX W403 3169 PFLCNV: Turbulence data is being used w/o ADJ_U* option SigA Data

MX W479 24 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 29 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 30 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 31 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.712

MX W479 48 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 51 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 52 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 53 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 116 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 141 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 143 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.877

MX W479 147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.581

MX W479 148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 151 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 215 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 216 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.734

MX W479 221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 222 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.588

MX W479 244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 291 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.544

MX W479 296 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 308 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.572

MX W479 312 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 313 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.700

MX W479 314 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.735

MX W479 317 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.795

MX W479 318 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.549

MX W479 320 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.664

MX W479 321 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 340 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 342 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.574

MX W479 344 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 475 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.580

MX W479 479 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 482 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.746

MX W479 483 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 484 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.515

MX W479 486 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 487 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.681

MX W479 488 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.697

MX W479 489 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.921

MX W479 509 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 524 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 526 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 527 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 528 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.926

MX W479 529 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.676

MX W479 530 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.808

MX W479 531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.740

MX W479 532 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.537

MX W479 533 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.621

MX W479 534 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.830

MX W479 535 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 550 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 554 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 555 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.719

MX W479 556 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.743

MX W479 573 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.536

MX W479 574 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.241

MX W479 575 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 576 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.562

MX W479 577 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 578 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.213

MX W479 579 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 580 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 581 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.713

MX W479 582 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.678

MX W479 583 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.869

MX W479 584 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 595 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.603

MX W479 597 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.667

MX W479 599 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.596

MX W479 600 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 601 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.705

MX W479 605 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 629 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.665

MX W479 632 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.505

MX W479 724 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 725 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 727 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 775 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 822 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 835 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479 836 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.517

MX W479 837 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 838 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 839 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 932 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 941 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.557

MX W479 1029 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.735

MX W479 1031 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479 1034 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 1035 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 1051 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 1052 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.500

MX W479 1053 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.884

MX W479 1054 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.859

MX W479 1055 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.766

MX W479 1056 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.677

MX W479 1060 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.721

MX W479 1061 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.639

MX W479 1197 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1198 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.709

MX W479 1199 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 1200 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.530

MX W479 1201 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1202 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.650

MX W479 1203 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.590

MX W479 1204 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.726

MX W479 1205 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.750

MX W479 1206 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.700

MX W479 1208 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1218 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 1219 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.824

MX W479 1220 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 1221 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.731

MX W479 1222 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.635

MX W479 1223 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.599

MX W479 1224 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.715

MX W479 1225 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.565

MX W479 1226 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1227 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.778

MX W479 1228 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 1229 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1230 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 1231 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.753

MX W479 1243 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.538

MX W479 1244 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 1245 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 1276 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 1277 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 1278 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.729

MX W479 1293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.683

MX W479 1294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.851

MX W479 1295 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.602

MX W479 1296 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 1297 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 1300 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.634

MX W479 1301 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.723

MX W479 1302 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479 1303 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.516

MX W479 1316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.692

MX W479 1343 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 1344 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.720

MX W479 1345 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 1346 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 1347 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.663

MX W479 1348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.520

MX W479 1351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 1363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 1365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.696

MX W479 1373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.592

MX W479 1374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1375 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.644

MX W479 1389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.622

MX W479	1392	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	1394	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.577
MX W479	1395	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	1396	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.671
MX W479	1397	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	1441	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	1442	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	1483	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.647
MX W479	1532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	1537	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	1539	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.613
MX W479	1540	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.597
MX W479	1541	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.648
MX W479	1543	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	1566	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.569
MX W479	1661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	1989	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.519
MX W479	1990	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	1991	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	1993	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.563
MX W479	1994	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.534
MX W479	2086	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	2088	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.531
MX W479	2089	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	2093	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	2228	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.579
MX W479	2229	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.638
MX W479	2230	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.693
MX W479	2231	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.634

MX W479 2232 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.632

MX W479 2234 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 2235 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.736

MX W479 2253 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 2254 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.510

MX W479 2255 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.755

MX W479 2262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.806

MX W479 2348 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.575

MX W479 2349 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.568

MX W479 2350 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 2351 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.710

MX W479 2352 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.834

MX W479 2353 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.525

MX W479 2354 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 2355 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.560

MX W479 2356 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 2373 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.752

MX W479 2374 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.569

MX W479 2378 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 2379 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.647

MX W479 2380 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 2382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.698

MX W479 2399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.920

MX W479 2421 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 2422 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 2424 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 2425 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.684

MX W479 2428 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 2429 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.578

MX W479	2430	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.528
MX W479	2445	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.748
MX W479	2446	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	2447	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.779
MX W479	2448	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.743
MX W479	2449	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.733
MX W479	2450	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	2468	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.568
MX W479	2469	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.019
MX W479	2470	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.976
MX W479	2471	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.882
MX W479	2472	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.650
MX W479	2542	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.620
MX W479	2543	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.826
MX W479	2544	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.734
MX W479	2545	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.629
MX W479	2546	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.769
MX W479	2547	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.656
MX W479	2548	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.679
MX W479	2549	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.853
MX W479	2550	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.715
MX W479	2615	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.589
MX W479	2616	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	2617	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.614
MX W479	2639	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	2640	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.715
MX W479	2641	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.777
MX W479	2643	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.648
MX W479	2645	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.602

MX W479	2646	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	2660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	2663	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.896
MX W479	2664	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	2666	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	2669	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	2670	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.500
MX W479	2763	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.504
MX W479	2783	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.567
MX W479	2786	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.588
MX W479	2788	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.748
MX W479	2789	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	2832	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.501
MX W479	2833	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.506
MX W479	2900	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.635
MX W479	2901	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.673
MX W479	2902	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.730
MX W479	2903	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	2905	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.672
MX W479	2906	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.753
MX W479	2907	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	3045	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.549
MX W479	3047	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.554
MX W479	3048	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	3148	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.666
MX W479	3149	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	3168	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.553
MX W479	3169	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.616
MX W479	3170	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.601

MX W479 3171 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.796

MX W479 3172 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.539

MX W479 3173 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.889

MX W479 3174 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.658

MX W479 3239 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 3262 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479 3263 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 3289 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 3290 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 3291 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.607

MX W479 3293 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 3294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 3313 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 3316 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 3337 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.519

MX W479 3338 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.521

MX W479 3339 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 3363 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.584

MX W479 3364 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.617

MX W479 3365 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.666

MX W479 3366 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.576

MX W479 3382 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.620

MX W479 3383 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.727

MX W479 3384 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.606

MX W479 3453 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.648

MX W479 3454 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.711

MX W479 3457 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.527

MX W479 3509 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.654

MX W479 3525 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.614

MX W479	3671	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.541
MX W479	3674	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	3693	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	3748	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.562
MX W479	3792	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.536
MX W479	3796	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.568
MX W479	4029	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.848
MX W479	4030	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.707
MX W479	4031	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.721
MX W479	4035	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.520
MX W479	4036	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.645
MX W479	4037	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	4057	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.502
MX W479	4080	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	4101	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.545
MX W479	4102	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.715
MX W479	4103	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.847
MX W479	4104	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.608
MX W479	4105	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.522
MX W479	4172	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.682
MX W479	4173	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.824
MX W479	4227	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	4297	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.508
MX W479	4298	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.590
MX W479	4301	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.582
MX W479	4493	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.603
MX W479	4586	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	4629	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.548
MX W479	4630	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.517

MX W479	4652	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.510
MX W479	4653	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.685
MX W479	4654	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	4656	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.599
MX W479	4657	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.903
MX W479	4658	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.975
MX W479	4659	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.826
MX W479	4660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.741
MX W479	4661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.888
MX W479	4677	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.524
MX W479	4679	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.638
MX W479	4680	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	4685	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.731
MX W479	4724	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.589
MX W479	4996	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.544
MX W479	5331	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.662
MX W479	5332	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.561
MX W479	5471	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	5472	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.555
MX W479	5475	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.635
MX W479	5614	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.669
MX W479	5615	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.549
MX W479	5621	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.557
MX W479	5622	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.623
MX W479	5790	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.581
MX W479	5804	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.522
MX W479	5805	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.719
MX W479	5809	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.553
MX W479	5812	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.675

MX W479 5813 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.645

MX W479 5814 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 5979 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 5980 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.546

MX W479 6120 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.528

MX W479 6121 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.501

MX W479 6125 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.556

MX W479 6126 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 6142 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 6146 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.582

MX W479 6147 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

MX W479 6148 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.779

MX W479 6149 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.883

MX W479 6150 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.860

MX W479 6267 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 6268 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.543

MX W479 6271 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.529

MX W479 6286 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.595

MX W479 6292 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.577

MX W479 6294 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.615

MX W479 6405 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.611

MX W479 6406 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.887

MX W479 6407 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.555

MX W479 6408 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.541

MX W479 6409 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 6410 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.740

MX W479 6411 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 6413 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.513

MX W479 6430 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.587

MX W479	6431	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.841
MX W479	6435	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.023
MX W479	6436	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.778
MX W479	6486	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	6501	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.822
MX W479	6524	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.557
MX W479	6525	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.600
MX W479	6526	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	6528	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.612
MX W479	6529	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	6530	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	6531	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.662
MX W479	6532	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.680
MX W479	6548	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.718
MX W479	6549	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.739
MX W479	6550	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.767
MX W479	6553	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.592
MX W479	6554	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.776
MX W479	6555	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.581
MX W479	6556	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	6558	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.988
MX W479	6559	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.766
MX W479	6571	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.523
MX W479	6572	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.870
MX W479	6573	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.668
MX W479	6574	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.705
MX W479	6577	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.791
MX W479	6578	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	6579	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.622

MX W479	6580	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	6581	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.872
MX W479	6582	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.704
MX W479	6583	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.559
MX W479	6596	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	6602	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.684
MX W479	6791	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.545
MX W479	6835	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.564
MX W479	6836	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	6868	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	6870	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.516
MX W479	6890	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	6912	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.576
MX W479	6913	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.636
MX W479	6914	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.591
MX W479	6915	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.571
MX W479	6917	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	6918	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.728
MX W479	7014	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7099	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.534
MX W479	7100	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.759
MX W479	7101	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7103	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.526
MX W479	7111	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.515
MX W479	7123	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	7126	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.603
MX W479	7127	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	7129	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	7130	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.683

MX W479	7131	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	7132	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.525
MX W479	7195	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.554
MX W479	7196	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.512
MX W479	7199	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.566
MX W479	7207	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.635
MX W479	7220	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.644
MX W479	7243	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.628
MX W479	7244	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.575
MX W479	7246	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.712
MX W479	7252	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.629
MX W479	7253	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.710
MX W479	7255	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.681
MX W479	7316	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.757
MX W479	7317	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.558
MX W479	7318	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.570
MX W479	7319	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.552
MX W479	7321	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.602
MX W479	7323	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556
MX W479	7324	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.578
MX W479	7326	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.528
MX W479	7340	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.691
MX W479	7343	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.510
MX W479	7345	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.627
MX W479	7346	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.565
MX W479	7351	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.538
MX W479	7363	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.547
MX W479	7364	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.215
MX W479	7366	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.516

MX W479 7367 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.612

MX W479 7368 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.799

MX W479 7369 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.518

MX W479 7388 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 7389 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.553

MX W479 7390 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.725

MX W479 7391 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.797

MX W479 7393 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 7395 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.616

MX W479 7396 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 7397 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.559

MX W479 7399 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.656

MX W479 7400 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.686

MX W479 7446 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.641

MX W479 7462 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.761

MX W479 7468 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.636

MX W479 7469 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.811

MX W479 7470 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.856

MX W479 7471 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.803

MX W479 7484 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.540

MX W479 7513 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.558

MX W479 7514 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 7531 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.594

MX W479 7543 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 7585 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.532

MX W479 7586 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.831

MX W479 7587 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.573

MX W479 7602 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.586

MX W479 7603 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.561

MX W479	7660	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.708
MX W479	7661	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.503
MX W479	7681	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574
MX W479	7682	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.643
MX W479	7683	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.707
MX W479	7684	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.628
MX W479	7753	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.641
MX W479	7755	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.502
MX W479	7794	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.607
MX W479	7796	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.032
MX W479	7797	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.212
MX W479	7798	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.800
MX W479	7801	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.637
MX W479	7802	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.906
MX W479	7803	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	7804	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.841
MX W479	7805	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.048
MX W479	7806	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.021
MX W479	7807	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.755
MX W479	7819	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.902
MX W479	7867	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.583
MX W479	7869	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	7873	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.542
MX W479	7878	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.513
MX W479	7879	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	7891	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.666
MX W479	7892	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.532
MX W479	7894	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.509
MX W479	7896	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.556

MX W479 7897 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.506

MX W479 7898 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.761

MX W479 7899 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.773

MX W479 7900 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 7901 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.852

MX W479 7941 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.507

MX W479 7948 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.503

MX W479 7989 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.671

MX W479 7990 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 7991 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.627

MX W479 7992 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.622

MX W479 7993 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=1.288

MX W479 7994 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.608

MX W479 7996 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.606

MX W479 8011 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.552

MX W479 8041 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.505

MX W479 8042 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.604

MX W479 8062 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.522

MX W479 8067 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.589

MX W479 8086 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.668

MX W479 8087 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.504

MX W479 8088 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.618

MX W479 8089 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.531

MX W479 8090 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.585

MX W479 8091 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.523

MX W479 8107 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.613

MX W479 8108 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.690

MX W479 8111 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.564

MX W479 8112 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.633

MX W479	8116	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	8117	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.838
MX W479	8118	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.725
MX W479	8119	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=1.001
MX W479	8120	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.649
MX W479	8190	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.571
MX W479	8191	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.719
MX W479	8192	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.617
MX W479	8202	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.572
MX W479	8203	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.563
MX W479	8204	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.511
MX W479	8206	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.527
MX W479	8208	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.642
MX W479	8209	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.717
MX W479	8210	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.670
MX W479	8211	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.664
MX W479	8213	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.701
MX W479	8214	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.584
MX W479	8215	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.714
MX W479	8216	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.687
MX W479	8229	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.638
MX W479	8230	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.543
MX W479	8231	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.539
MX W479	8235	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.507
MX W479	8238	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.571
MX W479	8301	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.642
MX W479	8304	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.555
MX W479	8306	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.685
MX W479	8307	TGINIT: Potential temperature gradient is out-of-range:	TG4PFL=0.574

MX W479 8311 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.550

MX W479 8350 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.596

MX W479 8356 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.511

MX W479 8358 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.547

MX W479 8360 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.512

MX W479 8427 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.593

MX W479 8428 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.548

MX W479 8442 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.566

MX W479 8445 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.526

MX W479 8447 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.643

MX W479 8448 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.591

MX W479 8450 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.583

MX W479 8451 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.695

MX W479 8452 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.533

MX W479 8514 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.597

MX W479 8553 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.944

MX W479 8567 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.619

MX W479 8570 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.535

MX W479 8571 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.544

MX W479 8595 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.626

MX W479 8646 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.542

MX W479 8660 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.567

MX W479 8730 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.728

MX W479 8734 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.672

MX W479 8735 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.560

MX W479 8760 TGINIT: Potential temperature gradient is out-of-range: TG4PFL=0.626

DELICH ASSOCIATES Traffic & Transportation Engineering
2272 Glen Haven Drive Loveland, Colorado 80538
Phone: (970) 669-2061 Fax: (970) 669-5034

MEMORANDUM

TO: Dan Egger, Ditesco Services
Larimer County Engineering
Tim Bilobran, CDOT Region 4
Town of Wellington

FROM: Matt Delich

DATE: March 3, 2023

SUBJECT: Connell Asphalt Batch Plant Transportation Impact Study (TIS) – Response to comments (File: 2216ME01)

This memorandum addresses the staff comments from Larimer County and CDOT regarding the "Connell Asphalt Batch Plant Transportation Impact Study," dated October 2022.

Larimer County had comments regarding the use of Town of Wellington criteria for the streets and intersections. Larimer County requested that criteria from the Larimer County Rural Roadway Standards be used for determining auxiliary lanes at intersections. In particular, the Larimer County Road 7 (LCR7)/Larimer County Road 66 (LCR66) intersection. The Town of Wellington uses the criteria contained in the Standard Design Criteria and Standard Construction Requirements (SDCSCR), Town of Wellington. Typically, when producing a TIS for a site within a municipality's growth management area, the study is scoped with that municipality and the municipality's criteria is used. The proposed Connell Asphalt Batch Plant site is within the Town of Wellington's growth management area. Therefore, the TIS was scoped with the Town of Wellington (August 12, 2022) and Wellington criteria was used. In order to address Larimer County comments, this memorandum will state the requirements using the Larimer County Rural Roadway Standards and using SDCSCR.

The Larimer County Rural Roadway Standards generally uses the Colorado State Highway Access Code (SHAC) criteria for auxiliary lanes at intersections. For analysis purposes, LCR7 is assumed to be evaluated as a Non-Rural Arterial (NR-B) roadway. Based upon the SHAC, with a NR-B category and a posted speed of greater than 40 mph, a left-turn deceleration lane is required at an intersection with a projected peak hour ingress turning volume greater than 10 vehicles per hour (vph) and a right-turn deceleration lane is required at an intersection with a projected peak hour ingress turning volume greater than 25 vph. Acceleration lanes are generally not required. Left-turn and right-turn deceleration lanes should provide only the deceleration length. In the short range (2025) future, left-turn deceleration lanes would not be required at the LCR7/LCR66 intersection. A southbound

right-turn lane deceleration would be required. In the long range (2045) future, a northbound left-turn deceleration lane would be required at the LCR7/LCR66 intersection. A southbound left-turn deceleration lane does not meet the criteria. A southbound right-turn lane deceleration would be required. It is important to note that in Section 3.5 of the SHAC, a right-turn deceleration lane may be dropped if the 20th year volume in the in the travel lane is predicted to be below 150 vehicles per hour (vph). In the long range (2045) future, the forecasted southbound volume at the LCR7/LCR66 intersection is 125 vph or less. Therefore, until greater growth is forecasted on LCR7, the southbound right-turn deceleration lane can be waived.

Auxiliary turn lane requirements are based on the Town of Wellington Standard Design Criteria and Standard Construction Requirements. As arterial streets, LCR7 and LCR66 are supposed to have left-turn deceleration lanes at all intersections. However, since this area of Wellington is fairly rural, LCR7 and LCR66 are not expected to be reconstructed to the full arterial street standards until other significant development occurs. Using Volume Warrants for Left-turn Lanes at Unsignalized Intersections, left-turn deceleration lanes would not be required in the short range (2025) or long range (2045) futures. Using Traffic Volume Guidelines for Design Right-turn Lanes, a southbound right-turn deceleration lane would not be required in the short range (2025) future at the LCR7/LCR66 intersection. In the long range (2045) future, a southbound right-turn deceleration lane would be at the threshold of requiring the lane in the afternoon peak hour.

It is our understanding that Connell Resources will pave/construct LCR66 along the frontage of the property to the LCR7/LCR66 intersection. This cross section will include five foot bicycle lanes.

Tim Bilobran, CDOT Region 4 requested an inventory of the acceleration and deceleration geometry at the I-25/Owl Canyon interchange. The State Highway Access Code has acceleration and deceleration criteria up to 70 mph. It was agreed to use the acceleration and deceleration criteria in A Policy on Geometric Design of Highways and Streets, 7th Edition, 2018, AASHTO (10.9.6.4.7 – 10.9.6.6.2). For analysis purposes, the criteria used assumed a flat grade of less than three percent, even though the on-ramps and off-ramps have upgrades and downgrades. This will result in a conservative analysis, since the ramp upgrades would aid in deceleration and the ramp downgrades would aid in acceleration. This analysis also assumed a stop condition at the top of the ramps. The various lane lengths were scaled from aerial photographs of the I-25/Owl Canyon interchange.

For acceleration lanes from a stop condition to 75 mph, the cited reference states that the acceleration lane should be 1790 feet. The cited reference also states that a taper length of 300 feet is adequate for speeds up to 75 mph. The SHAC suggests a taper of 25:1 (300 feet) for all speeds greater than 60 mph. The taper length applies to both acceleration and deceleration. For 75 mph, the total is 2090 feet (1790' + 300'). At the I-25/Owl Canyon interchange, the existing acceleration lane length for the southbound on-ramp is approximately 1670 feet, with a taper length of approximately 300 feet (total 1970

feet). This existing acceleration lane is approximately 120 feet shorter than the cited criteria. For the northbound on-ramp, the existing acceleration lane length is approximately 2000 feet, with a taper length of approximately 400 feet (total 2400 feet). This existing acceleration lane is approximately 310 feet longer than the cited criteria.

For deceleration lanes from 75 mph to a stop condition, the cited reference states that the deceleration lane should be 660 feet. The total length (plus taper at 300 feet) would be 960 feet. At the I-25/Owl Canyon interchange, the existing deceleration lane length for the southbound off-ramp is approximately 1480 feet, with a taper length of approximately 370 feet (total 1850 feet). This existing deceleration lane is approximately 890 feet longer than the recommended 960 feet. For the northbound off-ramp, the existing deceleration lane length is approximately 1640 feet, with a taper length of approximately 330 feet (total 1970 feet). This existing deceleration lane is approximately 1010 feet longer than the recommended 960 feet.

The foregoing memorandum addresses comments from Larimer County and CDOT regarding the, “Connell Asphalt Batch Plant Transportation Impact Study.” If there are any additional questions or comments, do not hesitate to contact us.

Connell Batch Plant - Comment Response Log			
CDOT (File Name: CDOT--Email_Comments)			
No.	Page	Comment	Response
1		Have the applicant's traffic engineer state whether the acceleration lanes onto I-25 (especially southbound) are up to the full Access code standards since this is predominantly a heavily-laden truck traffic generator	The TIS has been amended with a memorandum to address the CDOT concerns
Larimer County Engineering (File Name: LC_Wellington Referral - Connell Resources Site Plan)			
No.	Page	Comment	Response
TIS Review			
1		The Traffic Impact Study (TIS), included with this application has been conducted utilizing the Town of Wellington's Standard Design Criteria and Standard Construction Requirements. Larimer County will require that the TIS be revised to follow the Criteria shown in Appendix F of the Larimer County Rural Area Roadway Standards (LCRARS) as most offsite intersections impacted by this development fall within the unincorporated area.	The TIS has been amended with a memorandum to address the concerns of the County review and clarify assumptions used
2		Trip distribution – Clarification on finished product (Where is it going?). Are we to assume that all trips hauling the finished product to and from the site are to head east via CR66, proceed north on CR7, west along CR70, and then exit the County's roadway system onto I-25?	Primary truck traffic will be routed along CR 70, south on CR 7, and west on CR 66 to the site. Standard practice will not route truck traffic to the west on CR 66
3		How will these haul routes be enforced? Are specific conditions of approval being proposed?	Haul routes are designated by Connell batch plant personnel
4		The trip generation appears low for a plant of this capacity, how were these numbers determined?	Trip generation is based on current plant operations
5		Are the peak numbers averaged over the entire year or are they representative of peak season?	Peak numbers are representative of the summer season
6		Were bicyclists considered in the evaluation of the proposed haul routes? CR70→CR7→CR66→CR9 is a frequented route for cyclists. We have significant concerns for the safety of cyclists with an increase in heavy truck traffic of this magnitude.	Per discussions, the proposed 2' gravel shoulder will instead be paved to create a 4' wide paved shoulder/bike lane will be installed along CR66
7		Larimer County will require that the following intersections be evaluated using LCRARS Appendix F criteria: (CR70&CR7, CR66&CR7, CR66&CR9, CR66&Site Access, CR9&62E, CR9&HWY1)	The CR66/CR7 intersection has been evaluated in more detail and updated as part of the memorandum. Additional intersections will not be evaluated
8		CDOT should also be made aware of this project as it may have implications on their planned HWY 1 realignment at CR9 and CR62E.	CDOT was a reference agency and has provided comments on the project
Adjacent and/or Offsite Roadway Improvements			
9		Larimer County's Land Use Code Article 4 requirements specific to Adequate Public Facilities require that roadway segments that experience vehicular traffic volumes in excess of 400- trips/day be paved. The existing plus proposed traffic volumes for CR66 exceed this threshold. Paving will be required for the segment of CR66 from the current town limits (west of Boxelder Creek) to CR7. The paved roadway section will need to consist of a 28-ft paved surface to accommodate a minimum of two 12-ft lanes and two 2-ft shoulders. It is strongly recommended that this section be carried through to CR7.	Truck traffic will not be routed west to CR9. Per discussions, asphalt pavement will not extend to the west beyond the current limits shown on the drawings
10		Additional considerations will need to be given for cyclists along CR66. Shoulders wider than the required 2-ft may be needed to provide a safe corridor for cyclists adjacent to heavy haul trucks.	Per discussions, the proposed 2' gravel shoulder will instead be paved to create a 4' wide paved shoulder/bike lane will be installed along CR66
11		The existing railroad crossing will need to be updated. It appears that this issue is already being considered.	The applicant's proposed work is outside the RR ROW and will not update the roadway within the RR ROW. However, BNSF plans to update the crossing and the applicant design will accommodate these updates
12		Under the current criteria, the TIS states that a northbound right-turn lane approaching the LCR70/LCR7 intersection will be required in the short-range projections, and a southbound right-turn lane approaching the LCR7/LCR66 intersection will be required in the long range (2045) projections. Improvements required by either short-range or long-range projections are to be completed at the time of development. Expectations for long term build out by others is not acceptable.	The CR66/CR7 intersection has been evaluated in more detail and updated as part of the memorandum.
13		Depending on the requested revisions to the TIS, offsite improvements may be required at several of the intersections highlighted previously.	Additional off-site improvements are not anticipated.

Note 1: The comment response log includes comments related to the construction drawings for the proposed site. As part of the site plan submittal, the Applicant has removed the bulk of the construction drawings and has submitted drawings that are pertinent to the site plan approval. Following approval of the site plan by the Planning Commission, the Applicant will complete the construction drawings and drainage report and will address these additional comments at that time.

DELICH ASSOCIATES Traffic & Transportation Engineering
2272 Glen Haven Drive Loveland, Colorado 80538
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MEMORANDUM

TO: Jill Burrell/Dan Egger, Ditesco
John Warren, Connell Resources
Town of Wellington Staff
Sean Kellar, Kellar Engineering

FROM: Matt Delich

DATE: November 3, 2022

SUBJECT: Connell Asphalt Batch Plant Transportation Impact Study – Response to Comments (File: 2216ME01)

This memorandum responds to comments regarding the ***Connell Asphalt Batch Plant Transportation Impact Study*** (TIS) dated October 2022. The comments from Sean Kellar, Wellington Traffic Consultant are attached. A memorandum addressing the comments was requested. A revised TIS was deemed not to be necessary.

Each comment is addressed below.

Comment 1 – Acknowledged.

Comment 2 – Acknowledged.

Comment 3 – There is a single track railroad crossing on CR66, located approximately 1200 feet to the east of the site access driveway. According to Wellington staff, there are six trains per day on this track. The current control at this railroad crossing is overhead flashing-light signals. County Road 66 increases in grade to the east, cresting approximately 225 feet east of the railroad tracks. The railroad crossing is fully visible by traffic in the eastbound direction for more than 1500 feet. For traffic approaching in the westbound direction, the overhead flashing-light signal is visible at a location approximately 475 feet east of the railroad crossing. The stopping sight distance (at a design speed of 45 mph [5 mph greater than the posted speed of 40 mph]) is 360 feet. This is considerably less than the available 475 feet. This segment of CR66 will be paved and the crest will be lowered by 2 feet. Therefore, the stopping sight distance will be more than the already satisfactory stopping sight distance described above. The BNSF Railroad plans to install crossing arms, which will further improve the safety at this crossing. It is concluded that the railroad crossing is safe.

Comment 4 – The project will pave CR66 from the west property line to CR7.

Comment 5 – Acknowledged.

The foregoing provides responses to Wellington Traffic Consultant comments. Do not hesitate to contact me if there are questions or if additional information is required.

KELLAR ENGINEERING

October 19, 2022

Connell Asphalt Batch Plant, Wellington Traffic Impact Study (TIS) Review Comments:

1. Kellar Engineering (KE) has reviewed the submitted Connell Asphalt Batch Plant Traffic Impact Study (TIS). Thank you for providing this information to review. The submitted TIS generally follows industry standard methods.

2. The level of service (LOS) analysis in the TIS appears appropriate and all study intersections and the proposed site access appears to meet the Town's intersection LOS standards.

3. The safety with the railroad crossing and added traffic on CR 66 should be addressed in the TIS. While it appears that sufficient spacing exists between the site access and railroad crossing, please provide more information in the narrative of the TIS explaining how this was accounted for.

4. The project is proposing to add 254 ADT to CR 66. CR 66 is currently unpaved west of CR 7. Adding heavy truck traffic to CR 66 could result in the need for future maintenance of this unpaved portion of CR 7. It is recommended that the Connell Asphalt Batch plant agrees to work with the Town to ensure that the condition of CR 66 continues to be in an acceptable, well-maintained condition per the discretion of the Town of Wellington.

5. KE concurs with the findings in the TIS that with the addition of the Connell Asphalt Batch Plant site generated traffic, a northbound right-turn lane will be required approaching the Own Canyon Road (CR 70)/CR 7 intersection.

If you have any questions, please do not hesitate to contact me at (970) 219-1602 or skellar@kellarengineering.com.

Respectfully,

Kellar Engineering LLC

Sean K. Kellar, PE, PTOE
Colorado PE #38650

CONNELL ASPHALT BATCH PLANT
TRANSPORTATION IMPACT STUDY

WELLINGTON, COLORADO

OCTOBER 2022

Prepared for:

Ditesco, LLC
2133 South Timberline Road, Suite 110
Fort Collins, CO 80525

Prepared by:

DELICH ASSOCIATES
2272 Glen Haven Drive
Loveland, CO 80538
Phone: 970-669-2061
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Project # 2216

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A. Base Assumptions Form
B. Peak Hour Traffic Counts
C. Current Peak Hour Operation/Level of Service Descriptions/Wellington Motor Vehicle LOS Standards (Intersections)
D. Short Range (2025) Background Peak Hour Operation
E. Long Range (2045) Background Peak Hour Operation
F. Short Range (2025) Total Peak Hour Operation
G. Long Range (2045) Total Peak Hour Operation

I. INTRODUCTION

This transportation impact study (TIS) addresses the capacity, geometric, and control requirements at and near the proposed Connell Asphalt Batch Plant project. The proposed Connell Asphalt Batch Plant site is located south of (adjacent to) Larimer County Road 66 (LCR66) and west of Larimer County Road 7 (LCR7) in Wellington, Colorado.

During the course of the analysis, numerous contacts were made with the project owners (Connell Resources, Inc.), the project engineer (Ditesco, LLC), and the Town of Wellington staff. The Transportation Impact Study Base Assumptions form and related documents are provided in Appendix A. Due to the trip generation, this is a full transportation impact study. The study involved the following steps:

- Collect physical, traffic, and development data;
- Perform trip generation, trip distribution, and trip assignment;
- Determine peak hour traffic volumes;
- Conduct capacity and operational level of service analyses on key intersections;
- Analyze signal warrants;
- Conduct level of service evaluation of pedestrian, bicycle, and transit modes of transportation

II. EXISTING CONDITIONS

The location of the Connell Asphalt Batch Plant project is shown in Figure 1. It is important that a thorough understanding of the existing conditions be presented.

Land Use

Land uses in the area are primarily residential, agricultural, and commercial. There are residential uses to the southwest of the site. There are commercial uses to the south of the site. The proposed Connell Asphalt Batch Plant site is currently vacant. The center of Wellington lies to the south of the proposed Connell Asphalt Batch Plant site.

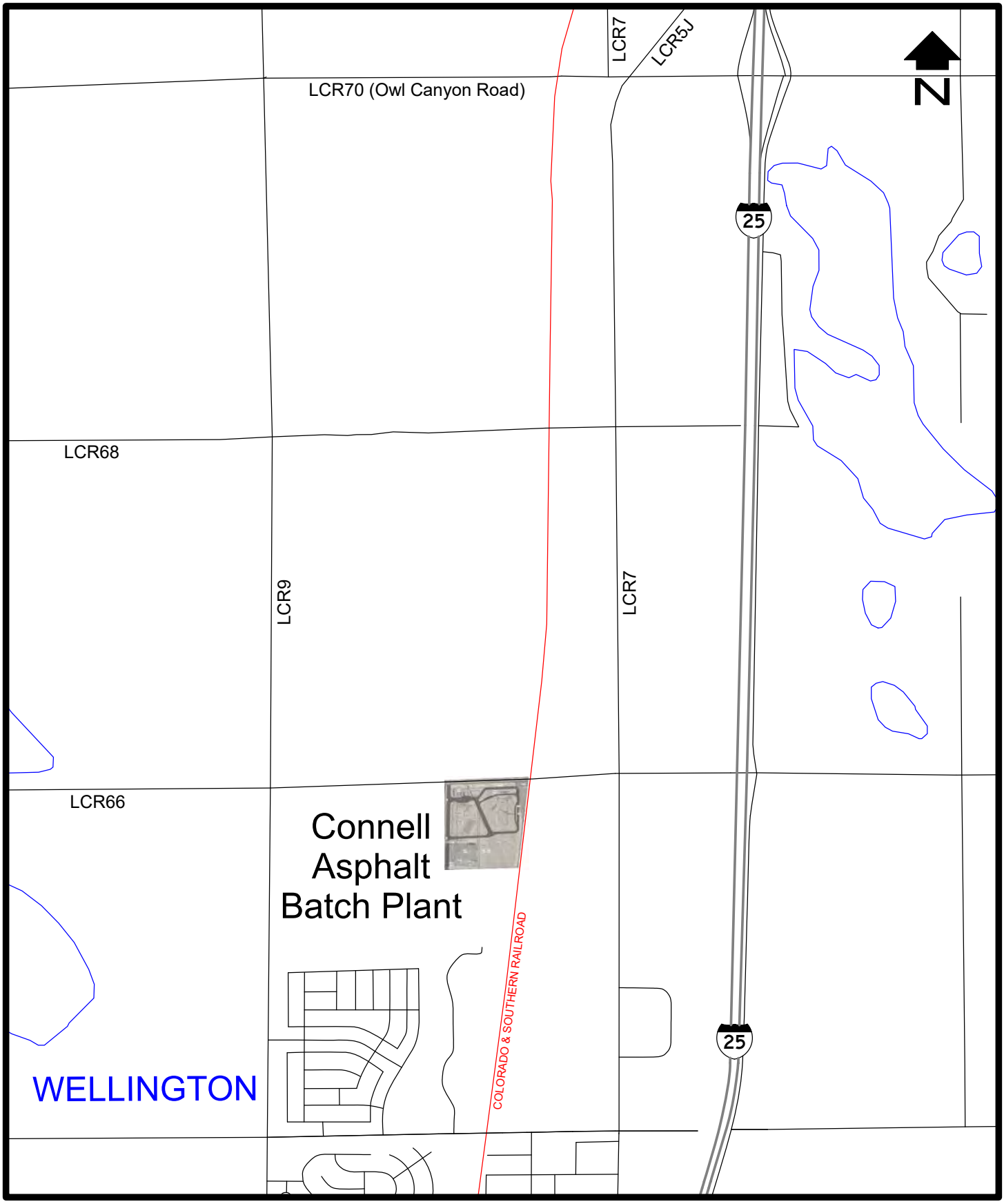
Streets

The primary roads near the Connell Asphalt Batch Plant site are LCR7, LCR66, and LCR70. Figure 2 shows a depiction of the existing geometry at various road intersections.

Larimer County Road 7 is to the east of the proposed Connell Asphalt Batch Plant site. It is a north-south road classified as an arterial according to the Wellington Master Street Plan. Currently, LCR7 has a two-lane rural cross section (no center lane) in this area. The posted speed limit in this area of LCR7 is 55 mph. At the LCR7/LCR66 intersection, LCR7 has all northbound and southbound movements combined into single lanes. The LCR7/LCR66 intersection has stop sign control on LCR66. Approaching LCR70, LCR7 veers to the east to line up with LCR5J before intersecting with LCR70. At the LCR70/LCR7-LCR5J intersection, LCR7 and LCR5J has all northbound and southbound movements combined into single lanes. The LCR70/LCR7-LCR5J intersection has stop sign control on LCR7 and LCR5J. Approximately 250 feet to the west of the LCR70/LCR7-LCR5J intersection, LCR7 continues to the north of LCR70. At the LCR70/LCR7 intersection, LCR7 has all southbound movements combined into a single lane. The LCR70/LCR7 intersection has stop sign control on LCR7. In the near future, LCR7 will be modified to line up with the north leg of LCR7 at LCR70.

Larimer County Road 66 is to the north of (adjacent to) the proposed Connell Asphalt Batch Plant site. It is an east-west road classified as an arterial according to the Wellington Master Street Plan. Currently, LCR66 has a paved two-lane rural cross section (no center lane) east of LCR7 and a gravel rural cross section west of LCR7. There is no posted speed limit in this area of LCR66. At the LCR7/LCR66 intersection, LCR66 has all eastbound and westbound movements combined into single lanes.

Larimer County Road 70 (Owl Canyon Road) is approximately two miles to the north of the proposed Connell Asphalt Batch Plant site. It is an east-west road classified as an arterial according to the Wellington Master Street Plan. Currently, LCR70 has a two-lane

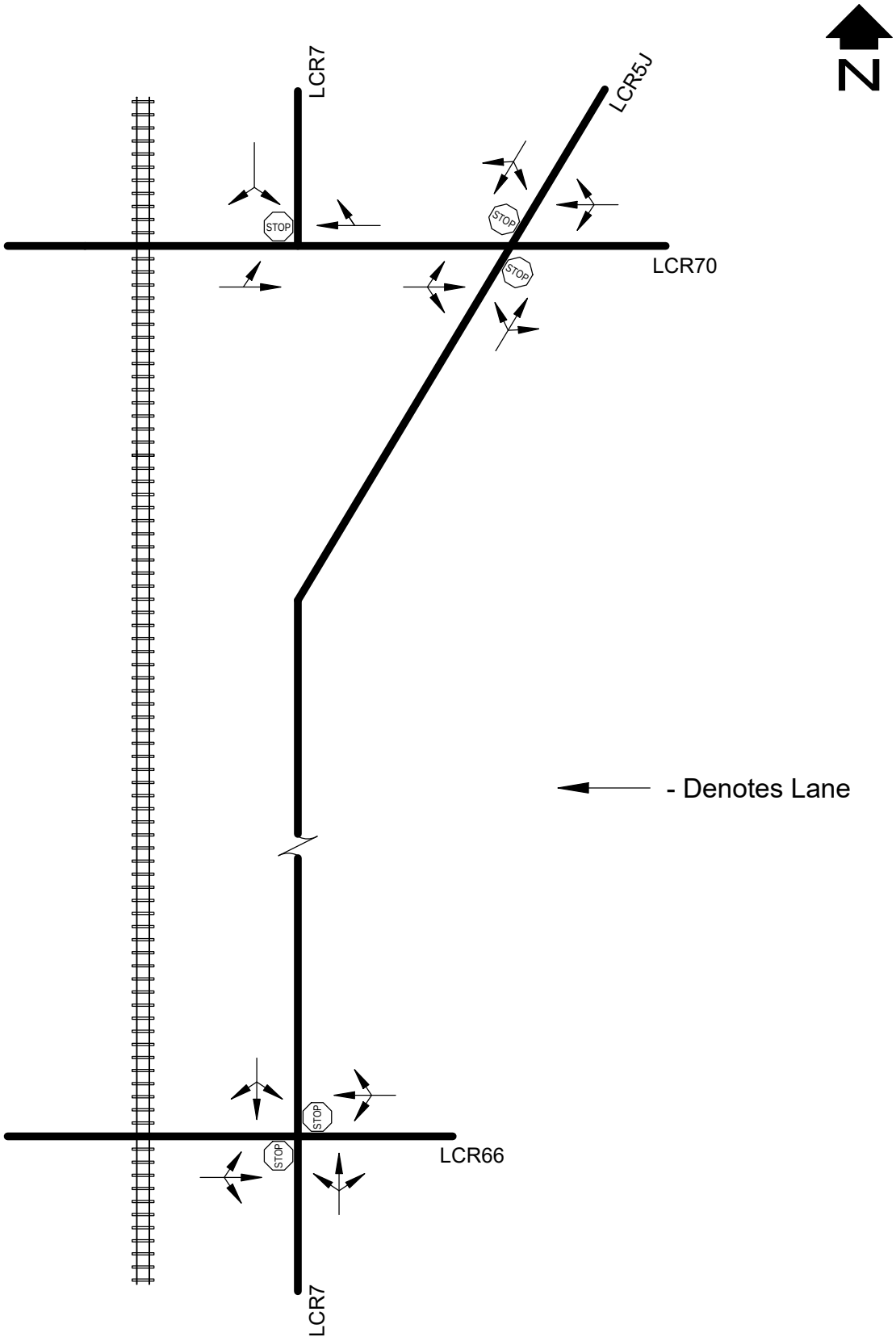


SCALE: 1"=2000'

SITE LOCATION

Figure 1

DELICH ASSOCIATES



EXISTING INTERSECTION GEOMETRY

Figure 2

rural cross section (no center lane) in this area. The posted speed limit in this area of LCR70 is 45 mph. At the LCR70/LCR7-LCR5J intersection, LCR70 has all eastbound and westbound movements combined into single lanes. At the LCR70/LCR7 intersection, LCR70 has all eastbound and westbound movements combined into single lanes. In the near future with the modification to LCR7, eastbound and westbound left-turn lanes will be constructed on LCR70.

Existing Traffic

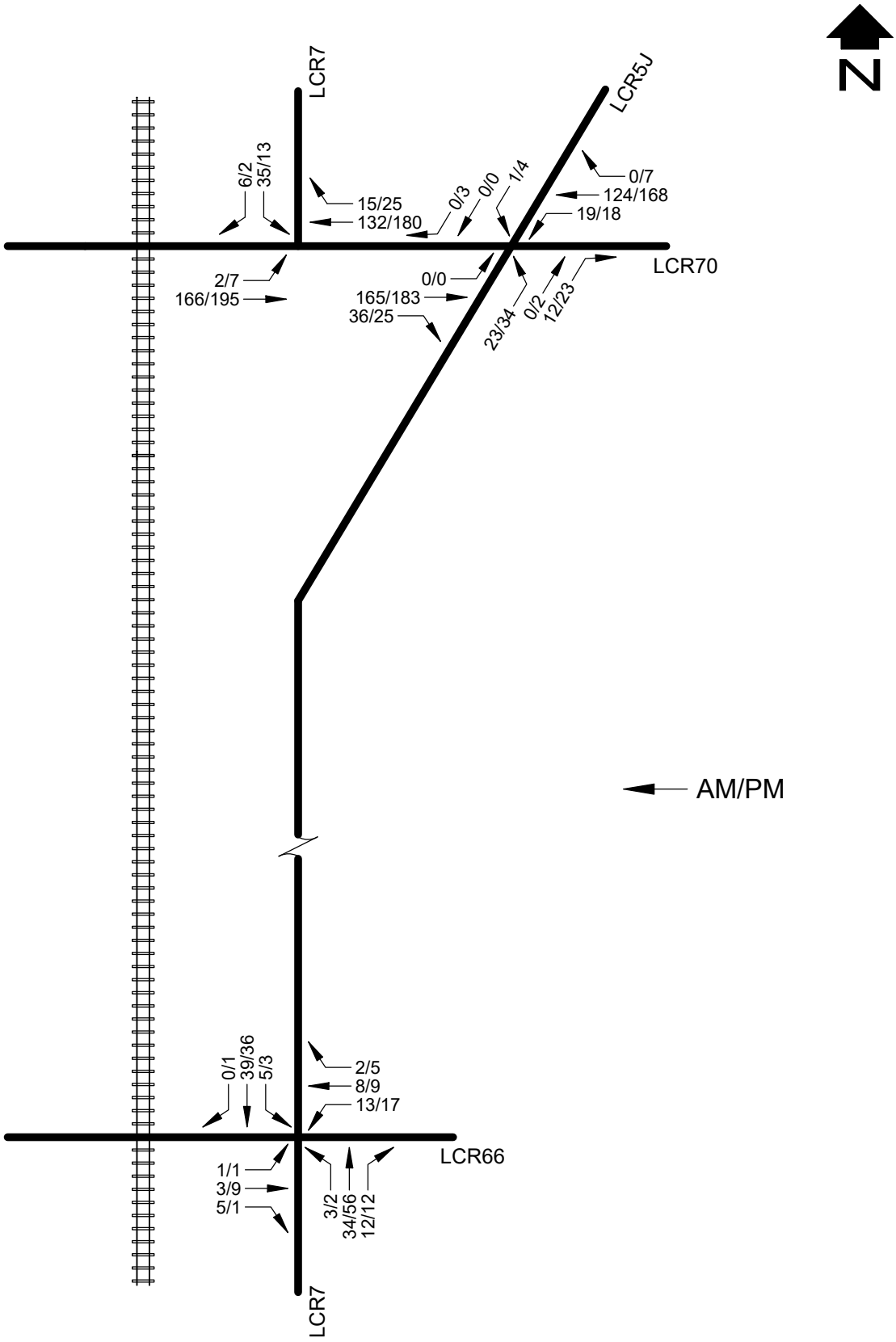
Recent weekday morning and afternoon peak hour traffic volumes at the LCR7/LCR66, LCR70/LCR7-LCR5J, and LCR70/LCR7 intersections are shown in Figure 3. The traffic counts were obtained in August 2022. Raw traffic count data is provided in Appendix B.

Existing Operation

Using the volumes shown in Figure 3, the current peak hour operation at the LCR7/LCR66, LCR70/LCR7-LCR5J, and LCR70/LCR7 intersections is shown in Table 1. Calculation forms for these analyses are provided in Appendix C. The key intersections were analyzed using the existing geometry and the unsignalized intersection techniques from the Highway Capacity Manual, 6th Edition (HCM). At major intersections, acceptable operation is defined by the Town of Wellington as level of service (LOS) C or better overall, LOS D for any approach leg, and LOS E for any movement. A description of level of service at unsignalized intersections from the HCM and a table showing the Wellington Motor Vehicle LOS Standards (Intersections) are also provided in Appendix C. As can be seen in Table 1, the key intersections are currently meeting the Wellington level of service standards in the peak hours with existing control and geometry.

Pedestrian/Bicycle Facilities

Due to the rural nature of this area of Wellington, sidewalks and bicycle facilities do not exist in this area.



RECENT PEAK HOUR TRAFFIC

Figure 3

TABLE 1 Current Peak Hour Operation			
Intersection	**Movement**	**Level of Service**	
		AM	**PM**
LCR7/LCR66 (stop sign)	EB LT/T/RT	A	A
	WB LT/T/RT	A	A
	NB LT/T/RT	A	A
	SB LT/T/RT	A	A
	OVERALL	A	A
LCR70/LCR7-LCR5J (stop sign)	NB LT/T/RT	B	B
	SB LT/T/RT	B	B
	EB LT/T/RT	A	A
	WB LT/T/RT	A	A
	OVERALL	A	A
LCR70/LCR7 (stop sign)	SB LT/RT	B	B
	EB LT/T	A	A
	OVERALL	A	A

III. PROPOSED DEVELOPMENT

Connell Resources is proposing an asphalt batch plant south of (adjacent to) Larimer County Road 66 (LCR66) and west of Larimer County Road 7 (LCR7). Figure 4 shows a site plan of the Connell Asphalt Batch Plant project. Access to the site will be via one full-movement access to/from LCR66. The short range analysis (Year 2025) includes the full development of the site and an appropriate increase in background traffic due to normal growth in the area. The long range future analysis year is considered to be 2045.

Trip Generation

Trip generation is important in considering the impact of a development such as this upon the existing and proposed street system. Trip Generation, 11th Edition, ITE is customarily used to calculate the trip generation for the land uses of a site. However, this land use is not contained in the cited reference. Therefore, information provided by Connell Resources was used to determine the trip generation. It is based upon the peak operation of a typical asphalt batch plant. The calculated trip generation for this use is 254 weekday daily trip ends, 64 weekday morning peak hour trip ends, and 64 weekday afternoon peak hour trip ends. The trip generation was agreed upon in the TIS scoping meeting.

TABLE 2
Trip Generation

Code	Use	Size	AWDTE		AM Peak Hour				PM Peak Hour			
			Rate	Trips	Rate	In	Rate	Out	Rate	In	Rate	Out
N/A	On-site Employees	21 Employees	N/A	50	N/A	21	N/A	0	N/A	0	N/A	21
N/A	Truck Drivers	31 Employees	N/A	62	N/A	31	N/A	0	N/A	0	N/A	31
N/A	Aggregate Trucks	4 Trucks	N/A	64	N/A	0	N/A	4	N/A	4	N/A	0
N/A	Liquid Asphalt Trucks	3 Trucks	N/A	6	N/A	1	N/A	0	N/A	0	N/A	1
N/A	Finished Product Trucks	36 Trucks	N/A	72	N/A	0	N/A	7	N/A	7	N/A	0
Total				254		53		11		11		53

N

SCALE: 1"=200'

SITE PLAN

Figure 4

DELICH ASSOCIATES

Trip Distribution

Trip distribution for the Connell Asphalt Batch Plant was based on the origin/ destination of the various employees and trucks using the facility and engineering judgment. The designated route for the truck traffic will be to use LCR7 and LCR70 to access I-25. A few trucks may use LCR70 to go to/from the west. The trip distribution was agreed upon in the TIS scoping meeting and is contained in Appendix A.

Background Traffic Projections

Currently, LCR7 veers to the east to line up with LCR5J before intersecting with LCR70. Approximately 250 feet to the west of the LCR70/LCR7-LCR5J intersection, LCR7 continues to the north of LCR70. In the near future, LCR7 will be modified to line up with the north leg of LCR7 at LCR70. The traffic forecasts reflect the LCR7 realignment. Figures 5 and 6 show the short range (2025) and long range (2045) background weekday peak hour traffic projections. Background traffic projections for the short range and long range were factored at a rate of two percent per year on all roads. The long range (2045) background traffic includes development of a residential subdivision in the southeast quadrant of the LCR9/LCR66 intersection.

Trip Assignment/Total Traffic

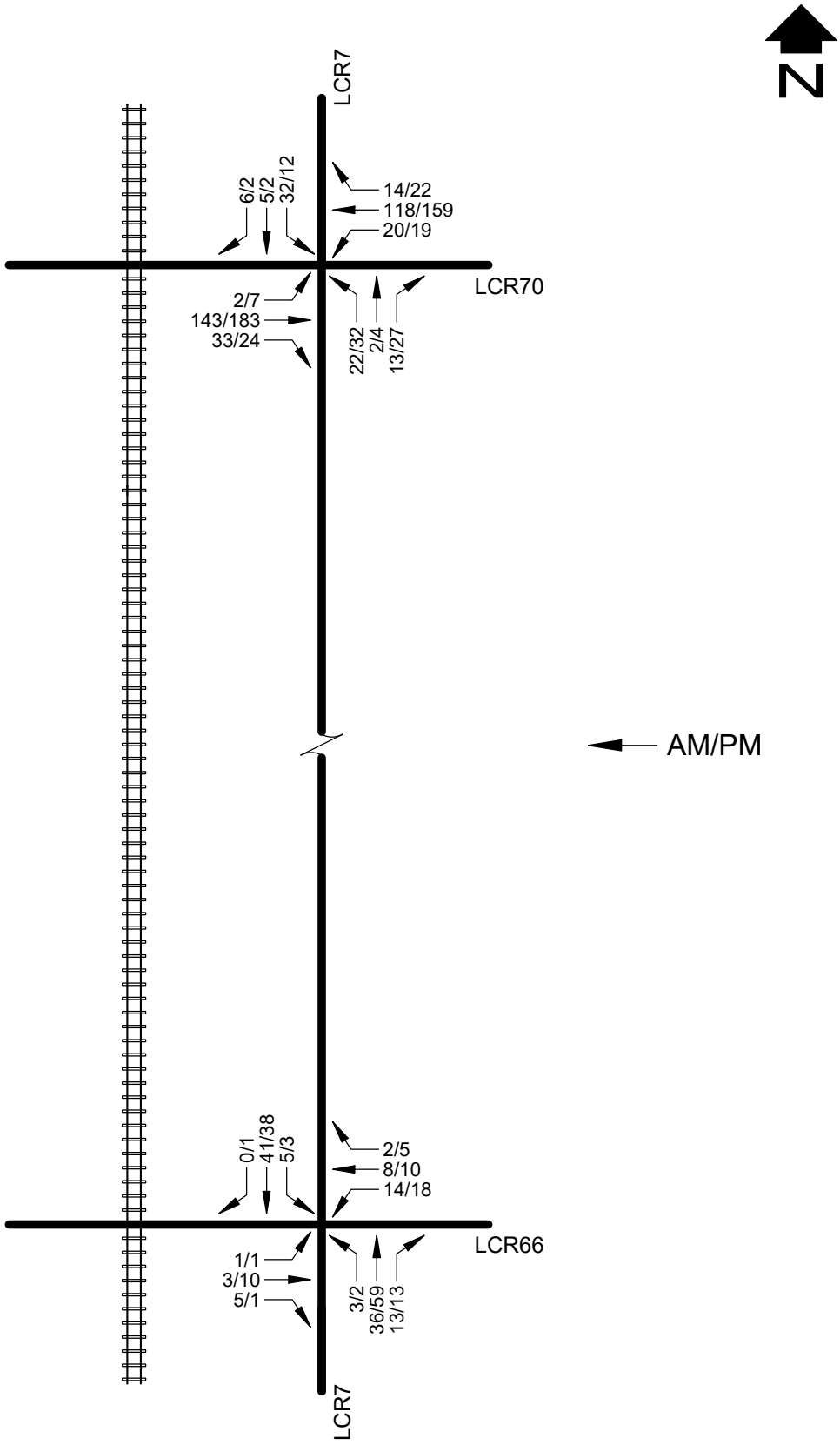
Trip assignment is how the generated and distributed trips are expected to be loaded on the road system. The assigned trips are the resultant of the trip distribution process. Figure 7 shows the site generated weekday morning and afternoon peak hour traffic assignment. The passenger car equivalents (PCE's) for trucks are shown on Figure 7. Passenger car equivalents are used to determine the auxiliary lane requirements. Figures 8 and 9 show the respective short range (2025) and long range (2045) total (site plus background) peak hour traffic at the LCR7/LCR66 and LCR70/LCR7 intersections.

Signal Warrants

None of the key intersections will meet signal warrants. It is not expected that the key intersections will be signalized in the future.

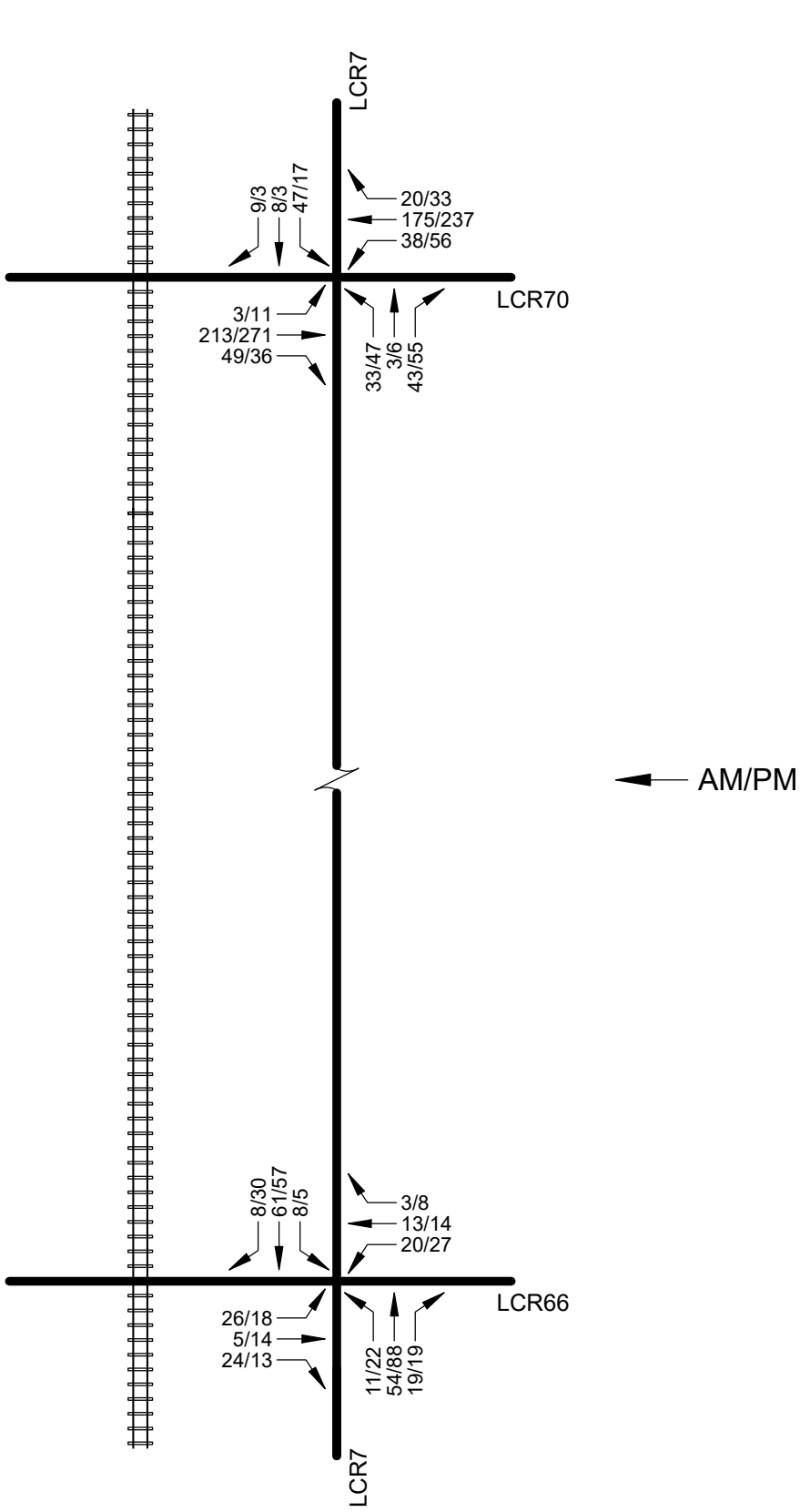
Geometry

As mentioned earlier, LCR7 will be modified to line up with the north leg of LCR7 at LCR70 in the near future. This reconstructed LCR70/LCR7 intersection will included eastbound and westbound left-turn lanes. Figure 10 shows a schematic of the short range (2025) geometry. Auxiliary turn lane requirements are based on the Town of Wellington **Standard Design Criteria and Standard Construction Requirements**. As arterial



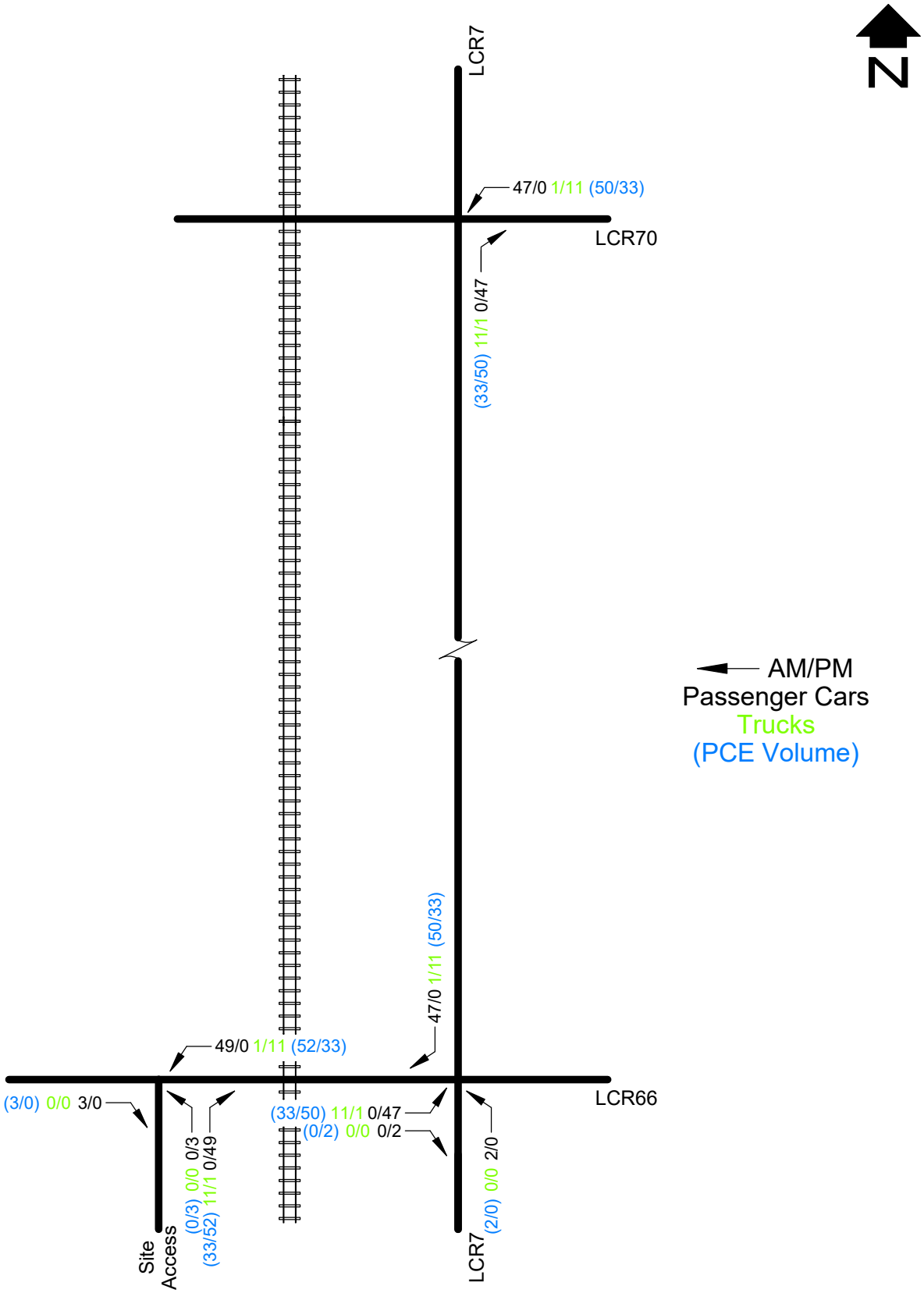
SHORT RANGE (2025) BACKGROUND PEAK HOUR TRAFFIC

Figure 5



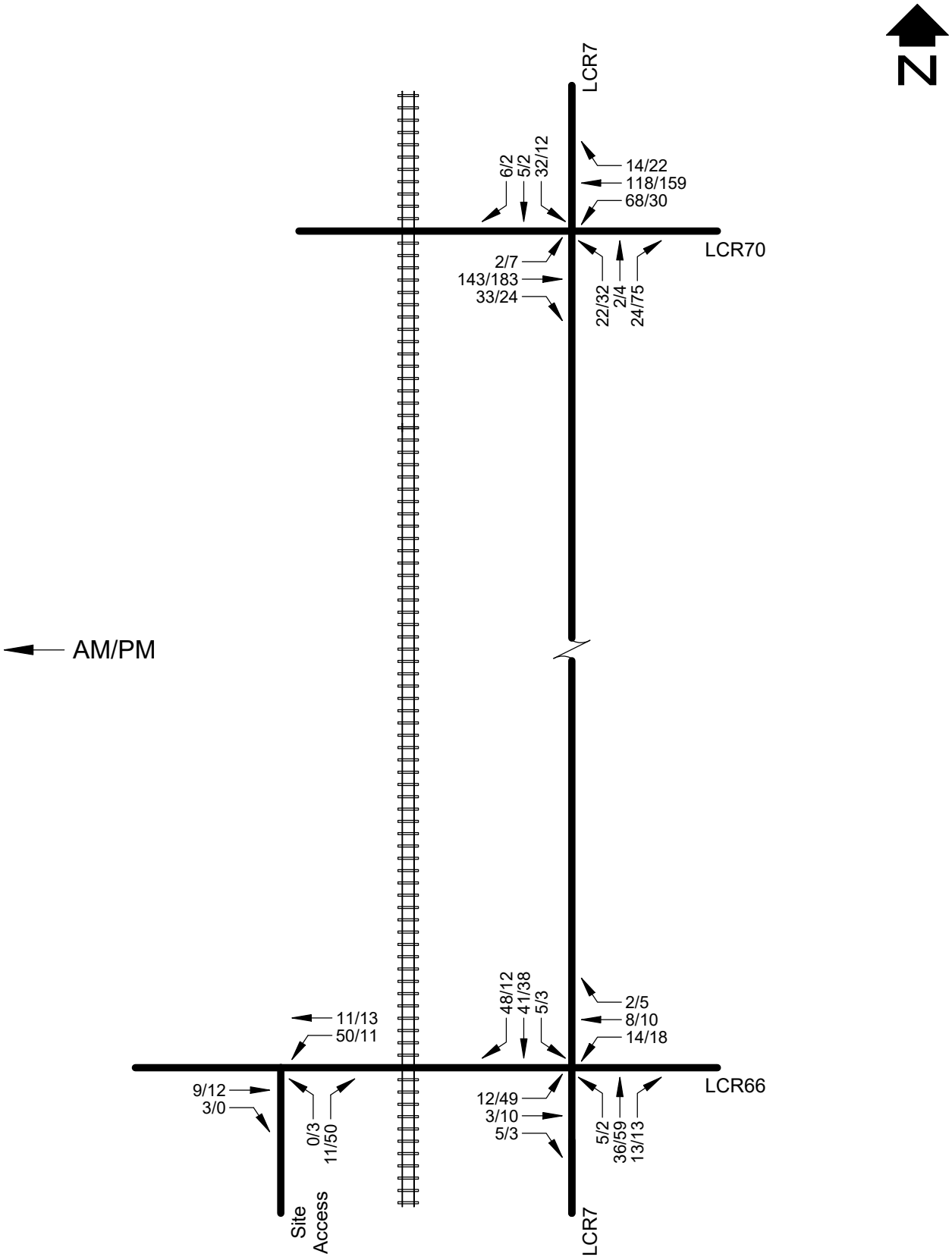
LONG RANGE (2045) BACKGROUND PEAK HOUR TRAFFIC

Figure 6



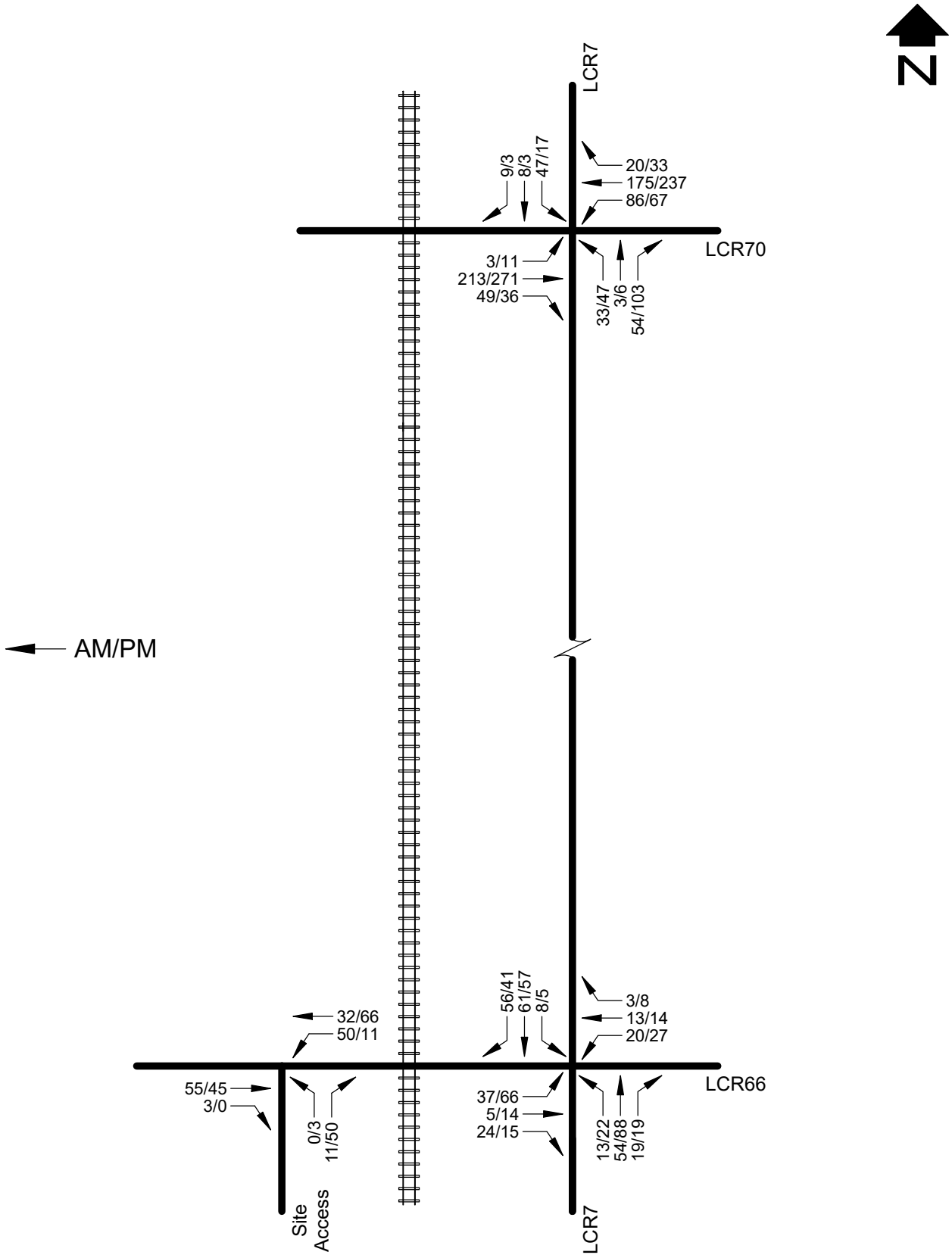
SITE GENERATED PEAK HOUR TRAFFIC

Figure 7



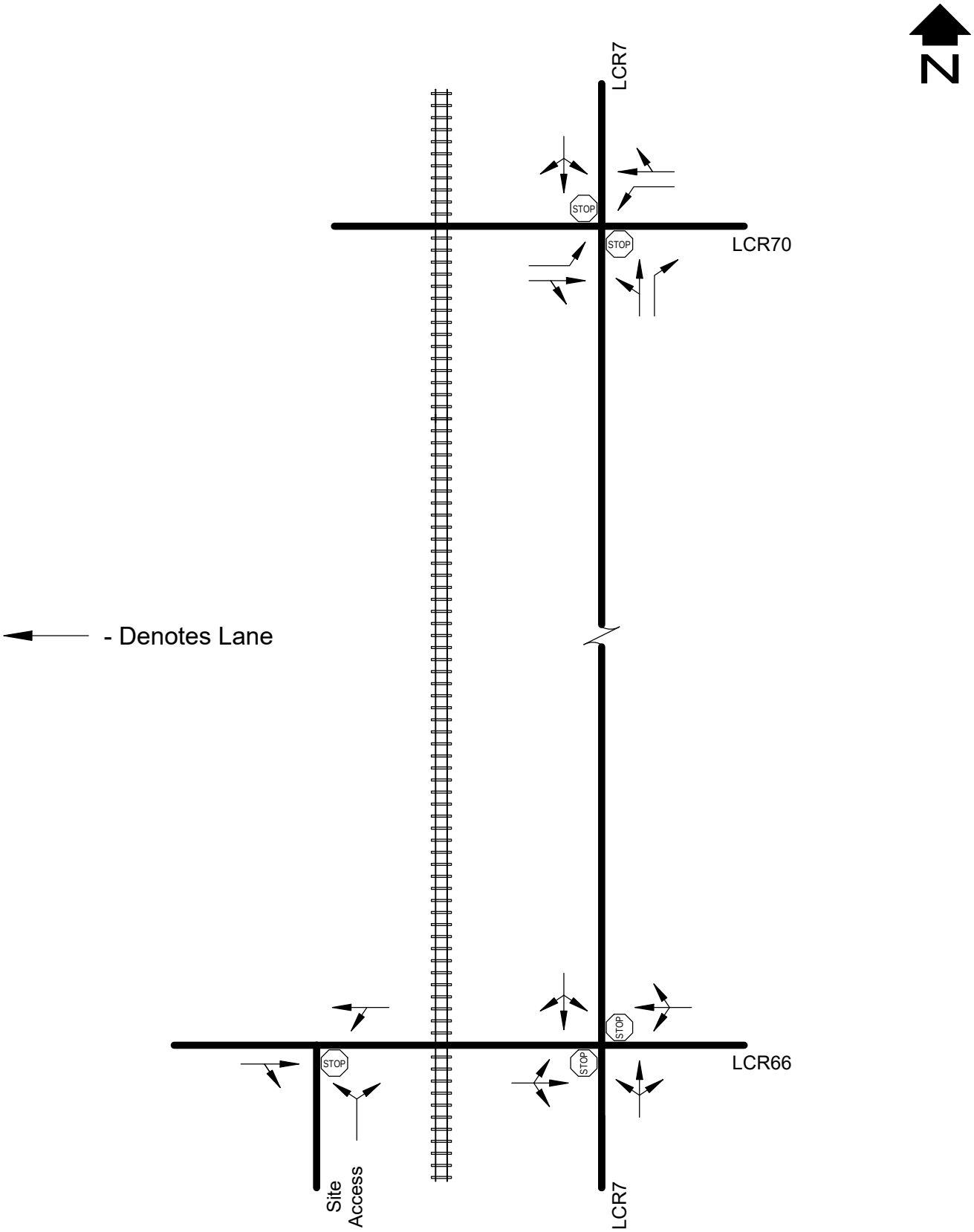
SHORT RANGE (2025) TOTAL PEAK HOUR TRAFFIC

Figure 8



LONG RANGE (2045) TOTAL PEAK HOUR TRAFFIC

Figure 9



SHORT RANGE (2025) GEOMETRY Figure 10

streets, LCR7 and LCR66 are supposed to have left-turn deceleration lanes at all intersections. However, since this area of Wellington is fairly rural, LCR7 and LCR66 are not expected to be reconstructed to the full arterial street standards until other significant development occurs. With the addition of the Connell Asphalt Batch Plant site generated traffic, a northbound right-turn lane will be required approaching the LCR70/LCR7 intersection in the short range (2025) future.

Figure 11 shows a schematic of the long range (2045) geometry. It was assumed that LCR7 would be constructed to a full arterial cross section by/before the long range (2045) future. A southbound right-turn lane will be required approaching the LCR7/LCR66 intersection in the long range (2045) future.

Operation Analysis

Capacity analyses were performed at the LCR7/LCR66, LCR70/LCR7, and LCR66/ Site Access intersections. The operations analyses were conducted for the short range and long range futures, reflecting year 2025 and 2045 conditions, respectively.

Using the traffic volumes shown in Figure 5, the LCR7/LCR66 and LCR70/LCR7 intersections operate in the short range (2025) background traffic future as indicated in Table 4. Calculation forms for these analyses are provided in Appendix D. The LCR7/LCR66 and LCR70/LCR7 intersections meet the Wellington operational criteria.

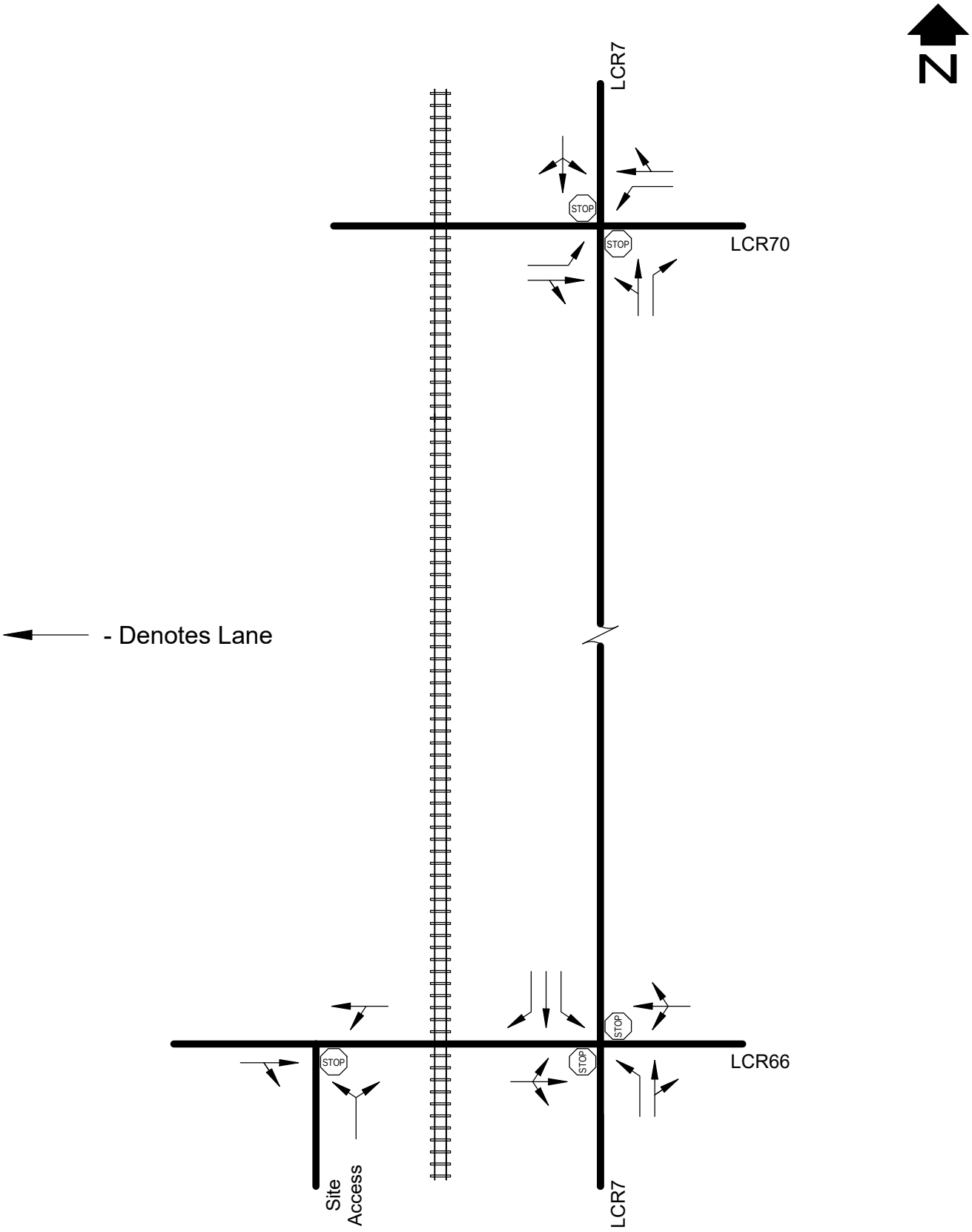
Using the traffic volumes shown in Figure 6, the LCR7/LCR66 and LCR70/LCR7 intersections operate in the long range (2045) background traffic future as indicated in Table 5. Calculation forms for these analyses are provided in Appendix E. The LCR7/LCR66 and LCR70/LCR7 intersections meet the Wellington operational criteria.

Table 6 shows the short range (2025) total peak hour operation at the LCR7/LCR66, LCR70/LCR7, and LCR66/Site Access intersections. Calculation forms are provided in Appendix F. The key intersections meet the Town of Wellington operational criteria during the morning and afternoon peak hours.

Table 7 shows the long range (2045) total peak hour operation at the LCR7/LCR66, LCR70/LCR7, and LCR66/Site Access intersections. Calculation forms are provided in Appendix G. The key intersections meet the Town of Wellington operational criteria during the morning and afternoon peak hours.

Pedestrian/Bicycle Facilities

Due to the heavy industrial land use at the proposed Connell Asphalt Batch Plant site, it is doubtful that there would be any pedestrian or bicycle trips to/from this site. Therefore, rigorous analysis of the pedestrian and bicycle level of service was not included in this TIS.



LONG RANGE (2045) GEOMETRY

Figure 11

DELICH ASSOCIATES

TABLE 3 Short Range (2025) Background Peak Hour Operation			
Intersection	**Movement**	**Level of Service**	
		AM	**PM**
LCR7/LCR66 (stop sign)	EB LT/T/RT	A	A
	WB LT/T/RT	A	A
	NB LT/T/RT	A	A
	SB LT/T/RT	A	A
	OVERALL	A	A
LCR70/LCR7 (stop sign)	NB LT/T/RT	B	B
	SB LT/T/RT	B	B
	EB LT	A	A
	WB LT	A	A
	OVERALL	A	A

TABLE 4 Long Range (2045) Background Peak Hour Operation			
Intersection	**Movement**	**Level of Service**	
		AM	**PM**
LCR7/LCR66 (stop sign)	EB LT/T/RT	A	B
	WB LT/T/RT	B	B
	NB LT	A	A
	SB LT	A	A
	OVERALL	A	A
LCR70/LCR7 (stop sign)	NB LT/T/RT	B	C
	SB LT/T/RT	C	C
	EB LT	A	A
	WB LT	A	A
	OVERALL	A	A

TABLE 5 Short Range (2025) Total Peak Hour Operation			
Intersection	**Movement**	**Level of Service**	
		AM	**PM**
LCR7/LCR66 (stop sign)	EB LT/T/RT	B	A
	WB LT/T/RT	A	A
	NB LT/T/RT	A	A
	SB LT/T/RT	A	A
	OVERALL	A	A
LCR70/LCR7 (stop sign)	NB LT/T	B	B
	NB RT	B	B
	NB APPROACH	B	B
	SB LT/T/RT	B	B
	EB LT	A	A
	WB LT	A	A
	OVERALL	A	A
LCR66/Site Access (stop sign)	NB LT/RT	A	A
	WB LT/T	A	A
	OVERALL	A	A

TABLE 6 Long Range (2045) Total Peak Hour Operation			
Intersection	**Movement**	**Level of Service**	
		AM	**PM**
LCR7/LCR66 (stop sign)	EB LT/T/RT	B	B
	WB LT/T/RT	B	B
	NB LT	A	A
	SB LT	A	A
	OVERALL	A	A
LCR70/LCR7 (stop sign)	NB LT/T	C	C
	NB RT	B	B
	NB APPROACH	B	B
	SB LT/T/RT	C	C
	EB LT	A	A
	WB LT	A	A
	OVERALL	A	A
LCR66/Site Access (stop sign)	NB LT/RT	A	A
	WB LT/T	A	A
	OVERALL	A	A

IV. CONCLUSIONS

This study assessed the impacts of the Connell Asphalt Batch Plant project on the street system in the vicinity of the proposed development in the short range (2025) and long range (2045) futures. As a result of this analysis, the following is concluded:

- The development of the Connell Asphalt Batch Plant is feasible from a traffic engineering standpoint. The Connell Asphalt Batch Plant project will generate approximately 254 daily trip ends, 64 weekday morning peak hour trip ends, and 64 weekday afternoon peak hour trip ends.

- None of the key intersections will be signalized in the future.

- In the short range (2025) future, given development of the Connell Asphalt Batch Plant and an increase in background traffic, the key intersections meet the Wellington operational criteria.

- In the long range (2045) future, given development of the Connell Asphalt Batch Plant and an increase in background traffic, the key intersections meet the Wellington operational criteria.

- The short range (2025) geometry is shown in Figure 10. With the addition of the Connell Asphalt Batch Plant site generated traffic, a northbound right-turn lane will be required approaching the LCR70/LCR7 intersection. Figure 11 shows a schematic of the long range (2045) geometry. It was assumed that LCR7 would be constructed to a full arterial cross section by/before the long range (2045) future. A southbound right-turn lane will be required approaching the LCR7/LCR66 intersection in the long range (2045) future.

APPENDIX A

Attachment A
Transportation Impact Study
Base Assumptions

Project Information		
Project Name	CONNELL ASPHALT BATCH PLANT	
Project Location	SOUTH OF LCR66, BETWEEN LCR 7 & LCR 9	
TIS Assumptions		
Type of Study	Full: YES	Memo:
Study Area Boundaries	North: LCR 70 (OCR)	South: LCR 66 (SITE)
	East: LCR 7	West: SITE ACCESS
Study Years	Short Range: 2025	Long Range: 2045
Future Traffic Growth Rate	2%/YEAR PLUS KNOWN/APPROVED DEVELOPMENTS (TOWN PROVIDE)	
Study Intersections	1. All access drives (1)	5.
	2. LCR66/LCR 7	6.
	3. LCR7/LCR 70(OCR)	7.
	4.	8.
Time Period for Study	AM: 7:00-9:00 / PM: 4:00-6:00	Sat Noon: NO
Trip Generation Rates	ATTACHED	
Trip Adjustment Factors	Passby: N/A	Captive Market: N/A
Overall Trip Distribution	SEE ATTACHED	
Mode Split Assumptions	AS NOTED IN TRIP GENERATION	
Committed Roadway Improvements	LARIMER COUNTY IMPROVEMENTS TO OWL CANYON ROAD.	
Other Traffic Studies	TOWN PROVIDE	
Areas Requiring Special Study	NONE	

Date: AUGUST 5, 2022

Traffic Engineer: DELICH ASSOCIATES

Wellington Town Administrator or Engineer: OK, PER MEETING ON 8/12/22

2216 BAF

WELLINGTON BATCH PLANT
CONNELL RESOURCES
CONNELL
UTILITY PLAN
DESIGNED BY: D. Eggar
DRAWN BY: R. Bunner
APPROVED BY: J. Burrell
DATE: June 1, 2022
SCALE: 1" = 80'
FILE NAME: Overall Utility.dwg
SHEET STATUS
30% PLAN SET
NOT FOR CONSTRUCTION
P.E. Seal
Civil Engineering & Construction Services
2133 S. Timberline Road, Suite 110
Fort Collins, Colorado 80525
Phone: 970.632.5068
www.ditescoservices.com
PROJECT NUMBER XXXX
SHEET NUMBER C301
SHEET INDEX: 3
SCALE: 1" = 80'
(True scale for 22x34 sheet size)
0 80' 160' 240'
Colorado & Southern Railroad
Larimer County Road 66
North Poudre Irrigation Co. Canal
Parcel
1,549,321 SF
35.568 Acres
PROPOSED SANITARY SEWER SERVICE
PROPOSED SANITARY SEWER MANHOLE, TYP.
PROPOSED 8" SANITARY SEWER
PROPOSED SANITARY SEWER SERVICE WITH GREASE INTERCEPTOR
PROPOSED 8" WATERLINE
PROPOSED WATER SERVICE, TYP.
PROPOSED FIRE HYDRANT
EXISTING 18" WATERLINE
50' SINCLAIR PIPELINE EASEMENT REC. NO. 840508
50' NORTH POUDRE IRRIGATION COMPANY ROW EASEMENT REC. NO. 19970216537
20' UTILITY & TCE REC. NO. 20030053554
60' EMERGENCY ACCESS EASEMENT REC. NO. 20030055592
Drawing Name: O:\Projects\Wellington Batch Plant\Dwg\Sheets\Connell Utility.dwg Wednesday, June 01, 2022 2:45 PM By: Shonda Bunner

TRIP GENERATION HOURS OF OPERATION 7AM TO 5PM

ANALYZE PEAKS 7-8 AM 4-5PM

ON-SITE EMPLOYEES - 21 (PASSENGER CARS)

AM - START - 21 INBOUND
0 OUTBOUND

PM - END - 0 INBOUND
21 OUTBOUND

DAILY - (42)(1.2) = 50 TE (20% IN/OUT NON PEAKS)

TRUCK DRIVERS - 31 (PASSENGER CARS)

AM - START - 31 INBOUND
0 OUTBOUND

PM - END - 0 INBOUND
31 OUTBOUND

DAILY - 62 TRIP ENDS

AGGREGATE TRUCKS - ALL AGGREGATE FROM CARR PIT
ALL AGGREGATE TRUCKS STORED AT THE SITE OVERNIGHT. 32 LOADS/DAY - 4/HOUR

AM - START - 0 INBOUND
4 OUTBOUND

PM - END - 4 INBOUND
0 OUTBOUND

DAILY - (32)(2) = 64 TRIP ENDS

LIQUID ASPHALT TRUCKS - 3 LOADS/DAY

AM - START - 1 INBOUND
0 OUTBOUND

PM - END - 0 INBOUND
1 OUTBOUND

DAILY - (3)(2) = 6 TRIP ENDS

FINISHED PRODUCT TRUCKS - ALL STORED AT THE SITE OVER NIGHT
32-38 PER DAY (USE 36)

DAILY 36 INBOUND } 72 TE
36 OUTBOUND }

7AM - 5PM - 10 HOURS

$\frac{72 \text{ TE}}{10 \text{ HOURS}} = 7 / \text{HOUR}$

AM - START 0 INBOUND
7 OUTBOUND

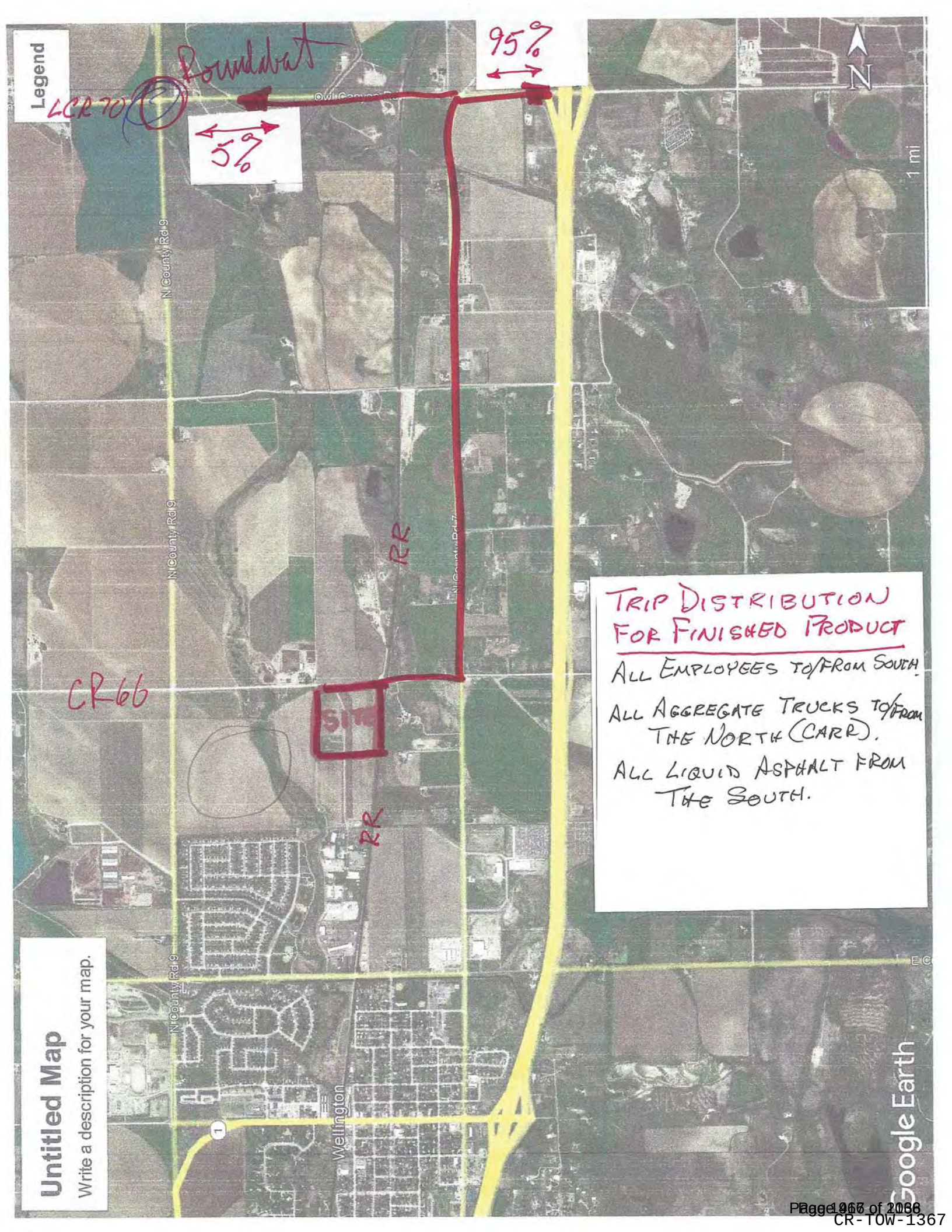
PM - END 7 INBOUND
0 OUTBOUND

TRIP GENERATION SUMMARY

DAILY - 254 TRIP ENDS

AM IN - 53 } 64 TRIP ENDS
OUT - 11 }

PM IN - 11 } 64 TRIP ENDS
OUT - 53 }


Legend
LCR 70
Roundabout
95%
5%
N
1 mi
N County Rd 9
N County Rd 7
RR
CR 66
Site
RR
Wellington
Google Earth
TRIP DISTRIBUTION FOR FINISHED PRODUCT
ALL EMPLOYEES TO/FROM SOUTH.
ALL AGGREGATE TRUCKS TO/FROM THE NORTH (CARR).
ALL LIQUID ASPHALT FROM THE SOUTH.
Untitled Map
Write a description for your map.

APPENDIX B

DELICH ASSOCIATES
2272 GLEN HAVEN DRIVE
LOVELAND, CO 80538
Phone: (970) 669-2061

TABULAR SUMMARY OF VEHICLE COUNTS

Date: 8/18/2022 Observer: Vickie

Day: Thursday Jurisdiction: Wellington/Larimer County

Intersection: LCR66/LCR7

R = right turn
S = straight
L = left turn

Time	Northbound: LCR7				Southbound: LCR7				Total	Eastbound: LCR66				Westbound: LCR66				Total	Total
Begins	L	S	R	Total	L	S	R	Total	north/south	L	S	R	Total	L	S	R	Total	east/west	All
7:00	0	3	3	6	0	9	0	9	15	0	3	0	3	2	1	0	3	6	21
7:15	0	5	0	5	0	13	2	15	20	0	1	0	1	2	1	0	3	4	24
7:30	1	10	3	14	0	21	0	21	35	0	0	0	0	4	1	1	6	6	41
7:45	0	12	3	15	2	8	0	10	25	0	1	3	4	2	1	0	3	7	32
8:00	1	3	3	7	0	5	0	5	12	1	1	1	3	4	4	1	9	12	24
8:15	1	9	3	13	3	5	0	8	21	0	1	1	2	3	2	0	5	7	28
8:30	2	4	4	10	1	14	1	16	26	0	1	2	3	3	3	0	6	9	35
8:45	0	10	4	14	0	6	0	6	20	0	3	1	4	7	2	0	9	13	33
7:30-8:30	3	34	12	49	5	39	0	44	93	1	3	5	9	13	8	2	23	32	125
PHF	0.75	0.71	1	0.82	0.42	0.46	n/a	0.52	0.66	0.25	0.75	0.42	0.56	0.81	0.5	0.5	0.64	0.67	0.76
4:00	0	8	3	11	0	7	0	7	18	0	2	2	4	5	3	1	9	13	31
4:15	0	15	4	19	0	5	0	5	24	0	5	0	5	1	0	2	3	8	32
4:30	0	16	4	20	0	7	0	7	27	0	2	0	2	7	2	2	11	13	40
4:45	0	14	5	19	1	13	0	14	33	0	3	0	3	5	2	0	7	10	43
5:00	2	11	2	15	2	12	0	14	29	1	2	1	4	1	1	0	2	6	35
5:15	0	15	1	16	0	4	1	5	21	0	2	0	2	4	4	3	11	13	34
5:30	3	11	2	16	0	5	0	5	21	0	5	1	6	7	2	3	12	18	39
5:45	1	9	4	14	1	5	0	6	20	0	3	1	4	8	2	1	11	15	35
4:30-5:30	2	56	12	70	3	36	1	40	110	1	9	1	11	17	9	5	31	42	152
PHF	0.25	0.88	0.6	0.88	0.38	0.69	0.25	0.71	0.83	0.25	0.75	0.25	0.69	0.61	0.56	0.42	0.7	0.81	0.88

DELICH ASSOCIATES
2272 GLEN HAVEN DRIVE
LOVELAND, CO 80538
Phone: (970) 669-2061

TABULAR SUMMARY OF VEHICLE COUNTS

Date: 8/17/2022 Observer: Vickie

Day: Wednesday Jurisdiction: Wellington/Larimer County

Intersection: LCR70/LCR7-LCR5J

R = right turn
S = straight
L = left turn

Time	Northbound: LCR7				Southbound: LCR5J				Total	Eastbound: LCR70				Westbound: LCR70				Total	Total
Begins	L	S	R	Total	L	S	R	Total	north/south	L	S	R	Total	L	S	R	Total	east/west	All
7:00	2	1	1	4	0	1	0	1	5	0	29	7	36	1	23	0	24	60	65
7:15	3	0	4	7	1	0	0	1	8	0	42	17	59	6	29	0	35	94	102
7:30	5	0	5	10	0	0	0	0	10	0	43	9	52	9	32	0	41	93	103
7:45	12	0	2	14	0	0	0	0	14	0	40	5	45	3	44	0	47	92	106
8:00	3	0	1	4	0	0	0	0	4	0	40	5	45	1	19	0	20	65	69
8:15	3	0	1	4	0	0	0	0	4	1	36	5	42	3	17	0	20	62	66
8:30	3	0	1	4	0	0	1	1	5	0	35	7	42	4	47	0	51	93	98
8:45	8	1	2	11	0	0	0	0	11	0	31	4	35	3	62	2	67	102	113
7:15-8:15	23	0	12	35	1	0	0	1	36	0	165	36	201	19	124	0	143	344	380
PHF	0.48	n/a	0.6	0.63	0.25	n/a	n/a	0.25	0.64	n/a	0.96	0.53	0.85	0.53	0.7	n/a	0.76	0.91	0.9
4:00	4	0	1	5	0	0	0	0	5	0	51	5	56	1	40	0	41	97	102
4:15	6	1	4	11	0	0	0	0	11	0	59	8	67	2	46	0	48	115	126
4:30	9	0	10	19	1	0	1	2	21	0	49	7	56	4	29	1	34	90	111
4:45	9	0	2	11	2	0	0	2	13	0	42	6	48	4	42	2	48	96	109
5:00	10	1	7	18	1	0	2	3	21	0	33	4	37	8	51	4	63	100	121
5:15	10	0	5	15	1	0	1	2	17	0	36	3	39	4	40	2	46	85	102
5:30	10	1	3	14	0	0	0	0	14	0	33	5	38	2	39	0	41	79	93
5:45	7	0	4	11	1	0	0	1	12	1	41	3	45	2	34	1	37	82	94
4:15-5:15	34	2	23	59	4	0	3	7	66	0	183	25	208	18	168	7	193	401	467
PHF	0.85	0.5	0.58	0.78	0.5	n/a	0.38	0.58	0.79	n/a	0.78	0.78	0.78	0.56	0.82	0.44	0.77	0.87	0.93

DELICH ASSOCIATES
2272 GLEN HAVEN DRIVE
LOVELAND, CO 80538
Phone: (970) 669-2061

TABULAR SUMMARY OF VEHICLE COUNTS

Date: 8/17/2022 Observer: Vickie

Day: Wednesday Jurisdiction: Wellington/Larimer County

Intersection: LCR70/LCR7 North

R = right turn
S = straight
L = left turn

Time	Northbound:				Southbound: LCR5J				Total	Eastbound: LCR70				Westbound: LCR70				Total	Total
Begins	L	S	R	Total	L	S	R	Total	north/south	L	S	R	Total	L	S	R	Total	east/west	All
7:00				0	5		0	5	5	1	31		32		24	1	25	57	62
7:15				0	9		2	11	11	0	50		50		31	1	32	82	93
7:30				0	12		1	13	13	0	40		40		37	0	37	77	90
7:45				0	6		3	9	9	1	39		40		45	11	56	96	105
8:00				0	8		0	8	8	1	37		38		19	3	22	60	68
8:15				0	6		4	10	10	1	36		37		18	2	20	57	67
8:30				0	7		2	9	9	2	34		36		48	3	51	87	96
8:45				0	2		0	2	2	2	33		35		66	4	70	105	107
7:15-8:15	0	0	0	0	35	0	6	41	41	2	166	0	168	0	132	15	147	315	356
PHF	n/a	n/a	n/a	n/a	0.73	n/a	0.5	0.79	0.79	0.5	0.83	n/a	0.84	n/a	0.73	0.34	0.66	0.82	0.85
4:00				0	3		1	4	4	2	53		55		39	5	44	99	103
4:15				0	2		0	2	2	1	65		66		41	11	52	118	120
4:30				0	3		0	3	3	1	53		54		33	6	39	93	96
4:45				0	5		1	6	6	2	43		45		49	2	51	96	102
5:00				0	3		1	4	4	3	34		37		57	6	63	100	104
5:15				0	1		1	2	2	1	38		39		40	11	51	90	92
5:30				0	3		0	3	3	2	35		37		43	6	49	86	89
5:45				0	4		2	6	6	1	41		42		34	7	41	83	89
4:15-5:15	0	0	0	0	13	0	2	15	15	7	195	0	202	0	180	25	205	407	422
PHF	n/a	n/a	n/a	n/a	0.65	n/a	0.5	0.63	0.63	0.58	0.75	n/a	0.77	n/a	0.79	0.57	0.81	0.86	0.88

APPENDIX C

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	3	5	13	8	2	3	34	12	5	39	0
Future Vol, veh/h	1	3	5	13	8	2	3	34	12	5	39	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	3	6	14	9	2	3	38	13	6	43	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	111	112	43	111	106	45	43	0	0	51	0	0
Stage 1	55	55	-	51	51	-	-	-	-	-	-	-
Stage 2	56	57	-	60	55	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	867	778	1027	867	784	1025	1566	-	-	1555	-	-
Stage 1	957	849	-	962	852	-	-	-	-	-	-	-
Stage 2	956	847	-	951	849	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	854	773	1027	856	779	1025	1566	-	-	1555	-	-
Mov Cap-2 Maneuver	854	773	-	856	779	-	-	-	-	-	-	-
Stage 1	955	846	-	960	850	-	-	-	-	-	-	-
Stage 2	942	845	-	938	846	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9	9.4	0.4	0.8
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1566	-	-	907	839	1555	-	-
HCM Lane V/C Ratio	0.002	-	-	0.011	0.03	0.004	-	-
HCM Control Delay (s)	7.3	0	-	9	9.4	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	9	1	17	9	5	2	56	12	3	36	1
Future Vol, veh/h	1	9	1	17	9	5	2	56	12	3	36	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	10	1	18	10	5	2	61	13	3	39	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	125	124	40	123	118	68	40	0	0	74	0	0
Stage 1	46	46	-	72	72	-	-	-	-	-	-	-
Stage 2	79	78	-	51	46	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	849	766	1031	852	772	995	1570	-	-	1526	-	-
Stage 1	968	857	-	938	835	-	-	-	-	-	-	-
Stage 2	930	830	-	962	857	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	835	764	1031	841	770	995	1570	-	-	1526	-	-
Mov Cap-2 Maneuver	835	764	-	841	770	-	-	-	-	-	-	-
Stage 1	967	855	-	937	834	-	-	-	-	-	-	-
Stage 2	913	829	-	948	855	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.6	9.5	0.2	0.6
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1570	-	-	789	839	1526	-	-
HCM Lane V/C Ratio	0.001	-	-	0.015	0.04	0.002	-	-
HCM Control Delay (s)	7.3	0	-	9.6	9.5	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	165	36	19	124	0	23	0	12	1	0	0
Future Vol, veh/h	0	165	36	19	124	0	23	0	12	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	183	40	21	138	0	26	0	13	1	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	138	0	0	223	0	0	383	383	203	390	403	138
Stage 1	-	-	-	-	-	-	203	203	-	180	180	-
Stage 2	-	-	-	-	-	-	180	180	-	210	223	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1446	-	-	1346	-	-	575	550	838	569	536	910
Stage 1	-	-	-	-	-	-	799	733	-	822	750	-
Stage 2	-	-	-	-	-	-	822	750	-	792	719	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1446	-	-	1346	-	-	568	541	838	552	527	910
Mov Cap-2 Maneuver	-	-	-	-	-	-	568	541	-	552	527	-
Stage 1	-	-	-	-	-	-	799	733	-	822	737	-
Stage 2	-	-	-	-	-	-	808	737	-	779	719	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1	11	11.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	639	1446	-	-	1346	-	-	552
HCM Lane V/C Ratio	0.061	-	-	-	0.016	-	-	0.002
HCM Control Delay (s)	11	0	-	-	7.7	0	-	11.5
HCM Lane LOS	B	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	183	25	18	168	7	34	2	23	4	0	3
Future Vol, veh/h	0	183	25	18	168	7	34	2	23	4	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	199	27	20	183	8	37	2	25	4	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	191	0	0	226	0	0	442	444	213	453	453	187
Stage 1	-	-	-	-	-	-	213	213	-	227	227	-
Stage 2	-	-	-	-	-	-	229	231	-	226	226	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1383	-	-	1342	-	-	526	508	827	517	503	855
Stage 1	-	-	-	-	-	-	789	726	-	776	716	-
Stage 2	-	-	-	-	-	-	774	713	-	777	717	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1383	-	-	1342	-	-	517	499	827	493	494	855
Mov Cap-2 Maneuver	-	-	-	-	-	-	517	499	-	493	494	-
Stage 1	-	-	-	-	-	-	789	726	-	776	704	-
Stage 2	-	-	-	-	-	-	758	701	-	751	717	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.7	11.7	11.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	605	1383	-	-	1342	-	-	602
HCM Lane V/C Ratio	0.106	-	-	-	0.015	-	-	0.013
HCM Control Delay (s)	11.7	0	-	-	7.7	0	-	11.1
HCM Lane LOS	B	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	166	132	15	35	6
Future Vol, veh/h	2	166	132	15	35	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	184	147	17	39	7

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	164	0	-	0	344	156
Stage 1	-	-	-	-	156	-
Stage 2	-	-	-	-	188	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1414	-	-	-	652	890
Stage 1	-	-	-	-	872	-
Stage 2	-	-	-	-	844	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1414	-	-	-	651	890
Mov Cap-2 Maneuver	-	-	-	-	651	-
Stage 1	-	-	-	-	870	-
Stage 2	-	-	-	-	844	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1414	-	-	-	678
HCM Lane V/C Ratio	0.002	-	-	-	0.067
HCM Control Delay (s)	7.5	0	-	-	10.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	195	180	25	13	2
Future Vol, veh/h	7	195	180	25	13	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	212	196	27	14	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	223	0	-	0	438	210
Stage 1	-	-	-	-	210	-
Stage 2	-	-	-	-	228	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1346	-	-	-	576	830
Stage 1	-	-	-	-	825	-
Stage 2	-	-	-	-	810	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1346	-	-	-	572	830
Mov Cap-2 Maneuver	-	-	-	-	572	-
Stage 1	-	-	-	-	819	-
Stage 2	-	-	-	-	810	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	11.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1346	-	-	-	597
HCM Lane V/C Ratio	0.006	-	-	-	0.027
HCM Control Delay (s)	7.7	0	-	-	11.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

UNSIGNALIZED INTERSECTIONS

Level-of-Service	Average Total Delay sec/veh
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

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Table 1-1
Motor Vehicle LOS Standards (Intersections)

Intersection Component	Major Intersection[1]	Minor Intersection[2]	Driveway
Overall	LOS C	LOS C	No Limit
Any Leg	LOS D	LOS D	No Limit
Any Movement	LOS E	LOS E	No Limit

[1] Includes all signalized and unsignalized arterial/arterial and arterial/major collector intersections.

[2] Includes all unsignalized intersections (except major intersections) and high volume driveways

[3] There are no LOS standards for the I-25 Interchange.

APPENDIX D

Intersection												
Int Delay, s/veh	2.8											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	3	5	14	8	2	3	36	13	5	41	0
Future Vol, veh/h	1	3	5	14	8	2	3	36	13	5	41	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	3	6	16	9	2	3	40	14	6	46	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	117	118	46	116	111	47	46	0	0	54	0	0
Stage 1	58	58	-	53	53	-	-	-	-	-	-	-
Stage 2	59	60	-	63	58	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	859	772	1023	861	779	1022	1562	-	-	1551	-	-
Stage 1	954	847	-	960	851	-	-	-	-	-	-	-
Stage 2	953	845	-	948	847	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	846	767	1023	850	774	1022	1562	-	-	1551	-	-
Mov Cap-2 Maneuver	846	767	-	850	774	-	-	-	-	-	-	-
Stage 1	952	844	-	958	849	-	-	-	-	-	-	-
Stage 2	939	843	-	935	844	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9	9.5	0.4	0.8
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1562	-	-	902	834	1551	-	-
HCM Lane V/C Ratio	0.002	-	-	0.011	0.032	0.004	-	-
HCM Control Delay (s)	7.3	0	-	9	9.5	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Intersection												
Int Delay, s/veh	2.9											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	10	1	18	10	5	2	59	13	3	38	1
Future Vol, veh/h	1	10	1	18	10	5	2	59	13	3	38	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	11	1	20	11	5	2	64	14	3	41	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	131	130	42	129	123	71	42	0	0	78	0	0
Stage 1	48	48	-	75	75	-	-	-	-	-	-	-
Stage 2	83	82	-	54	48	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	841	761	1029	844	767	991	1567	-	-	1520	-	-
Stage 1	965	855	-	934	833	-	-	-	-	-	-	-
Stage 2	925	827	-	958	855	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	825	759	1029	832	765	991	1567	-	-	1520	-	-
Mov Cap-2 Maneuver	825	759	-	832	765	-	-	-	-	-	-	-
Stage 1	964	853	-	933	832	-	-	-	-	-	-	-
Stage 2	907	826	-	943	853	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	9.5	0.2	0.5
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1567	-	-	781	830	1520	-	-
HCM Lane V/C Ratio	0.001	-	-	0.017	0.043	0.002	-	-
HCM Control Delay (s)	7.3	0	-	9.7	9.5	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	143	33	20	118	14	22	2	13	32	5	6
Future Vol, veh/h	2	143	33	20	118	14	22	2	13	32	5	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	250	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	159	37	22	131	16	24	2	14	36	6	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	147	0	0	196	0	0	372	373	178	373	383	139
Stage 1	-	-	-	-	-	-	182	182	-	183	183	-
Stage 2	-	-	-	-	-	-	190	191	-	190	200	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1435	-	-	1377	-	-	585	557	865	584	550	909
Stage 1	-	-	-	-	-	-	820	749	-	819	748	-
Stage 2	-	-	-	-	-	-	812	742	-	812	736	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1435	-	-	1377	-	-	569	548	865	565	541	909
Mov Cap-2 Maneuver	-	-	-	-	-	-	569	548	-	565	541	-
Stage 1	-	-	-	-	-	-	819	748	-	818	736	-
Stage 2	-	-	-	-	-	-	787	730	-	795	735	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1	11	11.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	645	1435	-	-	1377	-	-	593
HCM Lane V/C Ratio	0.064	0.002	-	-	0.016	-	-	0.081
HCM Control Delay (s)	11	7.5	-	-	7.7	-	-	11.6
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.3

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	183	24	19	159	22	32	4	27	12	2	2
Future Vol, veh/h	7	183	24	19	159	22	32	4	27	12	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	250	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	199	26	21	173	24	35	4	29	13	2	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	197	0	0	225	0	0	457	467	212	472	468	185
Stage 1	-	-	-	-	-	-	228	228	-	227	227	-
Stage 2	-	-	-	-	-	-	229	239	-	245	241	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1376	-	-	1344	-	-	514	493	828	502	493	857
Stage 1	-	-	-	-	-	-	775	715	-	776	716	-
Stage 2	-	-	-	-	-	-	774	708	-	759	706	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1376	-	-	1344	-	-	503	482	828	473	482	857
Mov Cap-2 Maneuver	-	-	-	-	-	-	503	482	-	473	482	-
Stage 1	-	-	-	-	-	-	770	711	-	771	705	-
Stage 2	-	-	-	-	-	-	758	697	-	723	702	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.7	11.7	12.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	603	1376	-	-	1344	-	-	502
HCM Lane V/C Ratio	0.114	0.006	-	-	0.015	-	-	0.035
HCM Control Delay (s)	11.7	7.6	-	-	7.7	-	-	12.4
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.1

APPENDIX E

Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	26	5	24	20	13	3	11	54	19	8	61	8
Future Vol, veh/h	26	5	24	20	13	3	11	54	19	8	61	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	6	27	22	14	3	12	60	21	9	68	9

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	194	196	73	202	190	71	77	0	0	81	0	0
Stage 1	91	91	-	95	95	-	-	-	-	-	-	-
Stage 2	103	105	-	107	95	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	765	699	989	756	705	991	1522	-	-	1517	-	-
Stage 1	916	820	-	912	816	-	-	-	-	-	-	-
Stage 2	903	808	-	898	816	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	743	689	989	723	695	991	1522	-	-	1517	-	-
Mov Cap-2 Maneuver	743	689	-	723	695	-	-	-	-	-	-	-
Stage 1	909	815	-	905	809	-	-	-	-	-	-	-
Stage 2	877	802	-	863	811	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	10.2	1	0.8
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1522	-	-	827	729	1517	-	-
HCM Lane V/C Ratio	0.008	-	-	0.074	0.055	0.006	-	-
HCM Control Delay (s)	7.4	-	-	9.7	10.2	7.4	-	-
HCM Lane LOS	A	-	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Intersection												
Int Delay, s/veh	3.8											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	18	14	13	27	14	8	22	88	19	5	57	30
Future Vol, veh/h	18	14	13	27	14	8	22	88	19	5	57	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	250	-	-	250	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	15	14	29	15	9	24	96	21	5	62	33

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	256	254	79	258	260	107	95	0	0	117	0	0
Stage 1	89	89	-	155	155	-	-	-	-	-	-	-
Stage 2	167	165	-	103	105	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	697	650	981	695	645	947	1499	-	-	1471	-	-
Stage 1	918	821	-	847	769	-	-	-	-	-	-	-
Stage 2	835	762	-	903	808	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	668	638	981	662	633	947	1499	-	-	1471	-	-
Mov Cap-2 Maneuver	668	638	-	662	633	-	-	-	-	-	-	-
Stage 1	903	819	-	833	757	-	-	-	-	-	-	-
Stage 2	798	750	-	870	806	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	10.7	1.3	0.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1499	-	-	724	687	1471	-	-
HCM Lane V/C Ratio	0.016	-	-	0.068	0.078	0.004	-	-
HCM Control Delay (s)	7.4	-	-	10.3	10.7	7.5	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.3	0	-	-

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	213	49	38	175	20	33	3	43	47	8	9
Future Vol, veh/h	3	213	49	38	175	20	33	3	43	47	8	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	250	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	237	54	42	194	22	37	3	48	52	9	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	216	0	0	291	0	0	569	570	264	585	586	205
Stage 1	-	-	-	-	-	-	270	270	-	289	289	-
Stage 2	-	-	-	-	-	-	299	300	-	296	297	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1354	-	-	1271	-	-	433	431	775	422	422	836
Stage 1	-	-	-	-	-	-	736	686	-	719	673	-
Stage 2	-	-	-	-	-	-	710	666	-	712	668	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1354	-	-	1271	-	-	410	416	775	383	407	836
Mov Cap-2 Maneuver	-	-	-	-	-	-	410	416	-	383	407	-
Stage 1	-	-	-	-	-	-	735	685	-	718	651	-
Stage 2	-	-	-	-	-	-	669	644	-	663	667	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1.3	12.8	15.4
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	552	1354	-	-	1271	-	-	418
HCM Lane V/C Ratio	0.159	0.002	-	-	0.033	-	-	0.17
HCM Control Delay (s)	12.8	7.7	-	-	7.9	-	-	15.4
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.6	0	-	-	0.1	-	-	0.6

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	271	36	56	237	33	47	6	55	17	3	3
Future Vol, veh/h	11	271	36	56	237	33	47	6	55	17	3	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	250	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	295	39	61	258	36	51	7	60	18	3	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	294	0	0	334	0	0	740	755	315	770	756	276
Stage 1	-	-	-	-	-	-	339	339	-	398	398	-
Stage 2	-	-	-	-	-	-	401	416	-	372	358	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1268	-	-	1225	-	-	333	338	725	318	337	763
Stage 1	-	-	-	-	-	-	676	640	-	628	603	-
Stage 2	-	-	-	-	-	-	626	592	-	648	628	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1268	-	-	1225	-	-	314	318	725	274	317	763
Mov Cap-2 Maneuver	-	-	-	-	-	-	314	318	-	274	317	-
Stage 1	-	-	-	-	-	-	670	634	-	622	573	-
Stage 2	-	-	-	-	-	-	589	562	-	583	622	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	1.4	16.1	17.9
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	442	1268	-	-	1225	-	-	305
HCM Lane V/C Ratio	0.266	0.009	-	-	0.05	-	-	0.082
HCM Control Delay (s)	16.1	7.9	-	-	8.1	-	-	17.9
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.1	0	-	-	0.2	-	-	0.3

APPENDIX F

Intersection												
Int Delay, s/veh	2.7											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	3	5	14	8	2	5	36	13	5	41	48
Future Vol, veh/h	12	3	5	14	8	2	5	36	13	5	41	48
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	92	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	3	6	16	9	2	6	40	14	6	46	53

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	150	151	73	148	170	47	99	0	0	54	0	0
Stage 1	85	85	-	59	59	-	-	-	-	-	-	-
Stage 2	65	66	-	89	111	-	-	-	-	-	-	-
Critical Hdwy	8.02	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	7.02	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	7.02	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	4.328	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	651	741	989	820	723	1022	1494	-	-	1551	-	-
Stage 1	741	824	-	953	846	-	-	-	-	-	-	-
Stage 2	762	840	-	918	804	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	639	735	989	808	717	1022	1494	-	-	1551	-	-
Mov Cap-2 Maneuver	639	735	-	808	717	-	-	-	-	-	-	-
Stage 1	738	821	-	949	843	-	-	-	-	-	-	-
Stage 2	749	837	-	906	801	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.2	9.7	0.7	0.4
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1494	-	-	716	788	1551	-	-
HCM Lane V/C Ratio	0.004	-	-	0.031	0.034	0.004	-	-
HCM Control Delay (s)	7.4	0	-	10.2	9.7	7.3	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	49	10	1	18	10	5	2	59	13	3	38	12
Future Vol, veh/h	49	10	1	18	10	5	2	59	13	3	38	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	92
Mvmt Flow	53	11	1	20	11	5	2	64	14	3	41	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	137	136	48	135	135	71	54	0	0	78	0	0
Stage 1	54	54	-	75	75	-	-	-	-	-	-	-
Stage 2	83	82	-	60	60	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	834	755	1021	836	756	991	1551	-	-	1520	-	-
Stage 1	958	850	-	934	833	-	-	-	-	-	-	-
Stage 2	925	827	-	951	845	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	818	753	1021	824	754	991	1551	-	-	1520	-	-
Mov Cap-2 Maneuver	818	753	-	824	754	-	-	-	-	-	-	-
Stage 1	957	848	-	933	832	-	-	-	-	-	-	-
Stage 2	907	826	-	936	843	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	9.6	0.2	0.4
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1551	-	-	809	822	1520	-	-
HCM Lane V/C Ratio	0.001	-	-	0.081	0.044	0.002	-	-
HCM Control Delay (s)	7.3	0	-	9.8	9.6	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0	-	-

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	143	33	68	118	14	22	2	24	32	5	6
Future Vol, veh/h	2	143	33	68	118	14	22	2	24	32	5	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	250	-	-	-	-	100	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	46	2	2	2
Mvmt Flow	2	159	37	76	131	16	24	2	27	36	6	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	147	0	0	196	0	0	480	481	178	487	491	139
Stage 1	-	-	-	-	-	-	182	182	-	291	291	-
Stage 2	-	-	-	-	-	-	298	299	-	196	200	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.66	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.714	3.518	4.018	3.318
Pot Cap-1 Maneuver	1435	-	-	1377	-	-	496	485	763	491	478	909
Stage 1	-	-	-	-	-	-	820	749	-	717	672	-
Stage 2	-	-	-	-	-	-	711	666	-	806	736	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1435	-	-	1377	-	-	467	458	763	452	451	909
Mov Cap-2 Maneuver	-	-	-	-	-	-	467	458	-	452	451	-
Stage 1	-	-	-	-	-	-	819	748	-	716	635	-
Stage 2	-	-	-	-	-	-	661	629	-	774	735	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	2.6	11.6	13.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	466	763	1435	-	-	1377	-	-	486
HCM Lane V/C Ratio	0.057	0.035	0.002	-	-	0.055	-	-	0.098
HCM Control Delay (s)	13.2	9.9	7.5	-	-	7.8	-	-	13.2
HCM Lane LOS	B	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0.1	0	-	-	0.2	-	-	0.3

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	183	24	30	159	22	32	4	75	12	2	2
Future Vol, veh/h	7	183	24	30	159	22	32	4	75	12	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	250	-	-	-	-	100	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	58	2	2	2	2	2	2	2	2
Mvmt Flow	8	199	26	33	173	24	35	4	82	13	2	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	197	0	0	225	0	0	481	491	212	522	492	185
Stage 1	-	-	-	-	-	-	228	228	-	251	251	-
Stage 2	-	-	-	-	-	-	253	263	-	271	241	-
Critical Hdwy	4.12	-	-	4.68	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.722	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1376	-	-	1073	-	-	495	478	828	465	478	857
Stage 1	-	-	-	-	-	-	775	715	-	753	699	-
Stage 2	-	-	-	-	-	-	751	691	-	735	706	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1376	-	-	1073	-	-	478	460	828	405	460	857
Mov Cap-2 Maneuver	-	-	-	-	-	-	478	460	-	405	460	-
Stage 1	-	-	-	-	-	-	770	711	-	748	677	-
Stage 2	-	-	-	-	-	-	724	670	-	655	702	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1.2	10.9	13.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	476	828	1376	-	-	1073	-	-	441
HCM Lane V/C Ratio	0.082	0.098	0.006	-	-	0.03	-	-	0.039
HCM Control Delay (s)	13.2	9.8	7.6	-	-	8.5	-	-	13.5
HCM Lane LOS	B	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	0.3	0	-	-	0.1	-	-	0.1

Intersection	
Int Delay, s/veh	5.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	9	3	50	11	0	11
Future Vol, veh/h	9	3	50	11	0	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	100
Mvmt Flow	10	3	56	12	0	12

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	13	0	136	12
Stage 1	-	-	-	-	12	-
Stage 2	-	-	-	-	124	-
Critical Hdwy	-	-	4.12	-	6.42	7.2
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	4.2
Pot Cap-1 Maneuver	-	-	1606	-	857	843
Stage 1	-	-	-	-	1011	-
Stage 2	-	-	-	-	902	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1606	-	827	843
Mov Cap-2 Maneuver	-	-	-	-	827	-
Stage 1	-	-	-	-	1011	-
Stage 2	-	-	-	-	870	-

Approach	EB	WB	NB
HCM Control Delay, s	0	6	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	843	-	-	1606	-
HCM Lane V/C Ratio	0.014	-	-	0.035	-
HCM Control Delay (s)	9.3	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0.1	-

Intersection	
Int Delay, s/veh	6.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	12	0	11	13	3	50
Future Vol, veh/h	12	0	11	13	3	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	100	2	2	2
Mvmt Flow	13	0	12	14	3	54

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	13	0	51	13
Stage 1	-	-	-	-	13	-
Stage 2	-	-	-	-	38	-
Critical Hdwy	-	-	5.1	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	3.1	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1146	-	958	1067
Stage 1	-	-	-	-	1010	-
Stage 2	-	-	-	-	984	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1146	-	947	1067
Mov Cap-2 Maneuver	-	-	-	-	947	-
Stage 1	-	-	-	-	1010	-
Stage 2	-	-	-	-	973	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.7	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1059	-	-	1146	-
HCM Lane V/C Ratio	0.054	-	-	0.01	-
HCM Control Delay (s)	8.6	-	-	8.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

APPENDIX G

Intersection												
Int Delay, s/veh	3.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	37	5	24	20	13	3	13	54	19	8	61	56
Future Vol, veh/h	37	5	24	20	13	3	13	54	19	8	61	56
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	250	-	-	250	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	32	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	41	6	27	22	14	3	14	60	21	9	68	62

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	193	195	68	233	247	71	130	0	0	81	0	0
Stage 1	86	86	-	99	99	-	-	-	-	-	-	-
Stage 2	107	109	-	134	148	-	-	-	-	-	-	-
Critical Hdwy	7.42	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.42	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.42	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.788	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	705	700	995	722	655	991	1455	-	-	1517	-	-
Stage 1	853	824	-	907	813	-	-	-	-	-	-	-
Stage 2	830	805	-	869	775	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	682	689	995	690	645	991	1455	-	-	1517	-	-
Mov Cap-2 Maneuver	682	689	-	690	645	-	-	-	-	-	-	-
Stage 1	844	819	-	898	805	-	-	-	-	-	-	-
Stage 2	805	797	-	835	770	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.2	10.5	1.1	0.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1455	-	-	771	690	1517	-	-
HCM Lane V/C Ratio	0.01	-	-	0.095	0.058	0.006	-	-
HCM Control Delay (s)	7.5	-	-	10.2	10.5	7.4	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.2	0	-	-

Intersection												
Int Delay, s/veh	4.7											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	66	14	15	27	14	8	22	88	19	5	57	41
Future Vol, veh/h	66	14	15	27	14	8	22	88	19	5	57	41
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	250	-	-	250	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	29
Mvmt Flow	72	15	16	29	15	9	24	96	21	5	62	45

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	239	237	62	265	272	107	107	0	0	117	0	0
Stage 1	72	72	-	155	155	-	-	-	-	-	-	-
Stage 2	167	165	-	110	117	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	715	664	1003	688	635	947	1484	-	-	1471	-	-
Stage 1	938	835	-	847	769	-	-	-	-	-	-	-
Stage 2	835	762	-	895	799	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	685	651	1003	655	623	947	1484	-	-	1471	-	-
Mov Cap-2 Maneuver	685	651	-	655	623	-	-	-	-	-	-	-
Stage 1	923	832	-	833	757	-	-	-	-	-	-	-
Stage 2	798	750	-	861	797	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.9	10.8	1.3	0.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1484	-	-	715	679	1471	-	-
HCM Lane V/C Ratio	0.016	-	-	0.144	0.078	0.004	-	-
HCM Control Delay (s)	7.5	-	-	10.9	10.8	7.5	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.3	0	-	-

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	213	49	86	175	20	33	3	54	47	8	9
Future Vol, veh/h	3	213	49	86	175	20	33	3	54	47	8	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	250	-	-	-	-	100	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	5	2	2	2	2	28	2	2	2
Mvmt Flow	3	237	54	96	194	22	37	3	60	52	9	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	216	0	0	291	0	0	677	678	264	699	694	205
Stage 1	-	-	-	-	-	-	270	270	-	397	397	-
Stage 2	-	-	-	-	-	-	407	408	-	302	297	-
Critical Hdwy	4.12	-	-	4.15	-	-	7.12	6.52	6.48	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.245	-	-	3.518	4.018	3.552	3.518	4.018	3.318
Pot Cap-1 Maneuver	1354	-	-	1254	-	-	367	374	716	354	366	836
Stage 1	-	-	-	-	-	-	736	686	-	629	603	-
Stage 2	-	-	-	-	-	-	621	597	-	707	668	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1354	-	-	1254	-	-	334	344	716	303	337	836
Mov Cap-2 Maneuver	-	-	-	-	-	-	334	344	-	303	337	-
Stage 1	-	-	-	-	-	-	735	685	-	628	557	-
Stage 2	-	-	-	-	-	-	558	551	-	643	667	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	2.5	13.2	18.5
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	335	716	1354	-	-	1254	-	-	338
HCM Lane V/C Ratio	0.119	0.084	0.002	-	-	0.076	-	-	0.21
HCM Control Delay (s)	17.2	10.5	7.7	-	-	8.1	-	-	18.5
HCM Lane LOS	C	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.4	0.3	0	-	-	0.2	-	-	0.8

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	271	36	67	237	33	47	6	103	17	3	3
Future Vol, veh/h	11	271	36	67	237	33	47	6	103	17	3	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	250	-	-	-	-	100	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	18	2	2	2	2	2	2	2	2
Mvmt Flow	12	295	39	73	258	36	51	7	112	18	3	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	294	0	0	334	0	0	764	779	315	820	780	276
Stage 1	-	-	-	-	-	-	339	339	-	422	422	-
Stage 2	-	-	-	-	-	-	425	440	-	398	358	-
Critical Hdwy	4.12	-	-	4.28	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.362	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1268	-	-	1141	-	-	321	327	725	294	327	763
Stage 1	-	-	-	-	-	-	676	640	-	609	588	-
Stage 2	-	-	-	-	-	-	607	578	-	628	628	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1268	-	-	1141	-	-	299	303	725	231	303	763
Mov Cap-2 Maneuver	-	-	-	-	-	-	299	303	-	231	303	-
Stage 1	-	-	-	-	-	-	670	634	-	604	550	-
Stage 2	-	-	-	-	-	-	562	541	-	521	622	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	1.7	14	20.1
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	299	725	1268	-	-	1141	-	-	263
HCM Lane V/C Ratio	0.193	0.154	0.009	-	-	0.064	-	-	0.095
HCM Control Delay (s)	19.9	10.9	7.9	-	-	8.4	-	-	20.1
HCM Lane LOS	C	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.7	0.5	0	-	-	0.2	-	-	0.3

Intersection	
Int Delay, s/veh	3.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	55	3	50	32	0	11
Future Vol, veh/h	55	3	50	32	0	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	100
Mvmt Flow	61	3	56	36	0	12

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	64	0	211	63
Stage 1	-	-	-	-	63	-
Stage 2	-	-	-	-	148	-
Critical Hdwy	-	-	4.12	-	6.42	7.2
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	4.2
Pot Cap-1 Maneuver	-	-	1538	-	777	784
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	880	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1538	-	748	784
Mov Cap-2 Maneuver	-	-	-	-	748	-
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	847	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.5	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	784	-	-	1538	-
HCM Lane V/C Ratio	0.016	-	-	0.036	-
HCM Control Delay (s)	9.7	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0.1	-

Intersection	
Int Delay, s/veh	3.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	45	0	11	66	3	50
Future Vol, veh/h	45	0	11	66	3	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	100	2	2	2
Mvmt Flow	49	0	12	72	3	54

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	49	0	145	49
Stage 1	-	-	-	-	49	-
Stage 2	-	-	-	-	96	-
Critical Hdwy	-	-	5.1	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	3.1	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1106	-	847	1020
Stage 1	-	-	-	-	973	-
Stage 2	-	-	-	-	928	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1106	-	838	1020
Mov Cap-2 Maneuver	-	-	-	-	838	-
Stage 1	-	-	-	-	973	-
Stage 2	-	-	-	-	918	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1008	-	-	1106	-
HCM Lane V/C Ratio	0.057	-	-	0.011	-
HCM Control Delay (s)	8.8	-	-	8.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

LARIMER COUNTY: HEALTH & ENVIRONMENT

AIR QUALITY

JUNE 5, 2023

Lea Schneider
Environmental Health Planner

REGULATORY AGENCIES

Environmental Protection Agency (EPA)

- Regulates the Clean Air Act
  - Sets National Ambient Air Quality Standards (NAAQS) for 6 criteria pollutants that have the potential to be harmful to human health and the environment.
  - National standards apply to all states and tribal areas

Colorado Air Pollution Control Division (APCD)

- Colorado's regulatory agency that oversees compliance with NAAQS.
  - Issue permits for sources of air pollution
  - Conduct inspections
  - Initiate compliance and enforcement actions

Larimer County Department of Health & Environment (LCDHE)

- LCDHE operates under a contract with APCD as a local regulatory agency for all of Larimer County's sources of air pollution.
  - Investigate complaints
  - Conduct inspections
  - Inspections conducted by LCDHE are reviewed by APCD's Compliance and Enforcement Program to determine appropriate enforcement actions.

EMISSION THRESHOLDS

	Calendar Year Uncontrolled Emissions in ATTAINMAENT Area		
Criteria Pollutants	**Air Pollutant Emission Notice (APEN)Thresholds**	**Permit Thresholds**	**EPA Thresholds for Major Sources**
VOC (volatile organic compounds)	2 tons	5 tons	100 tons
PM (particulate matter of various sizes)	2 tons	5 tons	100 tons
CO (carbon monoxide)	2 tons	10 tons	100 tons
SOx (sulfur dioxide)	2 tons	10 tons	250 tons
NOx (oxides of nitrogen)	2 tons	10 tons	100 tons
Noncriteria Pollutants **HAPs (Hazardous Air Pollutants)**	250 pounds	N/A	10 tons single source; or 25 tons combined

APCD PERMIT THRESHOLDS

Connell 2021 permit based on 300,000 tons per year

CRITERIA POLLUTANTS

Facility Equipment ID	AIRS Point	Tons per Year							Emission Type
		PM	PM_{10}	$PM_{2.5}$	NO_x	SO_2	VOC	CO	
650001	001	2.7	0.7	0.2	8.3	8.7	4.8	19.5	Point
	001	14.6	3.8	0.6	-	-	-	-	Fugitive

NONCRITERIA POLLUTANTS (HAZARDOUS AIR POLLUTANTS)

AIRS Point	Pollutant	CAS #	Uncontrolled Emission Rate (lb/yr)	Are the emissions reportable?	Controlled Emission Rate (lb/yr)
001	Acetaldehyde	75070	390	YES	390
	Hexane	110543	285.9	YES	285.9
	Formaldehyde	50000	930	YES	930
	Toluene	108883	870	YES	870

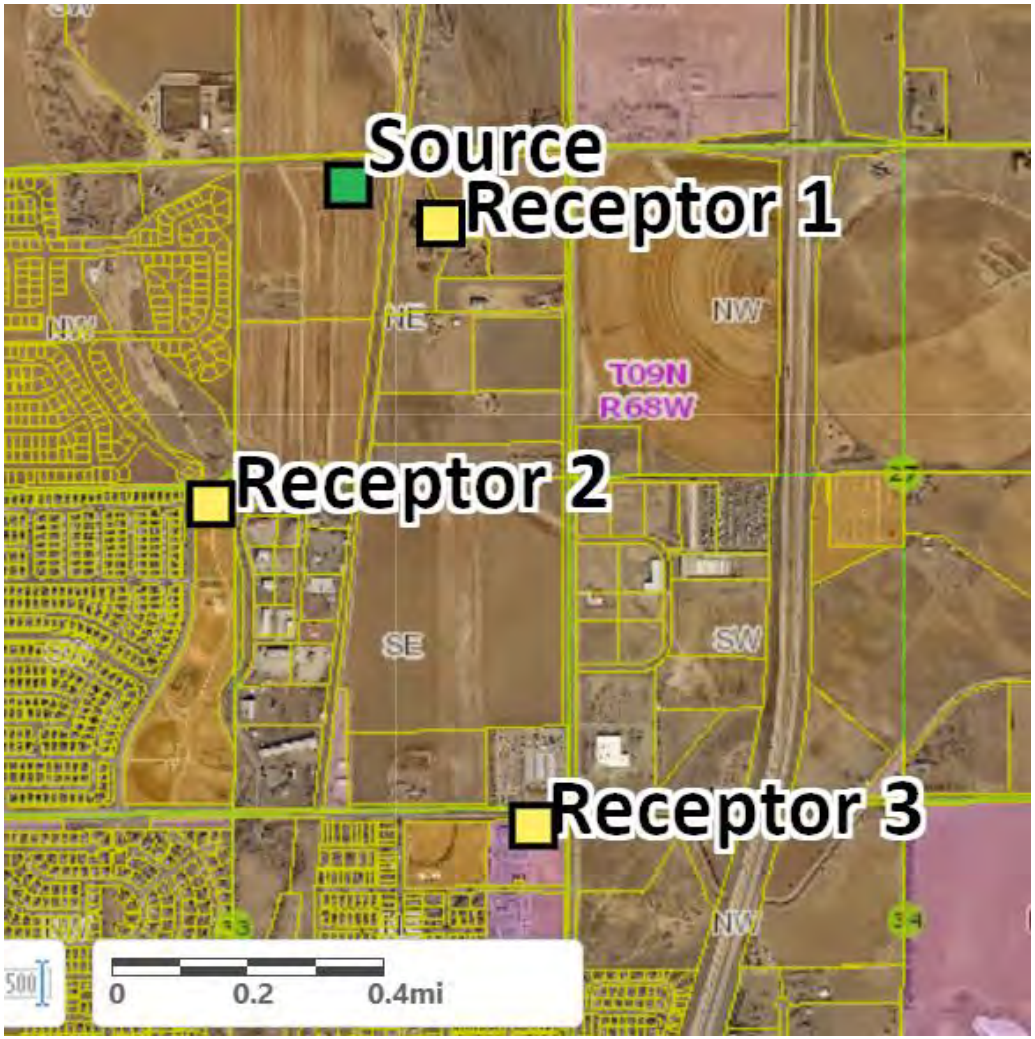
CONNELL 2023 RISK ASSESSMENT

- Connell contracted a consultant to conduct air dispersion modeling for criteria and noncriteria pollutants of Hazardous Air Pollutants/Air Toxics to evaluate community risk and determine if planned controls were adequate.

- Data for the modeling and risk assessment included the maximum pollutant emission rates from Connell's current 2021 permit, control equipment, local meteorology, etc.

- The air dispersion model for criteria pollutants and HAPs were determined to be below both the chronic and acute levels known to cause harmful health impacts under Federal and state screening values and health guideline values.

CONNELL 2023 RISK ASSESSMENT



- **Receptor 1: Residence**
- **Receptor 2: Community Park**
- **Receptor 3: Elementary School**

CONNELL 2023 RISK ASSESSMENT

Pollutant	Acute Screening Value (µg/m3)	CDPHE Recommended Screening Levels	Calculated 1-Hour Average HAP Exposure (µg/m3)		
			Receptor 1: Residential	Receptor 2: Park	Receptor 3: School
Acetaldehyde	470	45,040	0.17	0.241	0.03
Hexane	390,000	6,200	0.12	0.018	0.022
Formaldehyde	55	49	0.4	0.057	0.072
Toluene	37,000	7,500	0.37	0.054	0.068
Quinone	10000	4	0.035	0.005	0.0063
Benzene	1,300	29	0.036	0.0052	0.0065
Ethylbenzene	140,000	22,000	0.28	0.041	0.051
Xylene	8,700	8,700	0.35	0.05	0.063
Total PAH	0.75	0.03	0.03	0.0043	0.0054
Hydrochloric Acid	190	190	0.027	0.0039	0.0049

CONNELL 2023 RISK ASSESSMENT

Pollutant	Chronic Screening Value (µg/m3)	CDPHE Recommended Screening Levels	Calculated Annual Average HAP Exposure (µg/m3)		
			Receptor 1: Residential	Receptor 2: Park	Receptor 3: School
Acetaldehyde	0.45	4,504	0.0024	0.00026	0.00022
Hexane	70	700	0.0017	0.00021	0.00016
Formaldehyde	0.077	9.8	0.0056	0.00069	0.00053
Toluene	40	5,000	0.0053	0.00064	0.0005
Quinone	0.40	0.40	0.00049	0.00005	0.00005
Benzene	0.13	9.60	0.00051	0.00006	0.00005
Ethylbenzene	0.40	1,000	0.004	0.00044	0.00038
Xylene	10	100	0.0049	0.00054	0.00047
Total PAH	0.11	0.002	0.00042	0.00005	0.00004
Hydrochloric Acid	2	7.9	0.00038	0.00004	0.00004

CONNELL 2023 RISK ASSESSMENT

Health guideline values protect people because they are far below levels where we expect health effects.

COLORADO
Department of Public Health & Environment

AGENCY CONTACTS

Please call with questions or report concerns through the following agencies:

Larimer County Health Department: (970)498-6775
File complaint online: https://www.larimer.gov/health/environmental-health

Colorado Department of Public Health & the Environment: Toxicology
ToxCall: (303) 692-2606 or cdphe_toxcall@state.co.us

Colorado Environmental Incident Reporting Line at 1-877-518-5608
File complaint online:
https://cdphe.colorado.gov/report-a-public-health-or-environmental-concern

Addendum

May 1, 2023 Planning Commission Agenda Packet

This addendum to the May 1, 2023 Planning Commission agenda packet contains written public comments received before 3:00pm on April 28, 2023 that did not get included in the agenda packet published on April 28, 2023.

The agenda packet posted on April 28, 2023 is available for review on the Town's website at https://www.wellingtoncolorado.gov/Archive.aspx?AMID=56.

Print

Planning Commission May 1, 2023 Public Comment - Submission #3042

Date Submitted: 4/26/2023

First and Last Name*

Alyssa McGarvey

Email Address*

lissy.mcgarvey@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3948 Eucalyptus Street

Public Comment for the Planning Commission May 1, 2023 Meeting

I am opposed to the proposed asphalt plant in Wellington. The chemical and noise from the plant are enough for me to not want it here.

Optional File Attachment

Choose File No file selected

Optional File Attachment

Choose File No file selected

Optional File Attachment

Choose File No file selected

Print

Planning Commission May 1, 2023 Public Comment - Submission #3043

Date Submitted: 4/26/2023

First and Last Name*

Erin

Email Address*

erin5mcguirk@outlook.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

6992 Grassy Range Dr. Wellington, CO 80549

Public Comment for the Planning Commission May 1, 2023 Meeting

We do not want the Asphalt Plant here in Wellington so close to where my son attends school. We do not want to be exposed to such harsh chemicals. Air quality is already an issue.

Optional File Attachment

Choose File No file selected

Optional File Attachment

Choose File No file selected

Optional File Attachment

Choose File No file selected

Print

Planning Commission May 1, 2023 Public Comment - Submission #3044

Date Submitted: 4/26/2023

First and Last Name*

paul d Wakefield

Email Address*

pdwfield@yahoo.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

8912 Smoke Signal Way

Public Comment for the Planning Commission May 1, 2023 Meeting

This is in regards to the Asphalt plant meeting on may 1st. I have uploaded copies of three recent Asphalt plant accidents. Please review them for consideration to oppose the approval of the asphalt plant north of Buffalo Creek subdivision. 1. The Superior, Wi accident affected thirty six residents and eleven employees. People were evacuated up to 10 miles away. 2. The Ardmore asphalt explosion left one employee dead where they store a lot of volatile chemicals. 3. Tank explodes at asphalt plant in ADAMS COUNTY as a result of an electrical fire. Lastly, my other concern is: How is the Wellington fire department, the town of Wellington and Larimer county prepared to respond to such accidents?

Optional File Attachment

Ardmore asphalt plant.docx

Optional File Attachment

Tank explodes at asphalt plant 11.docx

Optional File Attachment

United Asphalts plant in Commerce.docx

Tank explodes at asphalt plant

ADAMS COUNTY – Southwest Adams County Fire and Rescue says an asphalt tank at Lafarge exploded Monday morning.

No one was hurt and the damage was minimal. A wooden deck on top of the tank and the motor was damaged.

Fire Chief George Ditolla says the cause of the explosion is still under investigation although it appears to be electrical in nature.

Author: **ColleenLocke** Published: **8/6/2007 1:38:59 PM Retrieved April 26, 2023 from https://www.9news.com/article/news/local/tank-explodes-at-asphalt-plant/73-343730236**

Author: ColleenLocke
Published: 8/6/2007 1:38:59 PM
Updated: 1:38 PM MDT August 6, 2007

No one was hurt and the damage was minimal. A wooden deck on top of the tank and the motor was damaged.

Fire Chief George Ditolla says the cause of the explosion is still under investigation although it appears to be electrical in nature.

COMMERCE CITY, Colo. -- Fire officials say an asphalt tank caught fire at the United Asphalts plant in Commerce City this morning.

A witness told Denver7 there was an explosion.

Gregg Vest, was working security detail at a nearby business when he heard a loud boom, ran outside and saw smoke coming from one of the tanks at the asphalt plant at 4306 E. 60th Avenue.

"I called 911," he said.

Vest, snapped several photos of the black smoke emanating from the plant site.

Vest said he saw a crew member on a fork lift trying to control the blaze with a fire extinguisher.

An Adams County Fire Department spokesperson said the fire broke out around 11:25 a.m. as the crew tried to heat the tank "to get the right consistency."

There were no injuries.

Denver 7 news 2023 Scripps Media, Inc. Retrieved April 26, 2023 from https://www.denver7.com/news/local-news/asphalt-tank-catches-fire-explodes-in-commerce-city

One dead after explosion at Ardmore asphalt plant

Friday, July 16th 2021, 10:50 AM CDT
Updated:
Friday, July 16th 2021, 6:38 PM CDT
By **Lexy French**

ARDMORE, Okla. (KTEN) -- One person was killed after an explosion and fire at an Ardmore asphalt plant on Friday morning.

Ardmore police Chief Kevin Norris said they began receiving calls around 10 a.m. concerning the blast at Asphalt Express Enterprises at 415 North Plainview Road on the city's west side, not far from the Michelin tire plant.

"Firefighters arrived on the scene and found heavy flames and smoke coming from the back of the compound ... where they stored a lot of their volatile chemicals," said Ardmore Fire Department spokesperson Jason Woydziak.

Thick black smoke rose from the scene and could be seen for miles around.

Norris confirmed that one person died in the blast; no identity was released. The chief said no one else was injured.

"We don't know what the cause of the fire is," Chief Norris said. "Right now that is under investigation, and then OSHA will come in and do an investigation."

He said it may be several months before the origin of the blast can be identified.

Concerned family members of employees were asked to meet officers stationed nearby at the car wash at Broadway and Plainview Road for help in contacting loved ones.

The fire was reported under control as of 12:45 p.m.

Phone calls to the company by the AP rang unanswered on Friday and neither the fire department nor emergency services immediately replied to messages seeking comment.

According to its website, Asphalt Express provides transportation, storage and sales of bulk liquids such as asphalt and various types of oil at the Ardmore plant.

Retrieved April 26, 2023, from 10 news Okla. **By Lexy French**

https://www.kten.com/story/44324469/fire-breaks-out-at-ardmore-asphalt-facility

Print

Planning Commission May 1, 2023 Public Comment - Submission #3045

Date Submitted: 4/26/2023

First and Last Name*

Joe Hayes

Email Address*

diverhayes@yahoo.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3328 Wild West lane wellington 80549

Public Comment for the Planning Commission May 1, 2023 Meeting

We are trying to work together as a city to fight hidden things, power and greed. We feel that the city employees are trying to sneak something into the town without letting us know about it. Luckily one of our neighbors found out about it, and notified us. We encourage more people to get involved and are asking that the truth be known that they are Toxic chemicals coming from the asphalt plant. This is not what the Connell companies representative presented to us and tried to say â€œ only steam comes out no chemicals, no more than a gas stationâ€. There is Also evidence that Connell has been out of compliance in the past & was fined $7k via a Settlement Agreement with the CDC. We didnâ€™t move here to be pushed out by greedy people who want to sell their families land that used to be a farm for millions of dollars to be an asphalt plant instead and right next to where our children go to play.

Optional File Attachment

Choose File | No file selected

Optional File Attachment

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Optional File Attachment

Choose File | No file selected

Print

Planning Commission May 1, 2023 Public Comment - Submission #3046

Date Submitted: 4/26/2023

First and Last Name*

Larry M. Rice

Email Address*

larryriceoc1@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

9073 Flaming Arrow Avenue

Public Comment for the Planning Commission May 1, 2023 Meeting

Dear Mr. Bird, Simply and to the point, I am a Wellington resident who resides and owns a home in Buffalo Creek subdivision, located to the west of the proposed Hot Asphalt Plant that is being considered for construction behind Wellington Community Park. I want to express in the strongest means possible that I oppose any such development in our community! Why? In plain terms that anyone can understand: IT STINKS! The smell, full of toxic gases and emissions. The eyesore (really, does anyone want to look out and see this ugly construction site?). The increase in heavy truck traffic within our town (as if we need any MORE traffic). The reduction in property values (who would like to have their home situated downwind of the asphalt fumes?). Noise pollution (yes, there are residents of Wellington who appreciate its small-town tranquility). And why is this hot asphalt plan even being considered to be located in Wellington? Hmmmâ€¦.letâ€™s think about that for a second. Money? Greed? Short-sighted, ill-informed thinking? All of the above? I think â€œall of the above.â€ I implore you, Mr. Bird, and the rest of the town trustees, including the mayor, to stop this ill-conceived idea from going any further. Do NOT allow this asphalt plan to be situated anywhere within Wellington. Not only for us current residents, but for those who might want to call Wellington their home in the future. Itâ€™s just a plain bad idea that should have never have been considered in the first place. Itâ€™s time to stop it now. Wellington does not need it. We do not need it! Thanks you for your time and consideration. Please do the right thing. Sincerely, Larry Rice Buffalo Creek Estates Sent from my iPhone

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Planning Commission May 1, 2023 Public Comment - Submission #3047

Date Submitted: 4/26/2023

First and Last Name*

Robby Oxford

Email Address*

jessicaoxford10@yahoo.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

6902 Grassy Range Dr.

Public Comment for the Planning Commission May 1, 2023 Meeting

To whom it may concern, We are all about growth and prosperity for our town, however allowing a large, toxic, company such as an asphalt plant to move in brings a lot of negative effects to our community. Some of these negatives include unwanted traffic, as well as all the health risks that it would bring, including breathing in toxic chemicals and potential water contamination in already questionable water, etc... The smell is just another negative aspect to add to this list of reasons why a plant does not belong here. I don't usually speak up, but this is a concern in which myself and many others do not agree with. We should not be allowing this to happen to our town. Thank you for your time and consideration of our opinion.

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Planning Commission May 1, 2023 Public Comment - Submission #3048

Date Submitted: 4/26/2023

First and Last Name*

Lorene Simpson

Email Address*

Lrsimpson25@gmail

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

6915 Grassy Range Dr

Public Comment for the Planning Commission May 1, 2023 Meeting

As a new homeowner in the state of Colorado and Wellington, I would like to express my concern over the Cornell asphalt plan and its toxic chemicals. It cannot be located at the proposed location due to the set back requirements of 2640 feet from any residential district, school, medical facility or religious area. DO NOT APPROVE THIS PLAN as the plant produces and curates toxic chemicals. Thank you for taking the property owners concern. Lorene Simpson

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Planning Commission May 1, 2023 Public Comment - Submission #3049

Date Submitted: 4/26/2023

First and Last Name*

Nathan Schmidt

Email Address*

nds.schmidt@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3233 Grizzly Way Wellington Co

Public Comment for the Planning Commission May 1, 2023 Meeting

I have lived in Wellington for six years, and we are wanting to start a family soon, putting an asphalt plant near our neighborhood (Buffalo Creek) would cause health issues for us, as well as drastically lower the value of our house. If we want this city to continue to grow, we cannot put a toxic and loud commercial enterprise so close to our neighborhoods, schools, and playgrounds. Please use some common sense and do not allow the asphalt plant to be built in such close proximity to the city. Think 10-20 years from now and what would be in the best interest of the city and for the people that call this place home.

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Planning Commission May 1, 2023 Public Comment - Submission #3050

Date Submitted: 4/26/2023

First and Last Name*

Jennieann West

Email Address*

jennieann9378@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3294 Wild West Ln. Wellington, CO

Public Comment for the Planning Commission May 1, 2023 Meeting

OPPOSED to proposed asphalt plant. Please do not ruin our beautiful community of Buffalo Creek and the community park with a plant this close to our houses and playground for our children.

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Planning Commission May 1, 2023 Public Comment - Submission #3051

Date Submitted: 4/26/2023

First and Last Name*

Chad Mickschl

Email Address*

chad.guides@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

6915 Grassy Range Dr

Public Comment for the Planning Commission May 1, 2023 Meeting

I am against the decision to approve the Asphalt Plat from being built at the current location within Wellington town limits. 1.Â The town of Wellington was re-zoned in 2022 with the land that Connell Resources Â wants to develop zoned as Heavy Industrial.Â As Wellington was re-zoned, Heavy Industrial land came with setback requirements of 1000ft linear and 45ft height restrictions.Â The claim by Connell Resources that the land is not suitable for Heavy Industrial use with current setbacks should have led town planners to decide that this property should be re-zoned to Light Industrial to limit the setback needs.Â The need for a greater setback of 2640ft is actually more appropriate given the language in the Land Use Code Section 4.03.21 B curating toxic chemicals.Â Especially since it is adjacent to a residential neighborhood, a park and school.Â Additionally, the asphalt plant will not only impact the nearby neighborhoods, but our entire small town as the air quality will be impacted. 2.Â I have issues with the lack of informed decision making to grant the setback variance as well.Â It does not appear the town of Wellington has done any environmental (air quality, water quality and quantity, soil erosion), traffic impact, view shed impacts, noise, environmental justice for underserved communities, or economic impacts analyses that this will have on the health and safety of Wellington residents and wildlife such as migrating birds.Â The town must clearly understand and communicate to the public, the risks and/or benefits associated with the Asphalt Plant. This has yet to have been completed. Â Based on other locations where Asphalt Plants are located near neighborhoods, property values decreased 56% according to Blue Ridge Environmental Defense League (BREDL). BREDL also found that 45% of residents living within a half mile of a new asphalt plant reported a deterioration of their health, which began after the plant opened. Known toxins also come with an Asphalt Plant such as odor, formaldehyde, hexane, phenol, polycyclic organic matter, and toluene. The CDCâ€™s National Institute for Occupational Safety & Health states, â€œKnown carcinogens have been found in asphalt fumes generated at work sites.â€* Exposure to these air toxins may cause cancer, central nervous system problems, liver damage, respiratory problems, and skin irritation (EPA Asphalt Plant Emission Assessment Report 2000). The town of Wellington has a number of human health and safety issues to deal with currently, they do not need to add another issue. The responsibility of the Town of Wellington and its elected representatives is the health, safety, and well being of its residents.Â If this asphalt plant is approved, the town is falling far short of this responsibility. Â 3.Â The economic impact on the residents and the town will be noticeable.Â Residents will lose property value and will likely look to move out of town.Â With issues Wellington is already trying to deal with (train crossings, water quality, water price, concentrated feed lots, close proximity to the highway), this will likely be the final thing to tilt residents to leave.Â Businesses will also likely leave and close as their consumers will leave town. Â 4.Â There are certainly better locations for the Asphalt Plant to be located.Â Connell Resources likes to mention that homes have been built in Fort Collins next to their plants, however that is a homeowners decision.Â With this approval, homeowners were not able to make a decision to live next to an Asphalt Plant, the town of Wellington is poorly making that decision for them.Â As elected officials, you must stand up for your constituents. There are large swaths of county land in Larmier and Weld where this could be located away from residential areas.Â Connell Resources claims that the counties don't want the Asphalt Plants, but there is a process to get those approved there.Â There are also areas within Weld County where these plants are welcomed. Connell Resources also claimed that they could open in Carr (where they get their aggregate) but its too cold and windy for transporting?Â There are common mitigations such as lining and insulating trucks for transport.Â Asphalt plants exist in far colder places than the Front Range of Colorado. It's time for the town of Wellington to STOP being Fort Collins' dumping ground. Thank you for taking comments and I trust the right decision will be made regarding the health, safety, and viability of residents and the town of Wellington. Chad Mickschl

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Planning Commission May 1, 2023 Public Comment - Submission #3054

Date Submitted: 4/27/2023

First and Last Name*

Jessica R Howe

Email Address*

colacinoj@yahoo.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

8802 Raging Bull Lane

Public Comment for the Planning Commission May 1, 2023 Meeting

I have COPD and a history of breast cancer. Having an asphalt company in town will exacerbate by COPD and I wonâ€™t be able to live here. I cannot afford to move. We are highly against this plant being built here due to health concerns. Thank you

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Planning Commission May 1, 2023 Public Comment - Submission #3055

Date Submitted: 4/27/2023

First and Last Name*

Aaron Hackett

Email Address*

aaron.e.hackett@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3337 Grizzly Way

Public Comment for the Planning Commission May 1, 2023 Meeting

Town of Wellington Planning Commission, I am extremely opposed to the proposed Asphalt Plant. I have a home that would be very close to this plant and I am very worried about chemical exposure, associated health impacts, noise pollution, and loss of property value. My wife is pregnant and as a parent-to-be I am appalled at the idea of raising my child near such a toxic industrial facility. The idea of putting an asphalt plant right in the center of a residential area when there are literally thousands of open acres near enough to be of no economic detriment is quite frankly one of the most ludicrous proposals I have ever heard. There is absolutely no reason to expose large numbers of children, mothers, and elderly individuals to the toxic fumes an asphalt plant would produce. The town, county, and state recently spent an extremely large sum of money building a new school that would be in the near vicinity to this proposed plant and therefore expose all the students, staff, and parents to these fumes. A simple solution to my and other's concerns would be to relocate the proposed plant to a significantly less populated area north or east of town. Aaron Hackett

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Planning Commission May 1, 2023 Public Comment - Submission #3056

Date Submitted: 4/27/2023

First and Last Name*

Trevor Vilkaitis

Email Address*

tvilkaitis@hotmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3282 Grizzly Way

Public Comment for the Planning Commission May 1, 2023 Meeting

To whom it may concern, In regards to the proposed asphalt plant, I strongly oppose the decision to allow the plant to be near Wellington. As a resident and homeowner in the Buffalo creek subdivision this will directly effect me and my family. Not only will my home value be compromised, but the pollution and health effects on me, my children and my animals is unacceptable. Also, Wellington is already on an infrastructure system that has been spread thin for years. For years now we have been on water restrictions, constant power outages and the traffic at peak times such as school start and finish times is already an issue. This area is not capable of supporting what is already here plus any industrial plant of any kind. Please take these concerns into consideration when discussing this asphalt plant near Wellington. Thank you.

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Planning Commission May 1, 2023 Public Comment - Submission #3057

Date Submitted: 4/27/2023

First and Last Name*

Ben Leistikow

Email Address*

ben.leistikow@me.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

8605 Citation Ct, Wellington

Public Comment for the Planning Commission May 1, 2023 Meeting

Dear Planning Board, The intent of this letter is that the Connell site plan doesnâ€™t meet the stringent requirements that apply to toxic chemicals and so cannot be located at the proposed location nor does a continuance for air modeling help with this. Land use code 4.03.21,B, regarding the production and curating of toxic chemicals requires these sites to be located at least 2,640 feet from any residential district, religious land use, medical care facility, or school. Batch asphalt plants produce toxic chemicals in the forms of HAPs and PAHs. Colorado Department of Public Health & Environment refer to these chemicals as toxic in their documentation. Additionally Lea Schneider from Larimer County Department of Public Health & Environment was quoted in the Coloradoan and at the previous meeting referring to these chemicals as toxic. John Warren also referenced these chemicals as toxic at major source levels. The code does not care about levels it only refers to if there are toxic chemicals. This batch asphalt plant produces and curates toxic chemicals. The planning board should not approve this plan due to the producing and curating setback of 2,640 feet. There is no variance for this setback. Thanks for your consideration, Ben Leistikow

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Proposed Wellington asphalt plant approval delayed.pdf

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This fact sheet answers.pdf

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PAH FAQ.pdf

Polycyclic Aromatic Hydrocarbons (PAHs) - ToxFAQs™

This fact sheet answers the most frequently asked health questions (FAQs) about polycyclic aromatic hydrocarbons (PAHs). For more information, call the CDC Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to polycyclic aromatic hydrocarbons usually occurs by breathing air contaminated by wild fires or coal tar, or by eating foods that have been grilled. PAHs have been found in at least 600 of the 1,430 National Priorities List (NPL) sites identified by the Environmental Protection Agency (EPA).

What are polycyclic aromatic hydrocarbons?

(Pronounced pŏl′ī-sī′klĭk ăr′ə-măt′ĭk hī′drə-kar′bənz)

Polycyclic aromatic hydrocarbons (PAHs) are a group of over 100 different chemicals that are formed during the incomplete burning of coal, oil and gas, garbage, or other organic substances like tobacco or charbroiled meat. PAHs are usually found as a mixture containing two or more of these compounds, such as soot.

Some PAHs are manufactured. These pure PAHs usually exist as colorless, white, or pale yellow-green solids. PAHs are found in coal tar, crude oil, creosote, and roofing tar, but a few are used in medicines or to make dyes, plastics, and pesticides.

What happens to PAHs when they enter the environment?

- PAHs enter the air mostly as releases from volcanoes, forest fires, burning coal, and automobile exhaust.
- PAHs can occur in air attached to dust particles.
- Some PAH particles can readily evaporate into the air from soil or surface waters.
- PAHs can break down by reacting with sunlight and other chemicals in the air, over a period of days to weeks.
- PAHs enter water through discharges from industrial and wastewater treatment plants.
- Most PAHs do not dissolve easily in water. They stick to solid particles and settle to the bottoms of lakes or rivers.
- Microorganisms can break down PAHs in soil or water after a period of weeks to months.
- In soils, PAHs are most likely to stick tightly to particles; certain PAHs move through soil to contaminate underground water.
- PAH contents of plants and animals may be much higher than PAH contents of soil or water in which they live.

How might I be exposed to PAHs?

- Breathing air containing PAHs in the workplace of coking, coal-tar, and asphalt production plants; smokehouses; and municipal trash incineration facilities.
- Breathing air containing PAHs from cigarette smoke, wood smoke, vehicle exhausts, asphalt roads, or agricultural burn smoke.
- Coming in contact with air, water, or soil near hazardous waste sites.
- Eating grilled or charred meats; contaminated cereals, flour, bread, vegetables, fruits, meats; and processed or pickled foods.
- Drinking contaminated water or cow's milk.
- Nursing infants of mothers living near hazardous waste sites may be exposed to PAHs through their mother's milk.

Agency for Toxic Substances and Disease Registry
Division of Toxicology and Human Health Sciences
ATSDR
CS265956-A

Polycyclic Aromatic Hydrocarbons

How can PAHs affect my health?

Mice that were fed high levels of one PAH during pregnancy had difficulty reproducing and so did their offspring. These offspring also had higher rates of birth defects and lower body weights. It is not known whether these effects occur in people.

Animal studies have also shown that PAHs can cause harmful effects on the skin, body fluids, and ability to fight disease after both short- and long-term exposure. But these effects have not been seen in people.

How likely are PAHs to cause cancer?

The Department of Health and Human Services (DHHS) has determined that some PAHs may reasonably be expected to be carcinogens.

Some people who have breathed or touched mixtures of PAHs and other chemicals for long periods of time have developed cancer. Some PAHs have caused cancer in laboratory animals when they breathed air containing them (lung cancer), ingested them in food (stomach cancer), or had them applied to their skin (skin cancer).

Is there a medical test to show whether I've been exposed to PAHs?

In the body, PAHs are changed into chemicals that can attach to substances within the body. There are special tests that can detect PAHs attached to these substances in body tissues or blood. However, these tests cannot tell whether any health effects will occur or find out the extent or source of your exposure to the PAHs. The tests aren't usually available in your doctor's office because special equipment is needed to conduct them.

Has the federal government made recommendations to protect human health?

The Occupational Safety and Health Administration (OSHA) has set a limit of 0.2 milligrams of PAHs per cubic meter of air (0.2 mg/m^3). The OSHA Permissible Exposure Limit (PEL) for mineral oil mist that contains PAHs is 5 mg/m^3 averaged over an 8-hour exposure period.

The National Institute for Occupational Safety and Health (NIOSH) recommends that the average workplace air levels for coal tar products not exceed 0.1 mg/m^3 for a 10-hour workday, within a 40-hour workweek. There are other limits for workplace exposure for things that contain PAHs, such as coal, coal tar, and mineral oil.

Glossary

Carcinogen: A substance that can cause cancer.

Ingest: Take food or drink into your body.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for polycyclic aromatic hydrocarbons. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information?

For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Human Health Sciences, 1600 Clifton Road NE, Mailstop F-57, Atlanta, GA 30329-4027.

Phone: 1-800-232-4636.

ToxFAQs™ Internet address via WWW is http://www.atsdr.cdc.gov/toxfaqs/index.asp.

ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

Coloradoan.

BUSINESS

Approval of asphalt plant in Wellington put on hold for more air quality data

Pat Ferrier
Fort Collins Coloradoan

Published 11:03 a.m. MT March 7, 2023 | **Updated 12:33 p.m. MT March 7, 2023**

Wellington's planning commission delayed a decision about a new asphalt plant in north Wellington to get more information on what level of toxins, if any, are dispersed into the air.

During a four-hour hearing, residents living near the proposed Connell asphalt plant at 3548 E. County Road 66 voiced concerns about air pollution, noise and truck traffic the plant may generate. The plant would mix asphalt for use in roads and highways.

The site is in an industrial zone on a lot south of County Road 66 between North County Road 7 and North County Road 9, adjacent to Buffalo Creek subdivision and the undeveloped Sundance subdivision.

Connell Resources' current plant, which is nearing the end of its lifespan, is just south of the Harmony Road and Interstate 25 intersection in Timnath. Connell plans to close the plant and redevelop it as a commercial and residential project, including a potential Topgolf entertainment center.

The planning commission is the last approval Connell needs before it can apply for a building permit. The Wellington Board of Adjustments approved two variances for the plant in October, including allowing a 70-foot silo and an 800-foot buffer from residential areas.

Wellington's land use code limits heights in the industrial zone to 45 feet and requires a 1,000-foot buffer from neighborhoods.

Flooded with last-minute emails and in-person comments from neighbors questioning the levels of benzene, formaldehyde and other toxins that could be emitted from the plant, commissioners stepped on the brakes, asking town planners to find additional resources and data to help them sort through conflicting information.

"Are there going to be toxic chemicals emitted at this plant?" Commissioner Lowrey Moyer asked. "Is the 800-foot buffer enough? Are our kids going to be OK? As a resident with four kids, I want to know."

Lea Schneider, an environmental health planner with Larimer County, said the plant does produce air toxics — pollutants that are known or suspected to cause cancer or other serious health effects — but the concentrations depend on production levels and equipment.

An analysis of potential air toxics at a larger asphalt plant near the Poudre Trail in Fort Collins had emissions that were within acceptable levels even for the closest neighbor and at the trailhead, she said. "But each asphalt plant is individual. Air dispersion modeling will be a huge asset to evaluate what needs to be done to protect the community if this is approved."

Wellington's land use code and the state require the plant to be tested regularly for air pollutants.

John Warren, president of Connell Resources, said that in 2002 the Environmental Protection Agency removed asphalt plants from its list of major sources of hazardous air pollution under the Clean Air Act and concluded asphalt plants do not have the potential to emit hazardous air pollution approaching major source levels.

Connell will comply with all emission regulations, but emissions coming from the plant are similar to emissions from everyday sources, he said. "It's a misnomer that's what coming out of the stack is asphalt fumes," he said. "It's steam coming off the natural gas used to

heat aggregates. We use a lot of natural gas, but (the emissions) are no different from what's coming off the furnace at your house."

A report from Sanborn, Head & Associates of Denver reported in an emissions comparison report that the benzene emissions from the combustion of fuel are equivalent to a single gas station or single fast-food restaurant in a year. In a letter sent to commissioners, resident Katie Meyer urged the board to require a 2,640-foot setback, which the Wellington land use code recommends for heavy industrial and manufacturing uses.

"The town has due diligence to find the correct unbiased research and data to make sure the land use code is properly followed," she wrote.

Jason Waldo, whose family has owned the property next door for 45 years, said Connell has addressed his family's concerns. "As a family, we feel this is a good opportunity to have a quality ... company as neighbors."

The property has been zoned industrial for years, and given that the asphalt plant will operate seasonally, from about April to November, Waldo said his family supports the project.

About the proposed Connell Resources asphalt plant in Wellington

Acres: 35
Estimated number of truck trips during production season: 50 to 60 per day
Operating hours/months: 7 a.m. to 5 or 6 p.m., April through November
Employees: 35

Polycyclic Aromatic Hydrocarbons (PAHs) - ToxFAQs™

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Agency for Toxic Substances and Disease Registry
Division of Toxicology and Human Health Sciences
ATSDR
CS265956-A

Polycyclic Aromatic Hydrocarbons

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Phone: 1-800-232-4636.

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Print

Planning Commission May 1, 2023 Public Comment - Submission #3058

Date Submitted: 4/27/2023

First and Last Name*

Ayla Leistikow

Email Address*

Ayla.leistikow@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

8605 Citation Ct

Public Comment for the Planning Commission May 1, 2023 Meeting

Dear Planning Board, The intent of this letter is to bring attention to our 2,640â€™ setback for producing and curating toxic chemicals. Itâ€™s frustrating to hear the EPA say they donâ€™t have the resources or money to deal with toxic chemicals coming from asphalt plant emissions, so they leave it up to each state. Colorado has been severely neglecting families by not putting money into research for this industry. In the documents Iâ€™ve submitted, you can see North Carolina is very upfront about these toxic chemicals. New Jersey has information that poisonous gases are produced in a fire, containers may explode. A quick google search shows asphalt plant explosions happen more often than they should. Asking for a continuance for the air dispersion study is useless. The air dispersion study is finding thresholds for these toxic chemicals, Connell wouldnâ€™t be able to do the study without producing toxic chemicals. The land use code does not reference thresholds in the setback, the plant has to simply produce toxic chemicals. I am asking the board to deny the continuance and apply the 2,640ft setback for producing and curating toxic chemicals. I have also included emails from the Weld County planner, and Larimer County planner stating Connellâ€™s options for finding a safer location away from families. Thanks, Ayla Leistikow

Optional File Attachment

County planners.pdf

Optional File Attachment

Poisonous gases.pdf

Optional File Attachment

Environmental Quality.pdf

>>>>>>>>>>>>>>>>> EMERGENCY INFORMATION <<<<<<<<<<<<<<<<<

Common Name: **ASPHALT**
DOT Number: **NA 1999 (Asphalt)**
UN 1999 (Tars, Liquid)
DOT Hazard Class: **3 (Flammable)**
NAERG Code: **130**
CAS Number: **8052-42-4**

Hazard rating	NJDHSS	NFPA
FLAMMABILITY	-	1, 2 or 3
REACTIVITY	-	0
FLAMMABLE OR COMBUSTIBLE DEPENDING ON FORMULATION POISONOUS GASES ARE PRODUCED IN FIRE CONTAINERS MAY EXPLODE IN FIRE		

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

FIRE HAZARDS

- *Cutback* and *Rapid Curing* **Asphalt** are FLAMMABLE.
- *Typical* or *Medium* to *Slow Curing* **Asphalt** is COMBUSTIBLE.
- Use dry chemical, CO_2, water spray, or a foaming agent.
- Water may cause frothing so do not apply solid streams of water directly on **Asphalt**.
- POISONOUS GASES ARE PRODUCED IN FIRE including *Sulfer Oxides* and *Hydrogen Sulfide*.
- CONTAINERS MAY EXPLODE IN FIRE.
- Use water spray to keep fire-exposed containers cool.
- Vapors may travel to a source of ignition and flash back.
- Vapor is heavier than air and may travel a distance to cause a fire or explosion far from the source.
- If employees are expected to fight fires, they must be trained and equipped as stated in the OSHA Fire Brigades Standard (29 CFR 1910.156).

SPILLS AND EMERGENCIES

If **Asphalt** is spilled or leaked, take the following steps:

- Evacuate personnel and secure and control entrance to the area.
- Eliminate all ignition sources.
- Absorb liquids in vermiculite, dry sand, earth, or a similar material and deposit in sealed containers.
- Ventilate and wash area after clean-up is complete.
- Keep **Asphalt** out of a confined space, such as a sewer, because of the possibility of an explosion.
- It may be necessary to contain and dispose of **Asphalt** as a HAZARDOUS WASTE. Contact your state Department of Environmental Protection (DEP) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.
- If employees are required to clean-up spills, they must be properly trained and equipped. The OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) may apply.

FOR LARGE SPILLS AND FIRES immediately call your fire department. You can request emergency information from the following:

CHEMTREC: (800) 424-9300
NJDEP HOTLINE: 1-877-WARN-DEP

HANDLING AND STORAGE (See page 3)

FIRST AID

For POISON INFORMATION call 1-800-222-1222

Eye Contact
- Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting upper and lower lids.

Skin Contact
- Quickly remove contaminated clothing. Immediately wash contaminated skin with large amounts of soap and water.

Breathing
- Remove the person from exposure.
- Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
- Transfer promptly to a medical facility.

PHYSICAL DATA

Flash Point:
Cutback Asphalt: less than 50°F (10°C)
Slow to *Rapid Curing Asphalt*: 80°F (27°C) to 225°F (107°C)
Typical Asphalt: greater than 400°F (204°C)
Water Solubility: Insoluble

OTHER COMMONLY USED NAMES

This Fact Sheet can also be used for:
Alphalt (Cutback) RTK # 3172
Chemical Name:
Asphalt
Other Names:
Road Tar; Mineral Pitch; Petroleum Pitch; Bitumen

NEW JERSEY DEPARTMENT OF HEALTH AND SENIOR SERVICES
Right to Know Program
PO Box 368, Trenton, NJ 08625-0368
(609) 984-2202

NORTH CAROLINA
Environmental Quality

Asphalt Plants

Hot mix asphalt is a proportioned mixture of dried aggregate and liquid asphaltic concrete cement used as roadway paving material. Aggregate is a graded mixture of crushed stone, sand and recycled asphalt paving. Liquid asphaltic concrete cement is a mixture of hundreds of organic compounds that remain after crude oil refining. There more than 150 asphalt plants in North Carolina with DAQ Air Quality Permits.

How does an asphalt plant work?

There are two types of asphalt plants, batch mix and drum mix (/air-quality/drum-mix/download?attachment). In a drum mix facility, undried aggregate and heated asphalt are placed directly into the rotary drum dryer, where they are mixed. The asphalt produced can be stored on site in heated storage silos or loaded directly into trucks and transported off-site. In a batch mix (/air-quality/batch-mix/download?attachment) facility, the aggregate is dried separately in a rotary drum dryer and stored in heated bins. Heated aggregate measured per batch in a weigh box and a proportional amount of heated asphalt are mixed in a pugmill and either stored on-

site in heated storage silos or loaded directly into trucks for transport off-site.

How are asphalt plants regulated by DAQ?

- All asphalt plants must obtain an air quality permit.
- Asphalt plants are subject to state regulations for criteria pollutant emissions of particulate matter, carbon monoxide, sulfur dioxide, nitrogen dioxide and volatile organic compounds. Most asphalt plant air quality permits include production limits to avoid applicability of Prevention of Significant Deterioration (PSD) rules (/air-quality/d0530/download?attachment).
- A DAQ currently active asphalt plant permit reflects what specific equipment can be operated at a specific location. As asphalt plants consist of portable equipment modules, an asphalt plant may be moved and operated at numerous permitted locations depending on paving contracts.
- In November 1999 DAQ issued an asphalt plant permitting policy (/water-quality/chemistry-lab/certification/memos/991118/download), which requires new and modified asphalt plant applications to quantify all 97 Toxic Air Pollutants (TAPs) emitted to determine the need for air toxics permit limits using EPA AP-42 emissions.
  - If the emissions of a specific TAP are below their regulatory threshold in NC Regulation 15A NCAC 2Q.0711 (/air-quality/q0711/download?attachment), an air quality permit is not required.
  - If the TAP emissions exceed its threshold, a dispersion modeling demonstration must be performed. The results of this model must show that the emissions are below the acceptable ambient level (AAL) listed in NC Regulation 15A NCAC 2D.1104 (/air-quality/d1104/download?attachment), and air quality permit emission limit, for the respective TAP not to exceed the AAL, is required.
- Air pollutant emissions from asphalt plants can be calculated using the DAQ

Asphalt Plant Spreadsheet (.xls) (/documents/files/hma/download).

- In August 13, 2013 DAQ issued the Emission Testing Frequency Policy (/air-quality/hot-mix-asphalt-plant-performance-testing/download?attachment), which establishes the baseline testing frequency of 120 months, unless other factors require more frequent testing schedule.

Why are there are so many asphalt plants?

North Carolina has the second largest state-maintained highway system in the United States. The state has about 80,000[1] miles of roads, with more under construction every year. In addition, roads generally need resurfacing every 12 to 15 years, so about 4,400 miles of roads are repaved each year. Paving is difficult at lower temperatures, and highway contractors must reject asphalt that is not hot enough (at least 250oF). That means asphalt plants must be located fairly close to road construction sites.

What TAPs do asphalt plants emit?

Toxic air pollutants compounds emitted from asphalt plants include polycyclic aromatic compounds, volatile organic compounds, metals and hydrogen sulfide.

Toxic air pollutants (TAPs) emitted from asphalt plant[2]

Toxic Air Pollutant	Emitted from drum dryer and hot oil heater	Emitted from material handling and storage
Acetaldehyde	yes	no
Acrolein	yes	no

Formaldehyde	yes	yes
Phenol	no	yes
Styrene	no	yes
Trichlorofluoromethane (CFC 111)	no	yes
Methyl chloroform	yes	yes
Methyl ethyl ketone	yes	yes
Toluene	yes	yes
Xylene	yes	yes
Methylene chloride	no	yes
Soluble Chromate Compounds, as Chromium (VI)	yes	no
n-Hexane	yes	yes
Manganese & compounds	yes	no
Mercury	yes	no

Nickel & Compounds	yes	no
Carbon disulfide	no	yes
Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	yes	no
Arsenic & Compounds	yes	no
Benzene	yes	yes
Benzo(a)pyrene	yes	yes
Hydrogen Sulfide	yes	yes
Beryllium	yes	no
Cadmium	yes	no
Hexachlorodibenzo-p-dioxin, 1,2,3,6,7,8	yes	no
Hydrogen Chloride (hydrochloric acid)	yes	no
Perchloroethylene (tetrachloroethylene)	no	yes
Trichloroethylene	no	yes

From: Tom Parko Jr. tparko@weldgov.com
Subject: RE: Zoning county land
Date: Jan 26, 2023 at 8:55:27 AM
To: Ayla Leistikow ayla.leistikow@gmail.com

Good morning, Ayla.

Yes, the County's I-3 industrial zone district can accommodate asphalt and concrete batch plants with a Site Plan Review (SPR). Please see attached. See Section 23-3-330.C.4.

Sincerely,
Tom Parko
Director, Dept. of Planning Services
Weld County

-----Original Message-----
From: Ayla Leistikow <ayla.leistikow@gmail.com>
Sent: Wednesday, January 25, 2023 3:39 PM
To: Tom Parko Jr. <tparko@weldgov.com>
Subject: Zoning county land

Caution: This email originated from outside of Weld County Government. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hello,

I have a question regarding zoning. Can an asphalt company buy county land and get it rezoned to heavy industrial for a batch asphalt plant?

Thanks,
Ayla

From: Lea Schneider schneils@co.larimer.co.us
Subject: Re: Wellington asphalt plant
Date: Jan 11, 2023 at 9:34:04 AM
To: Ayla Leistikow ayla.leistikow@gmail.com

Good morning Ayla!

I did not see the connell made it to planning commission on Mon...is that true?

1. Connell could purchase land in unincorporated Larimer County and apply to rezone the land. This would require the company to submit a sketch plan application with Larimer County, hold a public meeting, then apply for a public hearing rezoning application. They would also have to complete a Special Review process either combined or separate applications. This process could take over a year or more.

Print

Planning Commission May 1, 2023 Public Comment - Submission #3059

Date Submitted: 4/27/2023

First and Last Name*

Randi Vilkaitis

Email Address*

Randinicole502@hotmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3282 grizzly way

Public Comment for the Planning Commission May 1, 2023 Meeting

To whom it may concern, In regards to the proposed asphalt plant, I strongly oppose the decision to allow the plant to be near Wellington. As a resident and homeowner in the Buffalo creek subdivision this will directly effect me and my family. Not only will my home value be compromised, but the pollution and health effects on me, my children and my animals is unacceptable. Also, Wellington is already on an infrastructure system that has been spread thin for years. For years now we have been on water restrictions, constant power outages and the traffic at peak times such as school start and finish times is already an issue. This area is not capable of supporting what is already here plus any industrial plant of any kind. Please take these concerns into consideration when discussing this asphalt plant near Wellington. Thank you.

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Print

Planning Commission May 1, 2023 Public Comment - Submission #3061

Date Submitted: 4/28/2023

First and Last Name*

David Goodness

Email Address*

dgoodness@comcast.net

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

7090 Grassy Range Dr

Public Comment for the Planning Commission May 1, 2023 Meeting

To Whom it May Concern: I recently learned of the proposed development of an asphalt plant near the Wellington Community Park. I am very disappointed that this is being considered. Not only do I live in Wellington, but I take my granddaughter to the Community Park to enjoy the playgrounds and water park. There are no benefits to this plan as everyone knows an asphalt plant is a heavy industry that produces toxic chemicals, which will affect the health of people and the environment. There must be a safe distance between this project and citizens of Wellington. I hope I can be assured that the leaders of this community have the health and safety interests of its citizens in mind. Thank you

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Optional File Attachment

Choose File No file selected

Print

Planning Commission May 1, 2023 Public Comment - Submission #3062

Date Submitted: 4/28/2023

First and Last Name*

Dr. Fred Condos

Email Address*

fjc448@gmail ,com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

8994 Raging Bull Lane

Public Comment for the Planning Commission May 1, 2023 Meeting

My name is Dr. Fred Condos. I am retired and reside at the above stated address in the Buffalo Creek neighborhood. Our home is almost 3/4 of a mile from the proposed Connell Resources Hot Batch Asphalt Plant. I oppose the approval of Connell's application! The Town has not provided sufficient indications to the citizens of Wellington that answer the following: How will the construction of an Asphalt Plant within the city limits of Wellington benefit its' residents? Will it benefit us to be exposed to known health hazards from the proposed Asphalt Plant emissions particularly Nitrogen Oxides? See attachment from the U.S. Center for Disease Control Medical Management Guidelines for Nitrogen Oxides describing the health hazards posed even by the acceptable emission levels of Nitrogen Oxides. On June 20, 2021, The Colorado Department of Health & Environment issued an Out of Compliance status for excessive Carbon Monoxide and Nitrogen Oxides emission rates from the asphalt baghouse to the Connell Asphalt Plant in Fort Collins. The Stack Test and attending documents can be obtained from the Colorado Department of Health $ Environment. The Commission likely already has that information. Will it happen here too? How would that benefit us? Will it benefit us to be exposed to the excessive noise associated the process from trucks, loading and unloading aggregate materials, as well as truck trave to and from plant? Will it benefit us to have the park, people's back yards, schools the Community Park and neighborhoods barren of people on hot days and nights from the smell and particulates emitting from the plant stack? . Are the road conditions adequate to support the excessive truck loads a day. Who is responsible to improve and maintain the road improvements? Will these needs be a benefit to us? Will it benefit us when our property values drop because of an asphalt plant in our city limits? Most of us worked hard and planned carefully to make a happy, secure, quiet and safe home and environment to live, raise our children and spend our retirement years absent a preposterous and intrusive thing like an asphalt plant as a neighbor, Please answer us about how we benefit with an asphalt plant in our backyards? I am not convinced! Will our quality of life, our peace and happiness be improved and benefit us if the plant is built.

Optional File Attachment

Nitrogen Oxides _ Medical Management Guidelines _ Toxic Substance Portal .pdf

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Medical Management Guidelines for Nitrogen Oxides

(NO, NO_2, and others)

CAS# 10102-43-9, 10102-44-0
UN# 1660 (NO), 1067 (NO_2), 1975 (Mixture)

PDF Version [295 KB]

Synonyms for nitric oxide (NO) include mononitrogen monoxide and nitrogen monoxide. Synonyms for nitrogen dioxide (NO_2) include dinitrogen tetroxide, nitrogen peroxide, nitrogen tetroxide, and NTO. Synonyms for mixtures of nitrogen oxides include nitrogen fumes and nitrous fumes.

- Persons exposed only to nitrogen oxide gases do not pose substantial secondary contamination risks. Persons whose clothing is contaminated with liquid nitrogen oxides can secondarily contaminate others by direct contact or through off-gassing vapors.
- Nitric oxide and nitrogen dioxide are nonflammable liquids or gases; however, they will accelerate the burning of combustible materials. Odor generally provides an adequate warning of acute exposure providing the higher oxides (NO_2, N_2O_4 and N_2O_5) are present. Nitric oxide (NO) is odorless and nitrous oxide (N_2O) has only a very faint odor.
- The primary route of exposure to nitrogen oxides is by inhalation, but exposure by any route can cause systemic effects. Nitrogen oxides are irritating to the eyes, skin, mucous membranes, and respiratory tract. On contact with moisture, nitrogen dioxide forms a mixture of nitric and nitrous acids.

General Information

Description

Nitrogen oxides represent a mixture of gases designated by the formula NO_x. The mixture includes nitric oxide (NO), nitrogen dioxide (NO_2), nitrogen trioxide (N_2O_3), nitrogen tetroxide (N_2O_4), and nitrogen pentoxide (N_2O_5). The toxicity of nitrous oxide (N_2O) or laughing gas, which is used as an anesthetic, is different from that of the other nitrogen oxides and is not discussed in this protocol.

The most hazardous of the nitrogen oxides are nitric oxide and nitrogen dioxide; the latter exists in equilibrium with its dimer, nitrogen tetroxide. Nitric oxide is a colorless gas at room temperature, very sparingly soluble in water. Nitrogen dioxide is a colorless to brown liquid at room temperature and a reddish-brown gas above 70°F poorly soluble in water. Nitric oxide is rapidly oxidized in air at high concentrations to form nitrogen dioxide.

Routes of Exposure

Inhalation

Nitrogen oxides (NO_2, N_2O_4, N_2O_3 and N2O5) are irritating to the upper respiratory tract and lungs even at low concentrations. Only one or two breaths of a very high concentration can cause severe toxicity. Odor is generally an adequate warning property for acute exposures. Nitrogen dioxide is heavier than air, such that exposure in poorly ventilated, enclosed, or low-lying areas can result in asphyxiation.

Children exposed to the same levels of nitrogen oxides as adults may receive larger doses because they have greater lung surface area:body weight ratios and increased minute volumes:weight ratios. In addition, they may be exposed to higher levels of nitrogen dioxide than adults in the same location because of their short stature and the higher levels of nitrogen

dioxide found nearer to the ground.

Skin/Eye Contact

Exposure to relatively high air concentrations can produce eye irritation and inflammation.

Children are more vulnerable to toxicants affecting the skin because of their relatively larger surface area:body weight ratio.

Ingestion

Both nitrogen dioxide and nitric oxide are gases at room temperature. However, nitrogen dioxide exists as a liquid below 21°C and, if ingested, will cause gastrointestinal irritation or burns.

Sources/Uses

Nitrogen oxides form naturally during the oxidation of nitrogen-containing compounds such as coal, diesel fuel, and silage. Nitrogen oxides are also formed during arc welding, electroplating, engraving, dynamite blasting, as components of rocket fuel, and nitration reactions such as in the production of nitro-explosives, including gun-cotton, dynamite and TNT. They are produced commercially, usually as the first step in the production of nitric acid, either by the direct oxidation of atmospheric nitrogen in the electric arc (Birkeland-Eyder Process) or by the catalytic oxidation of anhydrous ammonia (Oswald Process). Trace metal impurities most likely cause nitrogen oxides to form in nitric acid and its solutions. Nitrogen oxides are intermediates in the production of lacquers, dyes, and other chemicals and are important components of photo-oxidant smog.

Standards and Guidelines

Nitric Oxide: OSHA PEL (permissible exposure limit) = 25 ppm (averaged over an 8-hour workshift)

NIOSH IDLH (immediately dangerous to life or health) = 100 ppm

Nitrogen Dioxide: OSHA PEL (permissible exposure limit) = 5 ppm (Ceiling)

NIOSH IDLH (immediately dangerous to life or health) = 20 ppm

Nitrogen Dioxide AIHA ERPG-2 (maximum airborne concentration below which it is believed that nearly all persons could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms that could impair their abilities to take protective action) = 15 ppm

Physical Properties

Nitric Oxide

Description: Colorless gas Yellow-brown liquid or red-brown gas

Warning properties: Non-irritating, odorless and colorless gas; no adequate 1-5 ppm; warning for acute exposure unless accompanied by NO_2 or another higher oxide as is usual.

Molecular weight: 30.0 daltons

Boiling point (760 mm Hg): -241°F (-152°C)

Freezing point: -263°F (-164°C)

Vapor pressure: >760 mm Hg at 68°F (20°C)

Gas density: 1.0 (air = 1)

Water solubility: Water soluble

Flammability: Not flammable, but will accelerate burning of combustible materials

Nitrogen Dioxide

Description: Yellow-brown liquid or red-brown gas

Warning properties: Irritating, sharp odor at adequate warning for acute exposure; inadequate warning for chronic exposure.

Molecular weight: 46.0 daltons

Boiling point (760 mm Hg): 70°F (21°C)

Freezing point: 12°F (-11°C)

Vapor pressure: 720 mm Hg at 68°F (20°C)

Gas density: 1.5 (air = 1)

Water solubility: Highly soluble, but reacts with water to form a mixture of nitric and nitrous acids.

Flammability: Not flammable, but will accelerate burning of combustible materials

Incompatibilities

Nitrogen dioxide and nitric acid react with combustible materials, chlorinated hydrocarbons, carbon disulfide, and ammonia. May react violently with cyclohexane, fluorine, formaldehyde and alcohol, nitrobenzene, petroleum, and toluene.

Health Effects

- Most of the higher oxides of nitrogen are eye, skin, and respiratory tract irritants. Nitrogen dioxide is a corrosive substance that forms nitric and nitrous acids upon contact with water; it is more acutely toxic than nitric oxide, except at lethal concentrations when nitric oxide may kill more rapidly.Nitric oxide is a potent and rapid inducer of methemoglobinemia.
- Exposure to nitrogen oxides may result in changes of the pulmonary system including pulmonary edema, pneumonitis, bronchitis, bronchiolitis, emphysema, and possibly methemoglobinemia. Cough, hyperpnea, and dyspnea may be seen after some delay.
- Damage to, and subsequent scarring of, the bronchioles may result in a life-threatening episode several weeks following exposure involving cough, rapid, shallow breathing, rapid heartbeat, and inadequate oxygenation of the tissues.
- Populations that may be particularly sensitive to nitrogen oxides include asthmatics and those with chronic obstructive pulmonary disease or heart disease.

Acute Exposure

Nitrogen dioxide is thought to damage lungs in three ways: (1) it is converted to nitric and nitrous acids in the distal airways, which directly damages certain structural and functional lung cells; (2) it initiates free radical generation, which results in protein oxidation, lipid peroxidation, and cell membrane damage; and (3) it reduces resistance to infection by altering macrophage and immune function. There may be an immediate response to exposure to nitrogen oxide vapors that may include coughing, fatigue, nausea, choking, headache, abdominal pain, and difficulty breathing. A symptom-free period of 3 to 30 hours may then be followed by the onset of pulmonary edema with anxiety, mental confusion, lethargy, and loss of consciousness. If survived, this episode may be followed by bronchiolitis obliterans (fibrous obstruction of the bronchioles) several weeks later. Any of these phases can be fatal.

Children do not always respond to chemicals in the same way that adults do. Different protocols for managing their care may be needed.

Respiratory

The higher nitrogen oxides are respiratory irritants. The primary site of toxicity is the lower respiratory tract. Low concentrations initially may cause mild shortness of breath and cough; then, after a period of hours to days, victims may suffer bronchospasm and pulmonary edema. Inhalation of very high concentrations can rapidly cause burns, spasms, swelling of tissues in the throat, upper airway obstruction, and death.

Exposure to certain chemicals can lead to Reactive Airway Dysfunction Syndrome (RADS), a chemically- or irritant-induced type of asthma.

Children may be more vulnerable to corrosive agents than adults because of the relatively smaller diameter of their airways. Children also may be more vulnerable because of relatively increased minute ventilation per kg and failure to evacuate an area promptly when exposed.

Cardiovascular

Absorption of nitrogen oxides can lead to a weak rapid pulse, dilated heart, chest congestion, and circulatory collapse.

Hematologic

High-dose exposure may convert Fe^{+2} in hemoglobin to Fe^{+3}, by virtue of the presence of nitric oxide (NO), causing methemoglobinemia and impaired oxygen transport.

Dermal

Higher nitrogen oxides are skin irritants and corrosives. Skin moisture in contact with liquid nitrogen dioxide or high concentrations of its vapor can result in nitric acid formation, which may lead to second-and third-degree skin burns. Nitric acid may also cause yellowing of the skin and erosion of dental enamel.

Because of their relatively larger surface area:body weight ratio, children are more vulnerable to toxicants affecting the skin.

Ocular

Liquid nitrogen oxides cause severe eye burns after brief contact. High concentrations of the gas cause irritation and, after prolonged exposure, may cause clouding of the eye surface and blindness.

Potential Sequelae

Obstruction of the bronchioles may develop days to weeks after severe exposure. Patients suffer malaise, weakness, fever, chills, progressive shortness of breath, cough, hemorrhage of the lungs or bronchioles, blue or purple coloring of the skin, and respiratory failure. This condition may be confused with the adult respiratory distress syndrome secondary to infectious diseases such as miliary tuberculosis.

Victims of inhalation exposure may suffer reactive airways dysfunction syndrome (RADS) after a single acute, high-dose exposure.

Chronic Exposure

Chronic exposure to nitrogen oxides is associated with increased risk of respiratory infections in children. Permanent restrictive and obstructive lung disease from bronchiolar damage may occur.

Carcinogenicity

Nitrogen oxides have not been classified for carcinogenic effects.

Reproductive and Developmental Effects

Nitric oxide and nitrogen dioxide are not included in *Reproductive and Developmental Toxicants*, a 1991 report published by the U.S. General Accounting Office (GAO) that lists 30 chemicals of concern because of widely acknowledged reproductive and developmental consequences. Methemoglobin inducers are considered harmful to the fetus and nitrogen dioxide has been shown to be fetotoxic in rats and has affected behavior and growth statistics in newborn mice. Nitrogen dioxide also causes DNA damage, mutations, sister chromatid exchanges, and other DNA aberrations.

Special consideration regarding the exposure of pregnant women may be warranted, since nitrogen oxides have been shown to be mutagenic and clastogenic, and fetotoxic in rats; thus, medical counseling is recommended for the acutely exposed pregnant woman.

Prehospital Management

- Victims exposed only to nitrogen oxide gases do not pose risks of secondary contamination to rescuers. Victims whose clothing or skin is contaminated with liquid nitrogen oxides or nitric acid can secondarily contaminate response personnel by direct contact or through off-gassing vapors.
- Most of the higher nitrogen oxides are eye, skin, and respiratory tract irritants. Initial respiratory symptoms after exposure to nitrogen oxides may be mild, but progressive inflammation of the lungs may develop several hours to days after exposure. Noncardiogenic pulmonary edema may develop even if initial pulmonary signs were minimal. Exposures may result in methemoglobinemia, depending upon the presence of nitric oxide (NO) in the gas mixture.
- There is no antidote for nitrogen oxides. Primary treatment consists of respiratory and cardiovascular support. Methylene blue may be necessary to treat methemoglobinemia.

Hot Zone

Rescuers should be trained and appropriately attired before entering the Hot Zone. If the proper equipment is not available, or if rescuers have not been trained in its use, assistance should be obtained from a local or regional HAZMAT team or other properly equipped response organization.

Rescuer Protection

Nitrogen oxides are severe respiratory tract irritants.

Respiratory Protection: Positive-pressure, self-contained breathing apparatus (SCBA) is recommended in response situations that involve exposure to potentially unsafe levels of nitrogen oxides.

Skin Protection: Chemical-protective clothing is recommended when repeated or prolonged contact with liquids of nitrogen oxides or with high concentrations of nitrogen oxide vapors is anticipated because skin irritation or burns may occur.

ABC Reminders

Quickly access for a patent airway, ensure adequate respiration and pulse. If trauma is suspected, maintain cervical immobilization manually and apply a cervical collar and a backboard when feasible.

Victim Removal

If victims can walk, lead them out of the Hot Zone to the Decontamination Zone. Victims who are unable to walk may be removed on backboards or gurneys; if these are not available, carefully carry or drag victims to safety.

Consider appropriate management of chemically contaminated children, such as measures to reduce separation anxiety if a child is separated from a parent or other adult.

Decontamination Zone

Victims exposed only to nitrogen oxide gases may appear to have no skin or eye irritation. However, they should still be decontaminated as described below as irritation may not become evident until washing commences.

Rescuer Protection

If exposure levels are determined to be safe, decontamination may be conducted by personnel wearing a lower level of protection than that worn in the Hot Zone (described above).

ABC Reminders

Quickly access for a patent airway, ensure adequate respiration and pulse. Stabilize the cervical spine with a collar and a backboard if trauma is suspected. Administer supplemental oxygen as required. Assist ventilation with a bag-valve-mask device if necessary.

Basic Decontamination

Victims who are able may assist with their own decontamination. Remove and double-bag contaminated clothing and personal belongings.

Flush exposed skin and hair with water for 20 minutes. Use caution to avoid hypothermia when decontaminating children or the elderly. Use blankets or warmers when appropriate.

Immediately begin irrigation of exposed or irritated eyes with plain water or saline and continue for at least 20 minutes. Remove contact lenses if easily removable without additional trauma. Continue eye irrigation during other basic care and transport.

If the victim has ingested a solution of nitrogen oxides or nitric acid, **do not induce emesis**. Do not administer activated charcoal. Victims who are conscious and able to swallow should be given 4 to 8 ounces of water or milk.

Consider appropriate management of chemically contaminated children at the exposure site. Also, provide reassurance to the child during decontamination, especially if separation from a parent occurs. If possible, seek assistance from a child separation expert.

Transfer to Support Zone

As soon as decontamination is complete, move the victim to the Support Zone.

Support Zone

Be certain that victims have been decontaminated properly (see *Decontamination Zone* above). Victims who have undergone decontamination pose no serious risks of secondary contamination to rescuers. In such cases, Support Zone personnel require no specialized protective gear.

ABC Reminders

Quickly access for a patent airway. If trauma is suspected, maintain cervical immobilization manually and apply a cervical collar and a backboard when feasible. Ensure adequate respiration and pulse. Administer supplemental oxygen as required and establish intravenous access if necessary. Place on a cardiac monitor.

Additional Decontamination

Continue irrigating exposed skin and eyes, as appropriate.

If the patient has ingested a solution of nitrogen oxides or nitric acid, **do not induce emesis**. Do not administer activated charcoal. Patients who are able to swallow should be given 4 to 8 ounces of water or milk, if not provided previously.

Advanced Treatment

In cases of respiratory compromise secure airway and respiration via endotracheal intubation. If not possible, perform cricothyroidotomy if equipped and trained to do so.

Treat patients who have bronchospasm with aerosolized bronchodilators. The use of bronchial sensitizing agents in situations of multiple chemical exposures may pose additional risks. Consider the health of the myocardium before choosing which type of bronchodilator should be administered. Cardiac sensitizing agents may be appropriate; however, the use of cardiac sensitizing agents after exposure to certain chemicals may pose enhanced risk of cardiac arrhythmias (especially in the elderly).

Consider racemic epinephrine aerosol for children who develop stridor. Dose 0.25-0.75 mL of 2.25% racemic epinephrine solution in 2.5 cc water, repeat every 20 minutes as needed, cautioning for myocardial variability.

Patients who are comatose, hypotensive, or are having seizures or cardiac arrhythmias should be treated according to advanced life support (ALS) protocols.

If evidence of shock or hypotension is observed begin fluid administration. For adults, bolus 1,000 mL/hour intravenous saline or lactated Ringer's solution if blood pressure is under 80 mm Hg; if systolic pressure is over 90 mm Hg, an infusion rate of 150 to 200 mL/hour is sufficient. For children with compromised perfusion administer a 20 mL/kg bolus of normal saline over 10 to 20 minutes, then infuse at 2 to 3 mL/kg/hour.

Transport to Medical Facility

Only decontaminated patients or patients not requiring decontamination should be transported to a medical facility. "Body bags" are not recommended.

Report to the base station and the receiving medical facility the condition of the patient, treatment given, and estimated time of arrival at the medical facility.

If a solution of nitrogen oxides, which means in effect a mixture of nitric (HNO_3) and nitrous (HNO_2) acids, has been ingested, prepare the ambulance in case the victim vomits toxic material. Have ready several towels and open plastic bags to quickly clean up and isolate vomitus.

Multi-Casualty Triage

Consult with the base station physician or regional poison control center for advice regarding triage of multiple victims. Because delayed respiratory compromise may occur even with minimal initial symptoms, all patients who have histories or evidence of exposure should be transported to a medical facility for evaluation. Because of the danger of acute, though delayed, onset of severe, life-threatening pulmonary edema from 3 to 30 hours after what may appear to have been quite a trivial exposure it is important that exposed subjects be maintained under medical surveillance for the first 48 hours post-exposure. If such are allowed to return home and acute pulmonary edema develops in a home environment during sleep it may not be possible to get the patient to resuscitative medical treatment in time. Others may be discharged at the scene after their names, addresses, and telephone numbers are recorded. Those discharged should be advised to seek medical care promptly if symptoms develop (see *Patient Information Sheet* below).

Emergency Department Management

- Patients exposed only to nitrogen oxide gases do not pose risks of secondary contamination to rescuers. Patients whose clothing or skin is contaminated with liquid nitrogen oxides or nitric acid can secondarily contaminate response personnel by direct contact or through off-gassing vapors.
- Most of the higher nitrogen oxides are eye, skin, and respiratory tract irritants. Initial respiratory symptoms after exposure to nitrogen oxides may be mild, but progressive inflammation of the lungs may develop several hours to days after exposure. Noncardiogenic pulmonary edema may develop even if initial pulmonary signs were minimal. Exposures may result in methemoglobinemia, depending upon the presence of nitric oxide (NO) in the gas mixture.
- There is no antidote for nitrogen oxides. Treatment consists of respiratory and cardiovascular support. Methylene blue may be necessary to treat methemoglobinemia.

Decontamination Area

Previously decontaminated patients may be transferred immediately to the Critical Care Area. Others require decontamination as described below.

Be aware that use of protective equipment by the provider may cause fear in children, resulting in decreased compliance with further management efforts.

Because of their relatively larger surface area:body weight ratio, children are more vulnerable to toxicants absorbed affecting the skin. Also, emergency room personnel should examine children's mouths because of the frequency of hand-to-mouth activity among children.

ABC Reminders

Evaluate and support airway, breathing, and circulation. Administer supplemental oxygen as required. Children may be more vulnerable to corrosive agents than adults because of the relatively smaller diameter of their airways. In cases of respiratory compromise secure airway and respiration via endotracheal intubation. If not possible, surgically create an airway.

Treat patients who have bronchospasm with aerosolized bronchodilators. The use of bronchial sensitizing agents in situations of multiple chemical exposures may pose additional risks. Consider the health of the myocardium before choosing which type of bronchodilator should be administered. Cardiac sensitizing agents may be appropriate; however, the use of cardiac sensitizing agents after exposure to certain chemicals may pose enhanced risk of cardiac arrhythmias (especially in the elderly).

Consider racemic epinephrine aerosol for children who develop stridor. Dose 0.25-0.75 mL of 2.25% racemic epinephrine solution in 2.5 cc water, repeat every 20 minutes as needed, cautioning for myocardial variability.

Patients who are comatose, hypotensive, or have seizures or ventricular arrhythmias should be treated in the conventional manner.

Basic Decontamination

Patients who are able may assist with their own decontamination. If the patient's clothing is wet with nitrogen oxides or nitric acid, remove and double-bag the contaminated clothing and all personal belongings.

Flush exposed skin and hair with water for 20 minutes (preferably under a shower). Use caution to avoid hypothermia when decontaminating children or the elderly. Use blankets or warmers when appropriate.

Begin irrigation of exposed eyes **immediately** and continue for at least 20 minutes. Remove contact lenses if easily removable without additional trauma to the eye. Continue irrigation while transporting the patient to the Critical Care Area.

If the patient has ingested a solution of nitrogen oxides or nitric acid, **do not induce emesis**. Do not administer activated charcoal. Activated charcoal is unlikely to be of benefit and may obscure endoscopic findings if GI tract irritation or burns are present. Patients who are conscious and able to swallow should be given 4 to 8 ounces of water or milk if not provided earlier.

Critical Care Area

Be certain that appropriate decontamination has been carried out (see *Decontamination Area* above).

ABC Reminders

Evaluate and support airway, breathing, and circulation as in *ABC Reminders* above. Administer supplemental oxygen as required. Children may be more vulnerable to corrosive agents than adults because of the relatively smaller diameter of their airways. Establish intravenous access in seriously symptomatic patients. Continuously monitor cardiac rhythm.

Patients who are comatose, hypotensive, or have seizures or ventricular arrhythmias should be treated in the conventional manner.

Inhalation Exposure

Administer supplemental oxygen by mask to patients who have respiratory symptoms. Treat patients who have bronchospasm with aerosolized bronchodilators. The use of bronchial sensitizing agents in situations of multiple chemical exposures may pose additional risks. Consider the health of the myocardium before choosing which type of bronchodilator should be administered. Cardiac sensitizing agents may be appropriate; however, the use of cardiac sensitizing agents after exposure to certain chemicals may pose enhanced risk of cardiac arrhythmias (especially in the elderly). Some clinicians recommend high doses of corticosteroids for seriously symptomatic patients, especially with severe bronchospasm; in patients with acute respiratory failure without bronchospasm, the value of steroids is unproven.

Consider racemic epinephrine aerosol for children who develop stridor. Dose 0.25-0.75 mL of 2.25% racemic epinephrine solution in 2.5 cc water, repeat every 20 minutes as needed, cautioning for myocardial variability.

Skin Exposure

If the skin was in contact with liquid nitrogen oxides or their solutions, chemical burns may occur; treat as thermal burns.

Because of their relatively larger surface area:body weight ratio, children are more vulnerable to toxicants affecting the skin.

Eye Exposure

Continue irrigation for at least 20 minutes. If liquid nitrogen oxides or nitric acid has been splashed in the eyes, irrigate until the pH of the conjunctival fluid has returned to normal. Test visual acuity. Examine the eyes for corneal damage and treat appropriately. Immediately consult an ophthalmologist for patients who have severe corneal injuries.

Ingestion Exposure

If the patient has ingested a solution of nitrogen oxides or nitric acid, **do not induce emesis**. Do not administer activated charcoal. Patients who are conscious and able to swallow should be given 4 to 8 ounces of water or milk if not provided earlier.

Consider endoscopy to evaluate the extent of gastrointestinal tract injury. Extreme throat swelling may require endotracheal intubation or cricothyroidotomy. Gastric lavage is useful in certain circumstances to remove caustic material and prepare for endoscopic examination. Consider gastric lavage with a small nasogastric tube if: (1) a large dose has been ingested; (2) the patient's condition is evaluated within 30 minutes; (3) the patient has oral lesions or persistent esophageal discomfort; and (4) the lavage can be administered within 1 hour of ingestion. Care must be taken when placing the gastric tube because blind gastric tube placement may further injure the chemically damaged esophagus or stomach.

Because children do no ingest large amounts of corrosive materials, and because of the risk of perforation from NG intubation, lavage is discouraged in children unless intubation is performed under endoscopic guidance.

Toxic vomitus or gastric washings should be isolated, e.g., by attaching the lavage tube to isolated wall suction or another closed container.

Antidotes and Other Treatments

There are no antidotes for nitrogen oxide poisoning. Methylene blue (tetramethylthionine chloride) should be considered for patients who have signs and symptoms of hypoxia (other than cyanosis) or for patients who have methemoglobin levels >30%. Cyanosis alone does not require treatment. Methylene blue may not be effective in patients who have G6PD deficiency and may cause hemolysis.

The standard dose of methylene blue is 1 to 2 mg/kg body weight (0.1 to 0.2 mL/kg of a 1% solution) intravenously over 5 to 10 minutes, repeated in 1 hour if needed. The total initial dose should not exceed 7 mg/kg. (Doses greater than 15 mg/kg may cause hemolysis.) Clinical response to methylene blue treatment is usually observed within 30 to 60 minutes. Side effects include nausea, vomiting, abdominal and chest pain, dizziness, diaphoresis, and dysuria.

Consider exchange transfusion in severely poisoned patients who are deteriorating clinically in spite of methylene blue treatment. Intravenous ascorbic acid administered to severely poisoned patients has not proved to be effective.

Administration of steroids is thought by some physicians to reduce the likelihood of the development of bronchiolitis obliterans by reducing inflammation and therefore lung damage. Steroids should be started soon after exposure and continued for 8 weeks, then tapered gradually. The data on steroid use to prevent late sequelae (bronchiolitis obliterans) is anecdotal and somewhat controversial.

Laboratory Tests

The diagnosis of acute nitrogen oxide toxicity is primarily based on respiratory symptoms and establishing a history of exposure to nitrogen oxides. Routine laboratory studies for all exposed patients include CBC, glucose, and electrolyte determinations. Additional studies for patients exposed to nitrous oxides include determination of methemoglobin levels. The condition of victims who have respiratory complaints should be evaluated with pulse oximetry (or ABG measurements), chest radiography, spirometry, and peak flow measurements. Pulse oximetry is not reliable if methemoglobin is present.

NO and NO_2 are metabolized to nitrite (NO_{2-}) and nitrate (NO_{3-}) and are excreted in the urine. The levels of these urinary metabolites are not medically useful but may be helpful in documenting exposure.

Disposition and Follow-up

Consider hospitalizing patients who have histories of significant inhalation exposure and are symptomatic.

Delayed Effects

Symptomatic patients should be observed in a controlled setting for 48 hours for delayed noncardiogenic pulmonary edema. All patients determined to have been exposed to nitrogen oxides should be advised that life-threatening symptoms may develop as late as several weeks after the exposure.

Patient Release

Patients who have been observed for several hours after minimal exposure and remain asymptomatic may be treated as outpatients. They should be advised to seek medical care promptly if symptoms develop (see *Nitrogen Oxides-Patient Information Sheet*). A patient whose symptoms resolve within 24 to 36 hours may be released with a follow-up appointment to assess pulmonary status.

Follow-up

Obtain the name of the patient's primary care physician so that the hospital can send a copy of the ED visit to the patient's doctor.

Close outpatient follow-up should be continued in patients who experienced significant respiratory compromise because these patients are at high risk of developing bronchiolitis obliterans within several weeks.

Patients who have corneal injuries should be reexamined within 24 hours.

Reporting

If a work-related incident has occurred, you may be legally required to file a report; contact your state or local health department.

Other persons may still be at risk in the setting where this incident occurred. If the incident occurred in the workplace, discussing it with company personnel may prevent future incidents. If a public health risk exists, notify your state or local health department or other responsible public agency. When appropriate, inform patients that they may request an evaluation of their workplace from OSHA or NIOSH. See Appendices III and IV for a list of agencies that may be of assistance.

Patient Information Sheet

This handout provides information and follow-up instructions for persons who have been exposed to nitrogen oxides.

Print this handout only. [44.1 KB]

What are nitrogen oxides?

Nitrogen oxides are a mixture of gases that each contain nitrogen and oxygen. Nitrogen oxides are formed naturally when fossil fuels (e.g., coal, oil, gas, kerosene) are burned and when silage containing nitrate fertilizer ferments in storage silos. They are also formed during electric arc welding, electroplating, and engraving. They are part of airborne smog and are partly indirectly responsible for the burning eyes, nose, and throat caused by air pollution, through formation of the intensely irritating compound peroxyacetylnitrate, PAN.

What immediate health effects can be caused by exposure to nitrogen oxides?

Breathing low levels of nitrogen oxides may cause brief, nonspecific symptoms such as cough, shortness of breath, tiredness, and nausea. However, even if removed from exposure, a person who has breathed nitrogen oxides can develop more serious lung injury over the next 1 to 2 days. Exposure to massive concentrations can cause sudden death due to lung injury and suffocation or choking. Generally, the more serious the exposure, the more severe the symptoms.

Can nitrogen oxides poisoning be treated?

There is no antidote for nitrogen oxide poisoning. Treatment for exposure usually involves giving the patient oxygen and medications to make breathing easier.

Are any future health effects likely to occur?
A single small exposure from which a person recovers quickly may not cause delayed or long-term effects. After a serious exposure or repeated exposures, a patient may develop asthma or other lung conditions.

What tests can be done if a person has been exposed to nitrogen oxides?
Specific tests for the presence of nitrogen oxides in blood or urine generally are not useful to the doctor. If a severe exposure has occurred, blood and urine analyses and other tests may show whether damage has been done to the lungs, heart, and brain. Testing is not needed in every case.

Where can more information about nitrogen oxides be found?
More information about nitrogen oxides can be obtained from your regional poison control center; your state, county, or local health department; the Agency for Toxic Substances and Disease Registry (ATSDR); your doctor; or a clinic in your area that specializes in occupational and environmental health. If the exposure happened at work, you may wish to discuss it with your employer, the Occupational Safety and Health Administration (OSHA), or the National Institute for Occupational Safety and Health (NIOSH). Ask the person who gave you this form for help in locating these telephone numbers.

Follow-up Instructions

Keep this page and take it with you to your next appointment. Follow *only* the instructions checked below.

Print instructions only. [44.1 KB]

[ ] Call your doctor or the Emergency Department if you develop any unusual signs or symptoms within the next 24 hours, especially:

[ ] Call your doctor or the Emergency Department if you develop any unusual signs or symptoms within the next 24 hours, especially:

- coughing or wheezing
- difficulty breathing, shortness of breath, or chest pain
- weakness, fatigue, or flu-like symptoms
- increased redness or pain or a pus-like discharge in the area of a skin burn

[ ] No follow-up appointment is necessary unless you develop any of the symptoms listed above.

[ ] Call for an appointment with Dr.____ in the practice of _____.

When you call for your appointment, please say that you were treated in the Emergency Department at _____ Hospital by_____and were advised to be seen again in ____days.

[ ] Return to the Emergency Department/Clinic on ____ (date) at _____ AM/PM for a follow-up examination.

[ ] Do not perform vigorous physical activities for 1 to 2 days.

[ ] You may resume everyday activities including driving and operating machinery.

[ ] Do not return to work for _____days.

[ ] You may return to work on a limited basis. See instructions below.

[ ] Avoid exposure to cigarette smoke for 72 hours; smoke may worsen the condition of your lungs.

[ ] Avoid drinking alcoholic beverages for at least 24 hours; alcohol may worsen injury to your stomach or have other effects.

[ ] Avoid taking the following medications: _____

[ ] You may continue taking the following medication(s) that your doctor(s) prescribed for you: _____

[ ] Other instructions: _____ _____

- Provide the Emergency Department with the name and the number of your primary care physician so that the ED can send him or her a record of your emergency department visit.
- You or your physician can get more information on the chemical by contacting: _____ or _____, or by checking out the following Internet Web sites: _____;_____.

Signature of patient _____ Date _____

Signature of physician _____ Date _____

Where can I get more information?

If you have questions or concerns, please contact your community or state health or environmental quality department or:

For more information, contact:
Agency for Toxic Substances and Disease Registry
Division of Toxicology and Human Health Sciences
4770 Buford Highway
Chamblee, GA 30341-3717
Phone: 1-800-CDC-INFO 888-232-6348 (TTY)
Email: Contact CDC-INFO

ATSDR can also tell you the location of occupational and environmental health clinics. These clinics specialize in recognizing, evaluating, and treating illnesses resulting from exposure to hazardous substances.

Page last reviewed: October 21, 2014

Print

Planning Commission May 1, 2023 Public Comment - Submission #3064

Date Submitted: 4/28/2023

First and Last Name*

Sue Burke

Email Address*

sue2nd9827@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

8714 Crossfire Drive

Public Comment for the Planning Commission May 1, 2023 Meeting

I am writing in opposition to approval for the asphalt plant planned for Wellington. From my research, I have learned that overall Connell Resources is a reputable company. This is not about Connell's reputation. No company is perfect, and no human beings are perfect. If the asphalt plant is approved, there WILL be increased traffic noise, there WILL be odors, and there WILL be accidents, spills, and unforeseen events. There can be no guarantees these things won't happen, and won't affect our little town and its residents. Because there is no "perfect," and because human error will always be there, the aftermath to your decision is huge. An asphalt plant does not belong here in Wellington, close to the Wellington Community Park, nearby subdivisions, downtown Wellington, an elementary school, in addition to the entirely of this small town. The consequences of anything not going "perfectly" are serious, now and into the future. This facility is also not appropriate for a "desirable town." When looking for a good place to raise families, retire, relocate, who is going to pick a town which has an asphalt processing plant so near to families, schools, parks? It is not a good move for the future of Wellington and attracting other types of businesses. If the asphalt plant is approved, what will be next with precedent set? Please deny the proposed location of the asphalt processing plant. There are many places that are more appropriate for a facility like this. Please keep our town as a desirable place to live.

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Planning Commission May 1, 2023 Public Comment - Submission #3065

Date Submitted: 4/28/2023

First and Last Name*

Shannon Evans

Email Address*

shannondevans@hotmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

Public Comment for the Planning Commission May 1, 2023 Meeting

As a concerned resident that lives and owns a home in Wellington, I donâ€™t agree with the idea of approving an asphalt plant that is in close proximity to Wellington Community Park, Buffalo Creek subdivision and would also affect the air quality/environment of the rest of the community/town for all the residents of Wellington. All of the toxins that are involved with asphalt plants can have so many negative effects on human health including, but not limited to cancer, autoimmune issues, neurologic issues. I am a board certified family medicine physician and have seen the effects industrial toxins have on humans and ask that you take into consideration your communitiesâ€™ health and well being and do not approve an asphalt plant right next to where children/adults play and people live. Sincerely, Shannon Evans

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Planning Commission May 1, 2023 Public Comment - Submission #3066

Date Submitted: 4/28/2023

First and Last Name*

Ryan Burtis

Email Address*

ryanbtownofwellington@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3234 Wild West Lane

Public Comment for the Planning Commission May 1, 2023 Meeting

I wanted to share several concerns about proposed asphalt plant. There is the potential for the plant to be harmful to the long term residential growth of Wellington as well as a potential negative impact on the quality of life for existing residents of the town. In addition, the fact that a local ordinance needed to be modified in order for this proposed asphalt plant to be allowed is a concern. I am concerned about what other local ordinances may need to be modified in the future to prompt business or industrial growth at the expense of residential growth. Another concern is that any potential buyers or renters looking at houses in the future may be discouraged from purchasing or renting due to concerns about noises or smells coming from the plant. As a result, the asphalt plant may have a detrimental effect on residential growth.

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Planning Commission May 1, 2023 Public Comment - Submission #3067

Date Submitted: 4/28/2023

First and Last Name*

Kimberly and Kevin Paganelli

Email Address*

Paganellikimberly@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

7101, Grassy Range Drive

Public Comment for the Planning Commission May 1, 2023 Meeting

To whom it may concern, We were shocked to hear the plan for an Asphalt plant here in Wellington. Not only was this surprising to hear because Wellington is a small rural town, but the plan to put it near so many neighboring houses and schools was alarming to say the least. We chose to raise our family in Wellington for its small town feel, farming community, and an overall healthier environment in comparison to areas in Northern Colorado that are more densely populated. It is absolutely heartbreaking that if the plans for the Asphalt plant come to pass, we will be forced to leave Wellington. We had many hopes that Wellingtons economy and infrastructure would continue to expand, as our young children grew, and we could benefit as a family from more businesses and families moving to town. We strongly feel an Asphalt plant will be the death of this potential in our community. Toxic fumes and chemicals released into our environment as our children grow, will not encourage more families or businesses to Wellington. We ask you to consider our plea to pass on this plan, and keep our children safe, as well as ensure Wellington's continued growth and expansion for years to come.

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Planning Commission May 1, 2023 Public Comment - Submission #3068

Date Submitted: 4/28/2023

First and Last Name*

Maureen Kudola

Email Address*

Mktagray@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

9016 painted horse ln

Public Comment for the Planning Commission May 1, 2023 Meeting

Iâ€™m writing this letter for those who it may concern, regarding the potential for the asphalt plant to be approved less than 2,640â€™ from the Buffalo creek neighborhood. It is my assertion that because asphalt batch plants are known for emitting toxic chemicals, such as Formaldehyde, Acetadelhyde, xylene and others, this asphalt plant MUST be considered heavy industry that curates toxic chemicals. And as such the 1,000 foot setback currently up for approval is wrong according to town land use codes. The board should recognize the health and welfare hazards to its citizens that use the Wellington Community Park and certainly those that reside in Buffalo Creek. Some of the chemicals curated by asphalt plants have been shown to cause headaches, severe breathing issues, cancer and birth defects. It would be irresponsible of the town to do anything other than classify this asphalt plant batch as industry that curates chemicals and toxins. Not to mention the negative property value impacts that it will have for every homeowner in Buffalo Creek. Property values will stagnate if not drop, which is of great concern to the hundreds of Wellington citizens that live in the Buffalo Creek community.

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Planning Commission May 1, 2023 Public Comment - Submission #3069

Date Submitted: 4/28/2023

First and Last Name*

Deborah Condos

Email Address*

dcondoscpp@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

8994 RAGING BULL LANE

Public Comment for the Planning Commission May 1, 2023 Meeting

Dear Planning Commissioners, **FACTS=TRUTH** **Fact**: The Larimer County Health Department representative assigned to the Connell Site Plan Review, Lea Schneider, states in her attached letter to the Town of Wellington that â€œhot mix asphalt plants release air pollutants.â€ â€œThe primary pollutants of concern include particulate matter, carbon monoxide, nitrogen oxides, volatile organic compounds, and/or sulfur oxides,â€ and, â€œAdditional non-criteria pollutants regulated by APCD include hazardous air pollutants (HAPS) as defined in the Air Quality Control Commission (AQCC) regulations.â€ The AQCC's website refers to the EPA's HAPS list. **Fact**: The EPA website states that two, among several hazardous air pollutants (HAPS) are Acetaldehyde and Arsenic. The attached EPA fact sheet on Acetaldehyde states that this hazardous air pollutant is â€œmainly used as an intermediate in the synthesis of other chemicals. Acute (short-term) exposure to acetaldehyde results in effects including irritation of the eyes, skin, and respiratory tract. Symptoms of chronic (long-term) intoxication of acetaldehyde resemble those of alcoholism.â€ **Fact**: The second EPA fact sheet attached states this about the hazardous air pollutant, Arsenic, â€œAcute (short-term), high-level inhalation exposure to inorganic arsenic has resulted in respiratory effects (cough, dyspnea, chest pain), gastrointestinal effects (nausea, diarrhea, abdominal pain), and central and peripheral nervous system effects.â€ Dyspnea, according to the Oxford dictionary, is difficult or labored breathing. The EPA fact sheet goes on to say that, â€œ Chronic (long-term) inhalation exposure to inorganic arsenic in humans is associated with skin, cardiovascular, and neurological effects.â€ All of the above is only a fraction of the reason I oppose the Connell asphalt plant being built in our backyards. The plant wonâ€™t just be in our backyards. All of Wellington and the surrounding areas will be affected by the plant. I donâ€™t believe any citizen of Wellington wants to breathe hazardous air pollutants on a daily basis. Do you? For the sake of our health, our children and grandchildrenâ€™s health and a thousand other reasons, please move to deny the site plan for Connell Resources asphalt plant! Thank you! Debbie Condos Wellington Buffalo Creek Resident

Optional File Attachment

Larimer Cnty Health Dept - Lea Schneider.pdf

Optional File Attachment

EPA Acetaldehyde Fact Sheet.pdf

Optional File Attachment

EPA Arsenic Compounds Fact Sheet.pdf

LARIMER COUNTY | HEALTH AND ENVIRONMENT

1525 Blue Spruce Drive, Fort Collins, Colorado 80524-2004, 970.498.6775, www.larimer.org/health/ehs/

TO: Paul Whalen
Senior Planner
Town of Wellington

FROM: Lea Schneider
Environemtnal Health Planner
Larimer County Department of Public Health & Environment

DATE: December 21, 2022

SUBJECT: Connell's Wellington Asphalt Plant Site Plan Referral Review

Larimer Department of Health and Environment (LCDHE) has reviewed the site plan application materials provided in the referral email dated November 29, 2022. In addition, LCDHE met with Connell Resources, Inc. on December 21, 2022. The following LCDHE comments include requirements of associated regulations as well as recommendations for the Town to consider for additional public health protections when evaluating the application for compatibility to the residential areas.

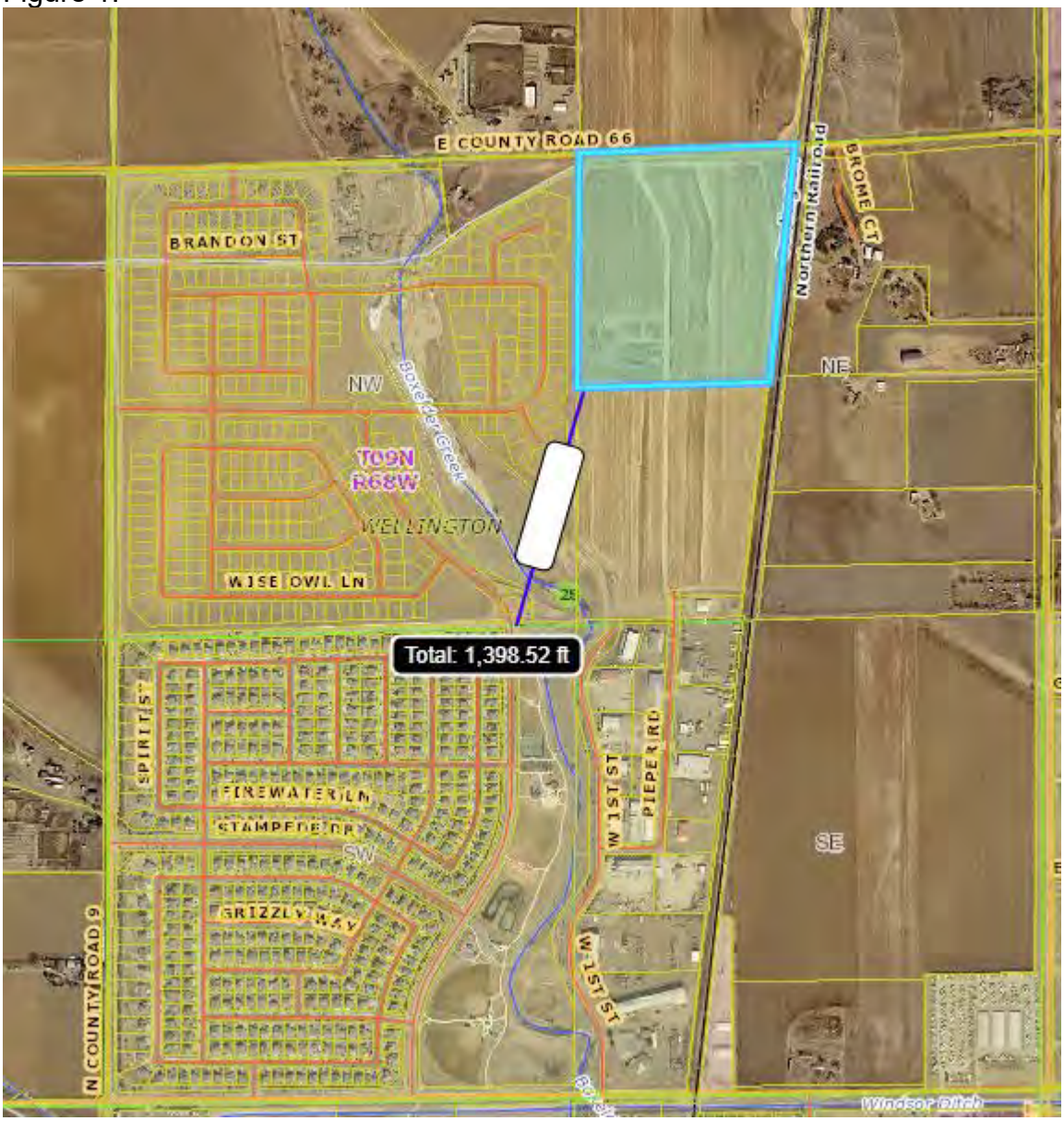
As a result of the submitted materials and meeting with Connell Resources, Inc., it is understood that Connell's existing asphalt batch plant operating near Timnath, Colorado, is proposed to be relocated to Parcel 8928000019 on East County Road 66 between North County Roads 7 and 9. The proposed improvements for the Site Plan include an office building, storage lean-to structure, welding and mechanical shop, garage, washing and fueling areas; landscaping and screening; paved parking, access and truck service roads; the relocated batch plant with associated cold storage bins, storage tanks/silos, resource stockpiles.

The operation will import and stockpile sand and aggregate resources via haul trucks for use in asphalt production, as well as process reclaimed asphalt pavement (RAP) on-site. Public utilities will supply water and sewer for new structures, while raw/well water will be transported from off-site for dust control during operations. Normal operating hours are between 7am to 6pm, Monday through Saturday with occasional work outside of normal operating hours for special projects such as evening construction for major traffic corridor infrastructure.

Though the property for the asphalt operation is zoned for I-Industrial uses under the zoning designation of Town of Wellington, there are residential uses in the area as shown in the Larimer County Assessor map shown below in Figure 1. A platted undeveloped residential community appears to be adjacent to the west and an existing developed residential community and outdoor recreational area to the south which are less than 1500 feet from the south property line of the asphalt property. The unincorporated parcels near the plant are zoned O-Open which is intended for rural

residential and agriculture uses. For this reason, it is recommended that the Town consider the residential compatibility as part of this review.

Figure 1.



Noise. Asphalt operations include noise generating activities such as road traffic, imported materials haulers, dump trucks for asphalt, off-road construction equipment with backup alarms moving aggregate resources around the site, crushing activities for RAP, conveyor belts moving material to the batch plant. For this reason noise impacts are recommended to be evaluated as part of this review process. It is not known if the Town of Wellington has a local noise ordinance, but Larimer County and the State of Colorado have standards for noise.

The County has adopted a noise ordinance (Ordinance No. 97-03) which specifies maximum sound levels of 55 dbA from 7am to 7pm at unincorporated residential

property lines as defined in the Ordinance. The ordinance is available on the County's website at: http://legacy.larimer.org/policies/noise.htm

In the absence of a Town of Wellington noise ordinance, the Colorado Revised Statute – ARTICLE 12 – Noise Abatement establishes noise levels at the property lines based on the use of adjacent properties which include residential areas except the adjacent parcel to the south which is also zoned I-Industrial.

Some site mitigations have been proposed including earthen berms of at least 10 feet to be installed along the north and west property lines; one-way haul truck movement on the site; location of noise producing activity to the northeast of the property; upgrading batch plant equipment. The Health Department recommends that the Town request a Predictive Sound Analysis with noise contour mapping to demonstrate that the proposed berms and additional mitigation strategies are adequate to protect future developed properties to the west and the existing residential uses to the north, but also to the east and the developed Buffalo Creek subdivision to the south/southeast.

It is also recommended that the operator signage include contact information such as a phone number and/or email for neighbors to report concerns directly to the operator in order to respond quicker to feedback for repairing or adjusting the noise-inducing activity.

Air Quality for Operations. Hot mix asphalt plants release air pollutants that are regulated by the Air Pollution Control Division (APCD) at the Colorado Department of Public Health and Environment (CDPHE). The primary pollutants of concern include particulate matter, carbon monoxide, nitrogen oxides, volatile organic compounds, and/or sulfur oxides. These criteria pollutants are regulated to meet the Environmental Protection Agency's National Ambient Air Quality Standards (NAAQS) which can be harmful to public health and the environment when not properly controlled. Additional noncriteria pollutants regulated by APCD include hazardous air pollutants (HAPS) as defined in the Air Quality Control Commission (AQCC) regulations..

Connell Resources, Inc. currently holds an APCD permit (00LR0746) for the asphalt batch plant proposed to be relocated to Wellington. This facility is routinely inspected by Larimer County Department of Health and Environment as contractors of APCD. A new APEN will need to be applied for and reviewed by APCD in order to establish new limitations and controls as part of the final construction (operating) permit for the new site. It is recommended that the Town request copies of the future applications and dust control plan for further evaluation on adequate controls for the residential uses.

LCDHE will continue to inspect the facility under the new air permit even within the Town of Wellington. Due to the lack of open mining on the property, aggregate material arriving pre-processed, and the current asphalt plant permit emission thresholds being in compliance with the NAAQS, it is not known if air emission dispersion modeling will be required for the future air permitting and will be evaluated by APCD at the time of APEN submittal.

To further evaluate the emission levels in relation to public health, compliance with NAAQS, and residential and recreation area compatibility, it is recommended that the

Town consider requesting emission dispersion modeling independent of the APCD permitting process to predict potential pollutant exposure. Air dispersion models are tools to approximate concentrations from one or more facilities or sources of air pollutants. When an air pollutant is emitted into the atmosphere, it is transported and dispersed by various atmospheric processes. Algorithms and equations have been developed to approximate (model) these atmospheric processes and have been incorporated into various computer codes (computer models). APCD typically uses the results from these computer models in their review of qualifying APEN/air permit applications. A modeled prediction is used to demonstrate if the emitting source will be in compliance with the NAAQS (as well as Colorado Ambient Air Quality Standards - CAAQS). If the model predicts an exceedance of the NAAQS and/or CAAQS, the applicant has the opportunity to adjust the facility emissions through operating hours, source parameters, source configuration, and other mitigation strategies in order to demonstrate compliance with all state and federal standards. Modeling is a good opportunity to examine control measures and potentially demonstrate compatibility with the residential and outdoor recreational uses.

Odors. Hot asphalt operations can produce odors depending on equipment, fuels, materials and processing. As part of compliance with the future air permit from APCD, the operation will be required to prevent excessive odors to comply with Colorado's Air Quality Control Commission Regulation 2 for Odor Emission. The regulation limits the emission of odorous air within areas used predominantly as residential or commercial purposes. This property in review is surrounded by a mix of commercial and residential uses as well as public recreation, therefore the more strict residential threshold for odors shall be complied with. Please note that it is a violation if odors are detected at property lines after the odorous air has been diluted with seven (7) or more volumes of odor free air using a nasal ranger operated by certified staff. Larimer County staff are certified in odor compliance and will evaluate complaints. Please note that compliance with APCD permitting and Regulation 2, as well as properly maintained and operating equipment will reduce the amount of emissions and therefore odors released from the property but does not create an odor-free operation.

Wetlands. No infromation was noted in the application materials regarding the intermittent waterway identified on the Larimer County Assessor's topography map. In referencing the Wetland Mapper developed by the U.S. Fish and Wildlife Service, the intermittent waterway has a preliminary identification as a riverine wetland. It is not known if there were earlier applications and/or discussions related to the topic of potential wetlands and a need for delineation.

Fugitive Dust during Construction. Colorado's air quality laws include requirements for controlling fugitive dust emissions during construction activities. Projects that are fewer than 25 acres and less than six months are not required to complete an APEN, but are still required to control fugitive dust and off-site transport. Additional information is avaible on the APCD website: https://cdphe.colorado.gov/apens-and-air-permits/air-permits-for-non-oil-gas

Water Quality. Potential water quality impacts associated with asphalt batch plants include sediments from in the truck wash down and stormwater runoff, and chemicals associated with the asphalt biding materials, fluids associated with trucks/off-road construction equipment, machinery and processing operations.

In this particular case, the submitted Ditesco drainage report indicates that a detention pond will be constructed in the southwest corner of the parcel with the intent to drain off-site. It is not known if there is a retention pond or other infrastructure to support the truck wash down area or other process water from the site.

Depending on the aforementioned process water and stormwater management, the non-extractive operations may be required to apply for either a 'Process and Stormwater Discharge Permit' or, if no process water will be discharged, a 'Stormwater Discharge Permit' from the Water Quality Control Division of the Colorado Department of Public Health and Environment. Please refer to the Water Quality Control Division's website: https://www.colorado.gov/pacific/cdphe/wq-commerce-and-industry-permits

A requirement for obtaining either permit is the preparation of a stormwater management plan. These plans must include identification of potential sources of pollution (including sediment, chemicals used in the mining operation, fuels, etc.) and selection of best management practices that will be implemented to control the potential pollutants. Under the terms of a state permit, the applicant is required to perform routine inspections and to prepare an annual report to address compliance with the stormwater management plan.

Fuel Storage Tanks. The Site Plan proposes the installation of on-site fuel storage and related pumping equipment. These items are regulated by the Colorado Department of Labor and Employment, Oil Inspection Section. Additional criteria may be required by the local fire authority. Information on their tank compliance plan submittal process is available at:
https://ops.colorado.gov/Petroleum/TankCompliance

Arsenic Compounds

Hazard Summary

Arsenic, a naturally occurring element, is found throughout the environment. For most people, exposure to arsenic, including to inorganic arsenic compounds, occurs through their diet. Acute (short-term), high-level inhalation exposure to inorganic arsenic has resulted in respiratory effects (cough, dyspnea, chest pain), gastrointestinal effects (nausea, diarrhea, abdominal pain), and central and peripheral nervous system effects. Chronic (long-term) inhalation exposure to inorganic arsenic in humans is associated with skin, cardiovascular, and neurological effects. Acute oral exposure to inorganic arsenic has resulted in effects on the digestive tract, respiratory tract, central nervous system (CNS), cardiovascular system, liver, and blood and has resulted in death. Chronic oral exposure to elevated levels of inorganic arsenic has resulted in gastrointestinal effects, anemia, peripheral neuropathy, skin lesions, hyperpigmentation, and liver and kidney damage in humans. EPA has concluded that inorganic arsenic is a human carcinogen. Evidence from human studies suggests that exposure to inorganic arsenic by inhalation may result in lung cancer, while exposure by ingestion may result in nonmelanoma skin cancer and bladder, kidney, liver, and lung cancers.

Arsine is a gas consisting of arsenic and hydrogen. It is extremely toxic to humans and can result in general malaise, headaches, apprehension, giddiness, shivering, thirst, vomiting, and abdominal pains with vomiting within a few hours of exposure. Arsine can be fatal if inhaled in sufficient quantities. EPA has not classified arsine for carcinogenicity.

Please Note:

- This fact sheet has a particular focus on inorganic arsenic compounds, including the gaseous arsenic compound arsine. The main sources of toxicity information for this fact sheet are EPA's Integrated Risk Information System (IRIS), which contains information on the carcinogenic effects of inorganic arsenic, including the unit cancer risk for inhalation exposure, and on effects of arsine; as well as the Agency for Toxic Substances and Disease Registry's (ATSDR's) Toxicological Profile for Arsenic.

Uses

- Inorganic arsenic is primarily used as a preservative to make wood resistant to rot and decay, although the use for certain residential items, such as decks and picnic tables, has been phased out. Inorganic arsenic is still used for this purpose in industrial applications. (1)
- The use of arsenic in agricultural or commercial pesticide applications has been restricted and is most recently limited to organic arsenic compounds in a limited number of approved uses. (1)
- Arsenic and its compounds have been used as alloy additives; in electronic devices, such as smartphones; in veterinary medicines; in pigment production; in glass manufacturing; as bronzing or decolorizing agents; in textile printing; in tanning; and other uses. (1,2)
- Until the 1940s, inorganic arsenic was used as a therapeutic agent in the treatment of various diseases, such as leukemia, psoriasis, and chronic bronchial asthma. Inorganic arsenic may still be used in homeopathic or folk remedies in the United States and other countries, and its use has reemerged in an FDA-approved treatment for

a specific type of leukemia. (1)

- Arsine is a gas that has much more limited usage than the other inorganic compounds. The use of arsine is primarily in electronics and semiconductor components manufacturing, organic syntheses, and lead-acid storage battery manufacturing. (2)

Sources and Potential Exposure

- Inorganic arsenic is found throughout the environment; it is released into the air by volcanoes, the weathering of arsenic-containing minerals and ores, and commercial and industrial processes. (1)
- General population exposure occurs through ingestion of contaminated drinking water or food. For most people, diet is the largest source of arsenic exposure, with smaller intakes from drinking water and air. Grains, produce, fish, and shellfish are significant sources of arsenic exposure via food. High arsenic levels have been found in fish and shellfish; however, arsenic in fish and shellfish exists primarily as two forms of organic arsenic (i.e., "fish arsenic") that are essentially nontoxic. Inorganic arsenic compounds are the predominant forms to which people are exposed. (1)
- Elevated levels of inorganic arsenic may be present in soil, either from natural mineral deposits or contamination from human activities, which may lead to dermal or ingestion exposure. (1)
- Workers at metal smelting facilities and nearby residents may be exposed to above-average inorganic arsenic levels from arsenic released into the air. (1,2)
- Other sources of inorganic arsenic exposure include burning wood treated with an arsenical wood preservative or dermal contact with wood treated with arsenic. (1)
- Arsine is formed when arsenic comes in contact with an acid. Most exposures to arsine have occurred after unintentional formation of arsine in the workplace of chemical, smelting, and refining industries. (2,9)

Assessing Personal Exposure

- Arsenic can be measured in blood, urine, hair, and fingernails. Measurement of inorganic arsenic in the urine is the best way to determine recent exposure (within the previous 1 to 2 days), while measuring inorganic arsenic in hair or fingernails can detect high-level exposures that occurred over the prior 6 to 12 months. (1)

Health Hazard Information

Acute Effects:

- Inorganic Arsenic (other than arsine)
  - Workers inhaling very high levels of arsenic over a short period have experienced respiratory tract symptoms (cough, chest pain, dyspnea, pulmonary edema), gastrointestinal effects (nausea, diarrhea, abdominal pain), and central and peripheral nervous system effects (peripheral neuropathy, frank encephalopathy). (1,2)
  - Ingestion of high levels inorganic arsenic over a short period has resulted in death. Acute oral exposure to lower levels has resulted in effects on the digestive tract (constriction of the throat, dysphagia, nausea, vomiting, watery diarrhea), respiratory tract (respiratory distress, hemorrhagic bronchitis), CNS (encephalopathy, weakness, delirium), cardiovascular system (hypotension, shock), the liver (increased enzymes and size), and blood (anemia, leukopenia). (1,2)
- Arsine
  - Inhaling high levels of arsine over very short periods has resulted in death; a half-hour exposure to 25 to 50 parts per million (ppm) can be lethal. (2,3)
  - Acute arsine poisoning can cause pulmonary edema, massive hemolysis with subsequent hemolytic anemia, and can cause kidney, liver, and heart damage. (2)
  - The major effects from short-term exposure to lower levels of arsine include headaches, vomiting,

abdominal pains, and effects on the blood, including hemolytic anemia, hemoglobinuria, and jaundice; these effects can lead to kidney failure. (2,3)

Chronic Effects (Noncancer):

- Inorganic Arsenic (other than arsine)
  - Chronic inhalation exposure of humans to elevated levels of inorganic arsenic has been associated with effects on the cardiovascular system and skin (including dermatitis, conjunctivitis, pharyngitis and rhinitis) and with nerve damage. (1,2,4)
  - EPA has not established a reference concentration (RfC) for inhalation exposure to inorganic arsenic. (4)
  - The California Environmental Protection Agency (CalEPA) has established a chronic inhalation reference exposure level (REL) of 0.000015 milligrams per cubic meter (0.000015 mg/m^3) estimated from an epidemiologic study indicating decreased intellectual function in 10-year-old children exposed to elevated arsenic in drinking water and assumptions for exposure and risk from inhalation exposure. The CalEPA REL is a concentration at or below which adverse health effects are not likely to occur. It is not a direct estimator of risk, but rather a reference point to gauge the potential effects. At lifetime exposures increasingly greater than the REL, the potential for adverse health effects increases. (4)
  - Chronic oral exposure of humans to elevated levels of inorganic arsenic has been associated with effects on the gastrointestinal system, blood, skin, eyes, lungs, heart, CNS, liver, and kidneys. Such effects include anemia, peripheral neuropathy, skin lesions, hyperpigmentation, gangrene of the extremities, vascular lesions, and liver or kidney damage. (1,4).
  - Some studies have reported an association between elevated arsenic levels in drinking water and neurocognitive or behavioral test results of school age children. (1)
  - Animal studies have reported effects on the blood, liver, and kidneys from oral exposure to inorganic arsenic. (1,4)
  - The EPA reference dose (RfD) for inorganic arsenic is 0.0003 milligrams per kilogram body weight per day (mg/kg/d) based on effects on the skin (hyperpigmentation and keratosis) and possible vascular effects reported in epidemiologic studies of exposure to contaminated drinking water . The RfD is an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral exposure to the human population (including sensitive subgroups) that is likely to be without appreciable risk of deleterious noncancer effects during a lifetime. (4)
  - EPA has medium confidence in the study on which the RfD for inorganic arsenic was based because although an extremely large number of people were included in the assessment (>40,000), the doses were not well characterized, and other contaminants were present. While extensive, the supporting human toxicity database is somewhat flawed; therefore, EPA has assigned medium confidence to the RfD. (4)

- Arsine
  - Long-term occupational exposure to arsine can damage skin and nerves and can affect the circulatory and hematopoietic systems and result in hemolytic anemia. At higher exposures, it may damage the spleen and kidney. (2, 3)
  - The EPA RfC for arsine is 0.00005 mg/m^3 based on effects on the blood and spleen, including hemolysis, abnormal red blood cell morphology, and increased spleen weight in rats, mice, and hamsters. (3)
  - EPA has assigned medium confidence to the RfC based on medium confidence in the database. While there were three inhalation animal studies and a developmental/reproductive study, there were no data available on human exposure. However, EPA has high confidence in the animal studies on which the RfC is based because the sample sizes were adequate, statistical significance was reported, concentration dose-response relationships were documented, three species were investigated, and both a no-observed-adverse-effect level (NOAEL) and a lowest-observed-adverse-effect level (LOAEL) were identified. (3)

Reproductive/Developmental Effects:

- Inorganic Arsenic
  - Studies have reported an association between maternal exposure to elevated arsenic levels in drinking water and low birth weights, neonatal death, and infant mortality. (1)
  - Ingested inorganic arsenic can cross the placenta in humans, exposing the fetus to the chemical. (1)
  - Oral animal studies have reported inorganic arsenic to produce developmental effects in offspring, including birth defects and neurobehavioral deficits. (1)

- Arsine
  - Human studies have indicated higher than expected spontaneous abortion rates in women in the microelectronics industry who were exposed to arsine. However, these studies have several limitations, including small sample size and exposure to other chemicals in addition to arsine. (3)
  - A National Toxicology Program (NTP) study found no adverse developmental effects in offspring of pregnant rats and mice exposed to arsine. (6)

Cancer Risk:

- Inorganic Arsenic
  - Human occupational studies have shown that inhalation exposure to inorganic arsenic increases the risk of lung cancer. (1,4)
  - Ingestion of inorganic arsenic in humans has been associated with an increased risk of nonmelanoma skin cancer and an increased risk of bladder, liver, kidney and lung cancers. (1,4)
  - No animal inhalation studies reporting cancer effects from inorganic arsenic exposure were identified. Most oral animal studies have not shown an association between inorganic arsenic exposure and cancer; however, a study in mice involving exposure to inorganic arsenic in drinking water reported an increased risk of lung tumors. (1)
  - EPA has concluded that inorganic arsenic is a human carcinogen. (4)
  - EPA used a mathematical model with data from an occupational study of arsenic-exposed copper smelter workers to estimate the probability of a person developing cancer from continuously breathing air containing a specified concentration of inorganic arsenic. EPA calculated an inhalation unit risk estimate of 4.3×10^{-3} per $\mu g/m^3$. EPA estimates that, if an individual were to continuously breathe air containing inorganic arsenic at an average of 0.0002 $\mu g/m^3$ (2×10^{-7} mg/m^3) over their entire lifetime, the person would theoretically have no more than a one-in-a-million increased chance of developing cancer as a direct result. Similarly, EPA estimates that continuously breathing air containing 0.002 $\mu g/m^3$ (2×10^{-6} mg/m^3) would result in not greater than a one-in-a-hundred thousand increased chance of developing cancer, and air containing 0.02 $\mu g/m^3$ (2×10^{-5} mg/m^3) would result in not greater than a one-in-ten thousand increased chance of developing cancer. For a detailed discussion of confidence in the potency estimates, please see IRIS. (4)
  - EPA has calculated an oral cancer slope factor of 1.5 per mg/kg/d for inorganic arsenic. The oral cancer slope factor is an estimate of the increased cancer risk from ingestion of 1 mg inorganic arsenic per kg body weight per day over a lifetime. (4)

- Arsine
  - EPA has not classified arsine for carcinogenicity. (3)
  - No cancer inhalation studies in humans or animals were available for arsine. (1)

Physical Properties

- Inorganic arsenic is a naturally occurring element in the earth's crust. (1)

- Pure inorganic arsenic is a gray-colored metal. Arsenic combined with elements such as oxygen, chlorine, and sulfur forms inorganic arsenic; inorganic arsenic compounds include arsenic pentoxide, arsenic trioxide, and arsenic acid. (1)
- The chemical symbol for arsenic is As, and it has a molecular weight of 74.92 g/mol. (2)
- The chemical formula for arsine is AsH_3, and it has a molecular weight of 77.95g/mol. (2)
- Arsine is an extremely flammable, colorless gas with a slight garlic-like odor. (2)
- Arsenic combined with carbon and hydrogen forms organic arsenic; organic arsenic compounds include arsanilic acid, arsenobetaine, and dimethylarsinic acid. (1)

Conversion Factors:

To convert concentrations in air (at 25 °C) from ppm to mg/m³:

mg/m³ = (ppm) × (molecular weight of the compound) / (24.45).

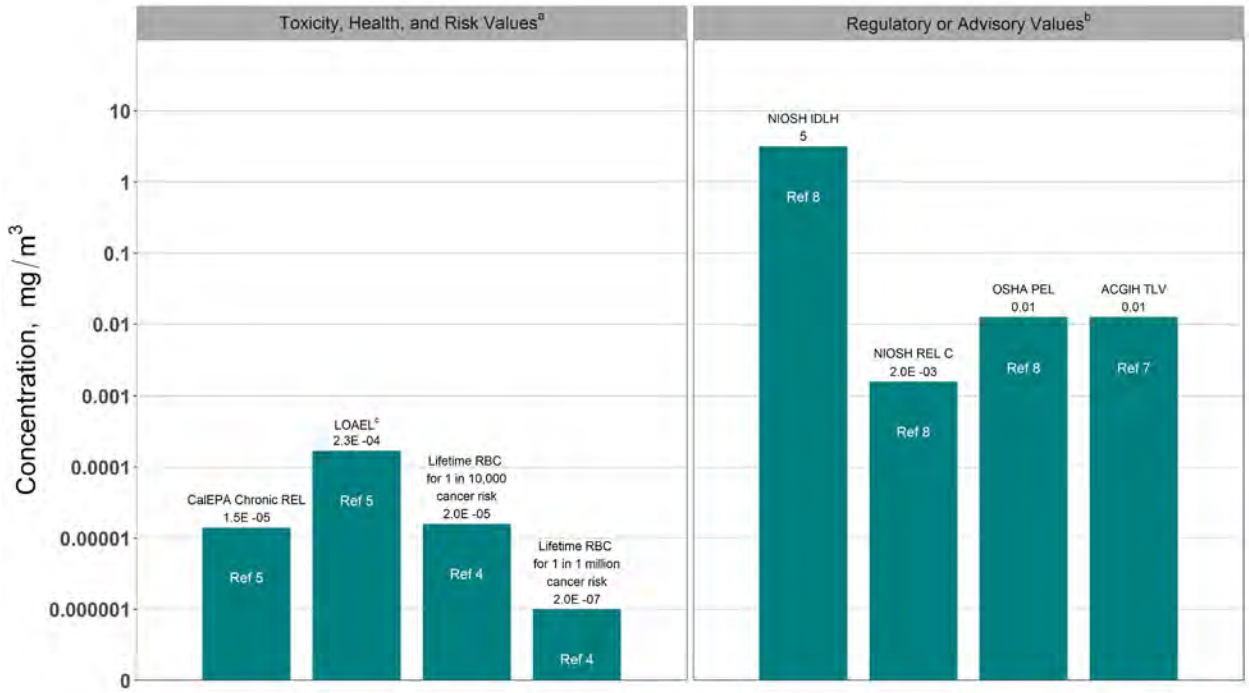
For inorganic arsenic: 1 ppm = 3.06 mg/m³.

For arsine: 1 ppm = 3.19 mg/m³

To convert concentrations in air from µg/m³ to mg/m³:

mg/m³ = (µg/m³) x (1 mg/1,000 µg)

Health Data from Inhalation Exposure (Inorganic Arsenic)



ACGIH TLV — American Conference of Governmental Industrial Hygienists threshold limit value expressed as a time-weighted average; the concentration of a substance to which most workers can be exposed without adverse effects.
LOAEL (Lowest-Observed-Adverse-Effect Level) — The lowest dose or concentration at which there was an observed toxic or adverse effect of a target organism distinguished from a normal or untreated organism of the same species.
CalEPA Chronic REL — California EPA Office of Environmental Health Hazard Assessment (OEHHA) chronic reference exposure level (REL) is the concentration at or below which no adverse health effect is anticipated for a lifetime exposure.
NIOSH IDLH — National Institute for Occupational Safety and Health's immediately dangerous to life or health concentration; IDLH values are established (1) to ensure that a worker can escape from a given contaminated environment in the event of failure of the respiratory protection equipment and (2) to indicate a maximum level

above which only a highly reliable breathing apparatus, providing maximum worker protection, is permitted.

NIOSH REL C (ceiling value) — NIOSH's recommended exposure limit ceiling; the concentration that should not be exceeded at any time.

OSHA PEL — Occupational Safety and Health Administration's permissible exposure limit expressed as a time-weighted average; the concentration of a substance to which most workers can be exposed without adverse effect, averaged over a normal 8-hour workday or a 40-hour workweek.

RBC (cancer risk-based concentration) — A calculated concentration of a chemical in air to which continuous exposure over a lifetime is estimated to be associated with a risk of contracting cancer not greater than the specified probability (e.g., 1-in-1 million).

[a]Toxicity, Health, and Risk numbers are toxicological values from animal testing or risk assessment values developed by EPA.

[b]Regulatory numbers are values that have been incorporated in Government regulations, while advisory numbers are nonregulatory values provided by Government or other groups as advice. OSHA numbers are regulatory, whereas NIOSH, ACGIH, and AIHA numbers are advisory.

[c]The concentration presented here is the LOAEL (calculated from the oral level) from the critical study used as the basis for the CalEPA chronic REL.

Summary updated April 2021.

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Acetaldehyde

75-07-0

Hazard Summary

Acetaldehyde is mainly used as an intermediate in the synthesis of other chemicals. It is ubiquitous in the environment and may be formed in the body from the breakdown of ethanol. Acute (short-term) exposure to acetaldehyde results in effects including irritation of the eyes, skin, and respiratory tract. Symptoms of chronic (long-term) intoxication of acetaldehyde resemble those of alcoholism. Acetaldehyde is considered a probable human carcinogen (Group B2) based on inadequate human cancer studies and animal studies that have shown nasal tumors in rats and laryngeal tumors in hamsters.

Please Note: The main sources of information for this fact sheet are EPA's Health Assessment Document for Acetaldehyde (1) and the Integrated Risk Information System (IRIS) (4), which contains information on inhalation chronic toxicity of acetaldehyde and the RfC. Other secondary sources include the International Agency for Research on Cancer (IARC) Monographs on Chemicals Carcinogenic to Humans. (6)

Uses

- The predominant use of acetaldehyde is as an intermediate in the synthesis of other chemicals. (1)
- Acetaldehyde is used in the production of perfumes, polyester resins, and basic dyes. Acetaldehyde is also used as a fruit and fish preservative, as a flavoring agent, and as a denaturant for alcohol, in fuel compositions, for hardening gelatin, and as a solvent in the rubber, tanning, and paper industries. (1,2)

Sources and Potential Exposure

- Acetaldehyde is ubiquitous in the ambient environment. It is an intermediate product of higher plant respiration and formed as a product of incomplete wood combustion in fireplaces and woodstoves, coffee roasting, burning of tobacco, vehicle exhaust fumes, and coal refining and waste processing. Hence, many individuals are exposed to acetaldehyde by breathing ambient air. It should be noted that residential fireplaces and woodstoves are the two highest sources of emissions, followed by various industrial emissions. (1)
- In Los Angeles, California, levels of acetaldehyde up to 32 parts per billion (ppb) have been measured in the ambient environment. (1)
- Exposure may also occur in individuals occupationally exposed to acetaldehyde during its manufacture and use. (1,2)
- In addition, acetaldehyde is formed in the body from the breakdown of ethanol; this would be a source of acetaldehyde among those who consume alcoholic beverages. (1)

Assessing Personal Exposure

- Acetaldehyde can be detected in the blood and breath to determine whether or not exposure has occurred. (12)

Health Hazard Information

Acute Effects:

- The primary acute effect of inhalation exposure to acetaldehyde is irritation of the eyes, skin, and

respiratory tract in humans. At higher exposure levels, erythema, coughing, pulmonary edema, and necrosis may also occur. (1)
- Acute inhalation of acetaldehyde resulted in a depressed respiratory rate and elevated blood pressure in experimental animals. (1)
- Tests involving acute exposure of rats, rabbits, and hamsters have demonstrated acetaldehyde to have low acute toxicity from inhalation and moderate acute toxicity from oral or dermal exposure. (3)

Chronic Effects (Noncancer):
- Symptoms of chronic intoxication of acetaldehyde in humans resemble those of alcoholism. (5)
- In hamsters, chronic inhalation exposure to acetaldehyde has produced changes in the nasal mucosa and trachea, growth retardation, slight anemia, and increased kidney weight. (1,4)
- The Reference Concentration (RfC) for acetaldehyde is 0.009 milligrams per cubic meter (mg/m^3) based on degeneration of olfactory epithelium in rats. The RfC is an estimate (with uncertainty spanning perhaps an order of magnitude) of a continuous inhalation exposure to the human population (including sensitive subgroups), that is likely to be without appreciable risk of deleterious noncancer effects during a lifetime. It is not a direct esimator of risk but rather a reference point to gauge the potential effects. At exposures increasingly greater than the RfC, the potential for adverse health effects increases. Lifetime exposure above the RfC does not imply that an adverse health effect would necessarily occur. (4)
- EPA has medium confidence in the principal studies because appropriate histopathology was performed on an adequate number of animals and a no-observed-adverse-effect level (NOAEL) and a lowest-observed-adverse-effect level (LOAEL) were identified, but the duration was short and only one species was tested; low confidence in the database due to the lack of chronic data establishing NOAELs and due to the lack of reproductive and developmental toxicity data; and, consequently, low confidence in the RfC. (4)
- EPA has not established a Reference Dose (RfD) for acetaldehyde. (4)

Reproductive/Developmental Effects:
- No information is available on the reproductive or developmental effects of acetaldehyde in humans.
- Acetaldehyde has been shown, in animals, to cross the placenta to the fetus. (1,4)
- Data from animal studies suggest that acetaldehyde may be a potential developmental toxin. In one study, a high incidence of embryonic resorptions was observed in mice injected with acetaldehyde. In rats exposed to acetaldehyde by injection, skeletal malformations, reduced birth weight, and increased postnatal mortality have been reported. (1,6)

Cancer Risk:
- Human data regarding the carcinogenic effects of acetaldehyde are inadequate. Only one epidemiology study is available that has several limitations including short duration, small number of subjects, and concurrent exposure to other chemicals and cigarettes. (1,4,6)
- An increased incidence of nasal tumors in rats and laryngeal tumors in hamsters has been observed following inhalation exposure to acetaldehyde. (1,4,6)
- EPA has classified acetaldehyde as a Group B2, probable human carcinogen. (1,4)
- EPA uses mathematical models, based on human and animal studies, to estimate the probability of a person developing cancer from breathing air containing a specified concentration of a chemical. EPA calculated an inhalation unit risk of 2.2×10^{-6} $(\mu g/m^3)^{-1}$. EPA estimates that, if an individual were to continuously breathe air containing acetaldehyde at an average of 0.5 $\mu g/m^3$ (5×10^{-4} mg/m^3) over his or her entire lifetime, that person would theoretically have no more than a one-in-a-million increased chance of developing cancer as a direct result of breathing air containing this chemical. Similarly, EPA estimates that breathing air containing 5.0 $\mu g/m^3$ (5×10^{-3} mg/m^3) would result in not greater than a one-in-a-hundred thousand increased chance of developing cancer, and air containing 50.0 $\mu g/m^3$ (5×10^{-2} mg/m^3) would result in not greater than a one-in-ten thousand increased chance of developing cancer. For a detailed discussion of confidence in the potency estimates, please see IRIS. (4)

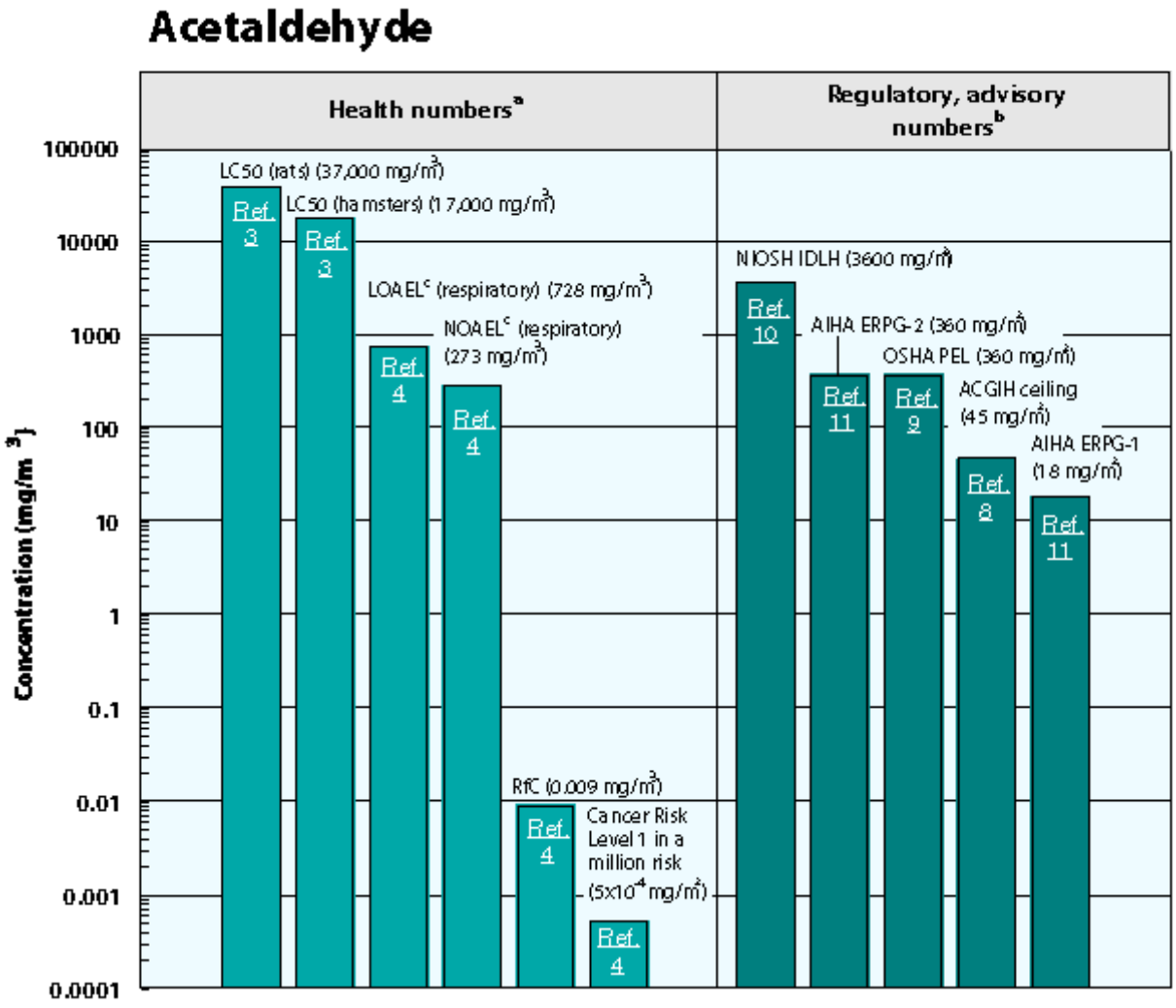
Physical Properties

- The chemical formula for acetaldehyde is CH_3CHO, and it has a molecular weight of 44.06 g/mol. (1)
- Acetaldehyde is a colorless mobile liquid that is flammable and miscible with water. (1,6)
- Acetaldehyde has a pungent suffocating odor, but at dilute concentrations it has a fruity and pleasant odor. The odor threshold of acetaldehyde is 0.05 parts per million (ppm) (0.09 mg/m^3). (1,7)
- The vapor pressure for acetaldehyde is 740 mm Hg at 20 °C, and it has a log octanol/water partition coefficient (log K_{ow}) of 0.43. (1)

Conversion Factors (only for the gaseous form):

To convert concentrations in air (at 25°C) from ppm to mg/m^3: mg/m^3 = (ppm) × (molecular weight of the compound)/(24.45). For acetaldehyde: 1 ppm = 1.8 mg/m^3. To convert concentrations in air from $\mu g/m^3$ to mg/m^3: mg/m^3 = ($\mu g/m^3$) × (1 mg/1,000 µg).

Health Data from Inhalation Exposure



AIHA ERPG--American Industrial Hygiene Association's emergency response planning guidelines. ERPG 1 is the maximum airborne concentration below which it is believed nearly all individuals could be exposed up to one hour without experiencing other than mild transient adverse health effects or perceiving a clearly defined objectionable odor; ERPG 2 is the maximum airborne concentration below which it is believed nearly all individuals could be exposed up to one hour without experiencing or developing irreversible or other serious health effects that could impair their abilities to take protective action.

ACGIH ceiling-- American Conference of Governmental and Industrial Hygienists' threshold limit value ceiling; the concentration of a substance that should not be exceeded during any part of the working exposure.

LC_{50} (Lethal Concentration $_{50}$)--A calculated concentration of a chemical in air to which exposure for a specific length of time is expected to cause death in 50% of a defined experimental animal population.

NIOSH IDLH --National Institute of Occupational Safety and Health's immediately dangerous to life or health limit; NIOSH recommended exposure limit to ensure that a worker can escape from an exposure condition that is likely to cause death or immediate or delayed permanent adverse health effects or prevent escape from the environment.

OSHA PEL --Occupational Safety and Health Administration's permissible exposure limit expressed as a time-weighted average; the concentration of a substance to which most workers can be exposed without adverse effect averaged over a normal 8-h workday or a 40-h workweek.

The health and regulatory values cited in this factsheet were obtained in December 1999.

[a] Health Numbers are toxicological numbers from animal testing or risk assessment values developed by EPA.

[b] Regulatory numbers are values that have been incorporated in Government regulations, while advisory numbers are nonregulatory values provided by the Government or other groups as advice. OSHA numbers are regulatory, whereas NIOSH, ACGIH, and AIHA numbers are advisory.

[c] The LOAEL and NOAEL are from the critical study used as the basis for the EPA RfC.

Summary created in April 1992, updated in January 2000

References

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8. American Conference of Governmental Industrial Hygienists (ACGIH). 1999 TLVs and BEIs. Threshold Limit Values for Chemical Substances and Physical Agents, Biological Exposure Indices. Cincinnati, OH. 1999.
9. Occupational Safety and Health Administration (OSHA). Occupational Safety and Health Standards, Toxic and Hazardous Substances. Code of Federal Regulations. 29 CFR 1910.1000. 1998.
10. National Institute for Occupational Safety and Health (NIOSH). Pocket Guide to Chemical Hazards. U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. Cincinnati, OH. 1997.
11. American Industrial Hygiene Association (AIHA). The AIHA 1998 Emergency Response Planning Guidelines and Workplace Environmental Exposure Level Guides Handbook. 1998.
12. U.S. Department of Health and Human Services. Hazardous Substances Data Bank (HSDB, online database). National Toxicology Information Program, National Library of Medicine, Bethesda, MD. 1993.

Print

Planning Commission May 1, 2023 Public Comment - Submission #3070

Date Submitted: 4/28/2023

Addendum

May 1, 2023 Agenda Packet

First and Last Name*

Sarah Mickschl

Email Address*

sarahmickschl@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

6915 GRASSY RANGE DR

Public Comment for the Planning Commission May 1, 2023 Meeting

I am strongly against the decision to approve the Asphalt Plant from being built at the current location within Wellington town limits. 1.Â The town of Wellington was re-zoned in 2022 with the land that Connell Resources Â wants to develop zoned as Heavy Industrial.Â As Wellington was re-zoned, Heavy Industrial land came with setback requirements of 1000ft linear and 45ft height restrictions.Â The claim by Connell Resources that the land is not suitable for Heavy Industrial use with current setbacks should have led town planners to decide that this property should be re-zoned to Light Industrial to limit the setback needs.Â The need for a greater setback of 2640ft is actually more appropriate given the language in the Land Use Code Section 4.03.21 B curating toxic chemicals.Â Especially since it is adjacent to a residential neighborhood, a park and school.Â Additionally, the asphalt plant will not only impact the nearby neighborhoods, but our entire small town as the air quality will be impacted. 2.Â As a homeowner, teacher and involved member of ourÂ community I have issues with the lack of informed decision making to grant the setback variance as well.Â It does not appear the town of Wellington has done any environmental (air quality, water quality and quantity, soil erosion and discharge), traffic impact, view shed impacts, noice, environmental justice for underserved communities, or economic impacts analysis that this will have on the health and safety of Wellington residents and wildlife such as migrating birds.Â The town must clearly understand and communicate to the public, the risks and/or benefits associated with the Asphalt Plant. This has yet to have been completed. Â Based on other locations where Asphalt Plants are located near neighborhoods, property values decreased 56% according to Blue Ridge Environmental Defense League (BREDL).Â BREDL also found that 45% of residents living within a half mile of a new asphalt plant reported a deterioration of their health, which began after the plant opened.Â Â Known toxins also come with an Asphalt Plant such as odor, formaldehyde, hexane, phenol, polycyclic organic matter, and toluene. The CDCâ€™s National Institute for Occupational Safety & Health states, â€œKnown carcinogens have been found in asphalt fumes generated at work sites.â€* Exposure to these air toxins may cause cancer, central nervous system problems, liver damage, respiratory problems, and skin irritation (EPA Asphalt Plant Emission Assessment Report 2000). As a mother and teacher, it seems very irresponsibleÂ of the Council not to have the health and safety of its residents as its first and foremost priority. It is also stated in the Land Use Code, Section 1.01.1Â and Section 4.03.21, that the sole purpose of the code is for the health and safety of its residents. Clearly, theÂ Asphalt Plant violates the Land Use Code and should not be approved.Â Â The town of Wellington has a number of human health and safety issues to deal with currently, they do not need to add another issue. The responsibility of the Town of Wellington and its elected representatives is the health, safety, and well being of its residents.Â If this asphalt plant is approved, the town is falling far short of this responsibility. Â 3.Â The economic impact on the residents and the town will be noticeable.Â Residents will lose property value and will likely look to move out of town.Â With issues Wellington is already trying to deal with (train crossings, water quality, water price, concentrated feed lots, close proximity to the highway), this will likely be the final thing to tilt residents to leave.Â Businesses will also likely leave and close as their consumers will leave town. Â 4.Â There are certainly better locations for the Asphalt Plant to be located.Â Connell Resources likes to mention that homes have been built in Fort Collins next to their plants, however that is a homeowners decision.Â With this approval in Wellington, homeowners were not able to make a decision to live next to an Asphalt Plant, the town of Wellington is poorly making that decision for them.Â As elected officials, you must stand up for your constituents. There are large swaths of county land in Larmier and Weld where this could be located away from residential areas.Â Connell Resources claims that the counties don't want the Asphalt Plants, but there is a process to get those approved there.Â There are also areas within Weld County where these plants are welcomed. Connell Resources also claimed that they could open in Carr (where they get their aggregate) but its too cold and windy for transporting.Â There are common mitigations such as lining and insulating trucks for transport.Â These plants exist in far colder places than the Front Range of Colorado. It's time for the town of Wellington to STOP being Fort Collins' dumping ground. Thank you for taking comments and I trust the right decision will be made regarding the health, safety, and viability of residents and the town of Wellington. Sarah Mickschl

Optional File Attachment

-Land Use Code-ADOPTED.pdf

Optional File Attachment

Choose File | No file selected

Optional File Attachment

Choose File | No file selected

Proposed Asphalt Plant

Ken Ferrier <kmfkona@gmail.com>
Sat 4/29/2023 7:54 AM
To: Cody Bird <birdca@wellingtoncolorado.gov>

Mr. Bird,
This message contains my thoughts on the proposed asphalt plant. I have previously submitted them to the Planning Council via the Wellington Town website. More recently I am finding information directing concerned citizens to send their comments directly to you at this email address. I apologize if this proves redundant.

The proposed asphalt plant would be in direct contradiction to the stated **PURPOSE (Article 1.01.1)** of the Wellington Land Use Code (WLUC). Specifically, the asphalt plant would NOT ***"enhance the Town's small-town character"*** nor would it ***"further the residents' goals as identified in the Comprehensive Plan"*** (with the exception, perhaps, of some increased revenues). If you disagree, please show us what goals would be furthered by the plant.

Furthermore, an asphalt plant in the proposed location would stand in opposition to several of the specific stated purposes for which the WLUC was adopted. The WLUC states that the zoning regulations contained therein are designed to:

1.01.1, A - ***Promote the health, safety, values, and general welfare of Town residents.***
How would the asphalt plant with its emissions, truck traffic, noise, and negative aesthetics achieve any of those foundational goals? Rather, it would seem designed to do just the opposite.

1.01.1, C - ***Ensure adequate provision of transportation, water supply, sewage disposal, schools, parks, and other public improvements.***
We are painfully aware of the water supply issues facing our community. How can an asphalt plant do anything but add to the burden of an already over-taxed (and over-priced) system?

1.01.1, H - ***Prevent...danger and congestion in travel and transportation, and any other use or development that might be detrimental to the stability and livability of the Town.***
Wellington residents are all too familiar with the traffic congestion that occurs at the I-25 on-ramps and off-ramps, as well as the traffic signal at the East Frontage Rd. At certain times of day the intersection at N. County Rd. 7 (6th Street) and Cleveland Ave. gets really backed up. I have had to wait through multiple cycles of the traffic light, especially when turning left. There is also a concern for the present school zone near Eyestone Elementary School and Wellington Middle School. Those roads are often clogged with school buses and other vehicles belonging to parents who are dropping off or picking up students. Adding a steady flow of asphalt trucks to the situation can only heighten the level of congestion and the likelihood of danger to vehicles and pedestrian students alike. Wouldn't that be "detrimental to the stability and livability of the Town"?

I respectfully urge you to act in the best interests of ALL the residents of our community and keep the asphalt plant out. Thank you!

Ken Ferrier
Buffalo Creek resident

Asphalt plant in Wellington

Carolynn McGahey <cgmcgahey@hotmail.com>

Sat 4/29/2023 9:21 AM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Very much opposed to this location. I am sure it's cheaper for them as the infrastructure is in place. However it is too close to the new school and neighborhoods. It will cause disruption and air quality and noise issues. No matter what they say. They belong out in areas that are not slated to become communities.
Thank you for letting me express my opinion.

Carolynn McGahey
2201 Antelope Racer Ct
Wellington CO

Hot asphalt plant

Katherine Andersen <katerandersen@gmail.com>
Sun 4/30/2023 9:40 PM

Hello,

I am opposed to the Connell Resources asphalt plant proposed in Wellington, Colorado. An environmental study and a study on the impact on home values should be done prior to any new factories. This is especially crucial as the planned plant is near the community park and a school. If nothing else, a different location further from town should be considered.

Thank you,

Kate Andersen
Sage Meadows, Wellington resident

Re: Vote NOT to Approve Asphalt Plant

Stacie Magruder <staciemagruder@gmail.com>

Sun 4/30/2023 6:20 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>;JKefalas@larimer.org <JKefalas@larimer.org>;janice.marchman.senate@coleg.gov <janice.marchman.senate@coleg.gov>

Thank you.

On Sun, Apr 30, 2023, 6:09 PM Stacie Magruder <staciemagruder@gmail.com> wrote:

> Janice and John,
>
> I want to bring your attention to concerns from Wellington residents around Connell Resources proposal to build an asphalt plant next to our community park. Along with most residents, I oppose the plan. The physical and financial health of its residents should be the first priority. I ask for your support in preventing the build of the plant.
>
> Please see email below to the Planning Director Corey Bird.
>
> Thank you for your time and consideration in this matter.
>
> Stacie Magruder
>
> On Sun, Apr 30, 2023, 5:49 PM Stacie Magruder <staciemagruder@gmail.com> wrote:
>
> > Mr. Bird,
> >
> > The reasons to not approve the plant are obvious. I understand there hasn't been an environmental study and asphalt plants are known for releasing toxic chemicals. Connell does not have a plan for spills and will bring a level of traffic that is not managable for Wellington. I would like to understand what you are going to do to protect the towns health and to protect the property values of its residents. Please put your constituents first. The management of water, utilities, etc. has been poorly managed for us and this is an opportunity to make a choice to positively impact tax payers in Wellington.
> >
> > I ask you to please vote no.
> >
> > Thank you.
> >
> > Stacie Magruder

Opposition to Asphalt Plant

Dave <dave69337@gmail.com>

Mon 5/1/2023 1:16 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>;janice.marchman.senate@coleg.gov <janice.marchman.senate@coleg.gov>;jkefalas@larimer.org <jkefalas@larimer.org>

Hello,

I am opposed to the Connell Resources asphalt plant proposed in Wellington, Colorado. An environmental study and a study on the impact on home values should be done prior to any new factories. This is especially crucial as the planned plant is near the community park and a school. If nothing else, a different location further from town should be considered.

Thank you,

David Andersen
Wellington resident

Online Form Submittal: Contact the Planning and Building Department

noreply@civicplus.com <noreply@civicplus.com>
Mon 5/1/2023 12:54 PM
To: TOW Building <Building@wellingtoncolorado.gov>

Contact the Planning and Building Department

Acknowledgement	I agree
First Name	Carrie
Last Name	Browning
Property Address Related to Question	6848 MEADOW RAIN WAY
City	Wellington
State	co
Zip Code	80549
Email Address	john.carrie@verizon.net
Phone Number	12144601093
Preferred contact method?	Email
Are you the homeowner, contractor, business, or other related to this project?	Homeowner
What is the zoning district for the location you have questions about? If you are unsure please utilize the zoning district map to the right.	I - Industrial
Discover Your Zoning District	Zoning District Map
I have a question regarding...	Other
What specific questions do you have? Please provide any relevant information.	I am not sure where to go or whom to contact, but I am totally against an asphalt plant here in Wellington. I am sure you are very interested in the tax you can collect, but I have a feeling there are several other things this town should be concerned about at this time. I moved from a town in Texas that was this size and the growth was well thought out to accommodate its citizens.

	Thank you, Carrie Browning
Helpful Documents	*Field not completed.*

Email not displaying correctly? View it in your browser.

Stopping Asphalt Plant

M.E. Cahill <doc_critter@yahoo.com>

Mon 5/1/2023 11:20 AM

To: Cody Bird <birdca@wellingtoncolorado.gov>

To Whom It May Concern;

I am in opposition of the Asphalt Plant being moved here. It is one thing to get inundated with country smells of cows when the wind blows right but quite another with the industrial chemical smells of this type of Plant. I suffer from lung disease and it is the last thing I want to deal with is the health issues to our air quality. I request that we take into consideration the impact would have on our citizens and the air quality we appreciate living here.

Mary

Mary E. Cahill
Resident of Wellington, CO

Sent from Yahoo Mail on Android

Asphalt planning meeting

Maureen Conkling <m.e.conkling@gmail.com>

Mon 5/1/2023 12:23 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Hi, I am a Wellington resident and I am hearing the news about the asphalt plant.

Why are they moving it from Timnath? Has someone gone to Timnath to see what it is like, the odors, the noise, the truck traffic? What do the Timnath people think about having it close by?

Why would Wellington want a plant like this? Are there any benefits to the town?

There is already an ozone problem here so we don't need more pollution. What environment and health effects are possible? What about the pollution and noise from all the truck traffic?

Maybe it is just too close to a residential area and park for people who move here to get away from those issues.

It doesn't sound like most people want the plant here, so the leaders should listen to the residents concerns.

Thanks,
Maureen Conkling

FW: Online Form Submittal: Contact Your Board of Trustees

Patti Garcia <garciapa@wellingtoncolorado.gov>
Mon 5/1/2023 4:33 PM

To: Kaufmanc15@gmail.com <Kaufmanc15@gmail.com>
Cc: **Board of Trustees <boardoftrustees@wellingtoncolorado.gov>**;Cody Bird <birdca@wellingtoncolorado.gov>

Mr. Kaufman –

Thank you for your email. The email you sent was to the Board of Trustees; the Planning Commission is a separate advisory board which will be considering the site plan for Connell Resources. Appeals of decisions made by the Planning Commission are made to the Board of Trustees so the Mayor and Trustees are not permitted to comment on this item as it could be considered ex-parte communications if there is an appeal.

I wanted to respond so that you understood why the Mayor and Trustees did not reply to your email. You can view the May 1, 2023 Planning Commission packet at this link https://www.wellingtoncolorado.gov/Archive.aspx?AMID=56.

Patti

TOWN OF WELLINGTON

Patti Garcia
Town Administrator
Mobile: (970) 473-6033
Email: garciapa@wellingtoncolorado.gov
Web: www.wellingtoncolorado.gov
8225 3rd Street, Wellington, CO 80549

From: noreply@civicplus.com <noreply@civicplus.com>
Sent: Monday, May 1, 2023 4:29 PM
To: Patti Garcia <garciapa@wellingtoncolorado.gov>; Kelly Houghteling <houghtkm@wellingtoncolorado.gov>; Calar Chaussee <chausseec@wellingtoncolorado.gov>; Ashley Macdonald <macdonas@wellingtoncolorado.gov>; Jon Gaiter <gaiterjm@wellingtoncolorado.gov>; Rebekka Dailey <daileyrm@wellingtoncolorado.gov>; Brian Mason <masonb@wellingtoncolorado.gov>; Shirrell Tietz <tietzs@wellingtoncolorado.gov>; David Wiegand <wiegandd@wellingtoncolorado.gov>
Subject: Online Form Submittal: Contact Your Board of Trustees

Contact Your Board of Trustees

First and Last Name	Cory Kaufman
Email Address	Kaufmanc15@gmail.com
Phone Number	619 890 1863
Address or Subdivision	Sage Meadows

Written Public Comments 3:00pm 5/30/2023

Message for the Board of Trustees	Good afternoon, I am sending this message in strong opposition to the proposed Connell Asphalt plant. I am in the construction industry myself and understand the importance of these building materials. However this location, in my mind is a no brainer terrible idea. Reading through the proposed plan and through some of the laws this is quite clearly an extreme grey line. There are many locations that are more suitable for these operations. Wellington is a growing and flourishing town and doing something to harm the health and Saftey of the residents is an awful thing to do. There is a quite clear right answer here and I ask that you do the right thing. So let's get it done and find a different location and keep Wellington a great place to live ! Thank you

Asphalt plant

Annie Lindgren <annie.e.lindgren@gmail.com>

Mon 5/1/2023 3:00 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Hey Cody,

Hope all is well! I am reaching out to share concerns regarding the asphalt plant. I wanted to do research, but haven't had time. I would advocate for environment and health studies to be shared. It sounds like not a lot of research has been done on the health & environmental side of it. I would hate for the asphalt plant be added to the community, and then decrease the value of our homes, and negatively impact the air quality. Really thinking more of Wellington as it continues growing. We know it is cheaper now, and thus more attractive to these types of businesses. But, then the future of Wellington has an asphalt plant in the center of it.

Just want to make sure all these health things are being taken into consideration! Already have the cow manure air to breath during walks.

Thank you,
Annie Lindgren
3746 Franklin Ave
Wellington, CO 80549

Fwd: Wellington Asphalt Plant

Stacie Magruder <staciemagruder@gmail.com>
Mon 5/1/2023 4:03 PM
To: Cody Bird <birdca@wellingtoncolorado.gov>

1 attachments (208 KB)
Final Wellington Letter 51.pdf;

Hello,

Please see the email and attached letter I received from our State Senator Janice Marchman this afternoon.

Thank you.

---------- Forwarded message ---------
From: **Sam Maddux** <sam@janiceforcolorado.com>
Date: Mon, May 1, 2023 at 3:10 PM
Subject: Wellington Asphalt Plant - Senator Marchman Response
To: Sam Maddux <sam@janiceforcolorado.com>

Hello!

Thank you for reaching out regarding the potential asphalt plant in Wellington. I wanted to share with you the letter Senator Marchman sent to the Board of Trustees and Planning Commission. Our office would not have been aware of this issue without your outreach, thank you for bringing it to our attention.

Again, thank you so much for reaching out, it is truly our honor to listen to and serve the constituents of Senate District 15. Please feel free to reach out again with any future comments or questions.

Best,
Sam
--
Sam Maddux (He/Him)
Legislative Aide | Senator Marchman
C: (303) 763-0183
E: sam@janiceforcolorado.com

JANICE MARCHMAN
SENATE DISTRICT 15
State Senator
200 E. Colfax Avenue
Denver, Colorado 80203
Capitol: (303) 866-4878

COMMITTEES
Vice Chair – Senate Committee on Education
Committee on Agriculture and Natural Resources

Town of Wellington Board of Trustees and Planning Commission Members,

I am writing to you today regarding a matter that has been brought to my attention by numerous constituents in Wellington. I have received significant outreach regarding the planned asphalt plant that is set to be built near our community park and school. Many constituents have expressed their concern that an environmental study and a study on the impact on home values should be conducted prior to any new factories.

As elected representatives, we must ensure that we listen to our constituents before moving forward with any significant development projects. The concerns that have been raised about the planned asphalt plant are especially crucial given its proximity to our community park and school. The potential impact on the environment and the health of our community must be thoroughly studied and evaluated before any decisions are made.

I urge the Board of Trustees and the Planning Commission to take these concerns seriously and consider the impact that this plant could have on our community. If necessary, a different location further from town should be considered. We must prioritize the health and well-being of our constituents and ensure that any decisions we make align with the best interests of our community.

Thank you for your attention to this matter. I look forward to working with you to ensure that Wellington remains a safe and healthy place to live.

Sincerely,
State Senator Janice Marchman

Janice Marchman

Written Public Comments
3:00pm 5/30/2023

Opposed - Connell Resources Asphalt Plant, Wellington CO

Sarah McPhaul <smcwhirt@live.com>

Mon 5/1/2023 1:30 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>
Cc: janice.marchman.senate@coleg.gov <janice.marchman.senate@coleg.gov>;jkefalas@larimer.org <jkefalas@larimer.org>

Good afternoon,

This email is in reference to the Asphalt Plant in Wellington, CO. Without an enviromental study conducted or knowledge on how this may affect real estate costs, I'm opposed to the relocation of the Asphalt Plant to just North of Wellington Community Park. The close proximity to the main community park of Wellington, neighborhoods as well as schools needs to be considered for current and future residents; I believe this will make our community less disirable.

Thank you for your consideration,

Sarah McPhaul
Resident of Wellington
8460 W 2nd St.
Wellington, CO 80549

JANICE MARCHMAN
SENATE DISTRICT 15
State Senator
200 E. Colfax Avenue
Denver, Colorado 80203
Capitol: (303) 866-4878

COMMITTEES
Vice Chair – Senate Committee on Education
Committee on Agriculture and Natural Resources

Town of Wellington Board of Trustees and Planning Commission Members,

I am writing to you today regarding a matter that has been brought to my attention by numerous constituents in Wellington. I have received significant outreach regarding the planned asphalt plant that is set to be built near our community park and school. Many constituents have expressed their concern that an environmental study and a study on the impact on home values should be conducted prior to any new factories.

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I urge the Board of Trustees and the Planning Commission to take these concerns seriously and consider the impact that this plant could have on our community. If necessary, a different location further from town should be considered. We must prioritize the health and well-being of our constituents and ensure that any decisions we make align with the best interests of our community.

Thank you for your attention to this matter. I look forward to working with you to ensure that Wellington remains a safe and healthy place to live.

Sincerely,
State Senator Janice Marchman

Janice Marchman

Connell Resources Asphalt Plant

John Shipp <johnshipp@gmail.com>

Mon 5/1/2023 12:47 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>;janice.marchman.senate@coleg.gov <janice.marchman.senate@coleg.gov>;JKefalas@larimer.org <JKefalas@larimer.org>

Attn. Colorado Senator Janice Marchman, Larimer County Commissioner John Kefalas, Planning Director Cody Bird:

Please do not approve having the Connell Resources Asphalt Plant in Wellington, Colorado. Many toxic chemicals will be produced and this should be far away from residences. Instead, perhaps the commission should look into having the plant nearer to the county dump on the east side of Highway 25 near the Wyoming State line where there are far fewer residences. Thank you for your time and please consider what would be best for the residences of Wellington.

Sincerely,

John and Camille Shipp
6977 Sage Meadows Drive
Wellington, CO 80549

Written Public Comments
3:00pm 5/30/2023

Opposition To Proposed Hot Asphalt Plant

James Raymond <jeraymond2@gmail.com>

Tue 5/2/2023 1:14 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>;Patti Garcia <garciapa@wellingtoncolorado.gov>

Cody Bird

Planning Director Town Of Wellington

Mr. Bird

I'm writing you to express my disapproval of the possible Connell asphalt plant approval to move and set up operations in the Town Of Wellington I have attended all public meeting in regards to the matter and I do not think it is a good fit for the town, as you have wittiness the majority of the town residents have showed disapproval of Connell`s move to Wellington.

I have lived in Buffalo Creek for the past 10 years and I would challenge the vision and the growth management of the town since I became a resident in January of 2013.

The Town Of Wellington has proven to me that they are not capable of making the right decision and understanding how their decisions will effect this town in the long term below are examples of past poor management decisions in my opinion.

Building a new Municipal Building on Third Street Parking for both Staff and visitors have impacted the local neighborhood and the park that is across from this municipal building. Yes the town had outgrown their old building but was this location the right choice?

The town continues approving housing developments with the growth of the new developments come traffic we struggle with the only exit into Wellington HWY 1 off of I25 this has become a bottleneck during peak hours both during the morning and evening commutes and during weekends

The town has created with the approval of the New Housing Developments huge strain on the Wellington "Potable Water Systems" How many homes were approved and built after the June 27th 2017 approval of "Resolution No.16-2017 Voluntary Watering Restrictions" they were approved and became effective immediately upon passage and sign by both Mayor Tim Singewald and Town Clerk Ed Cannon.

Even though these newer developments were lucky to have "Non-Potable Water" for outdoor irrigation and let's not forget the New Poudre School, I do believe they requested a 3" water tap for "Potable water?

The inside water consumption is still Potable Water which comes from the Towns Water Treatment Plant if the town knew back in June of 2017 that there was concerns of maximum throughput of the plant and went far enough to pass Resolution No16-2017 why did the approval of building permits continue and what strain did this put on an already strained Water Treatment Plant?

Local residents who do not have the luxury of a non-potable water supply are feeling the effects of these poor decisions today, some homeowners take pride in their yards and even having a small backyard gardens with high water rates and once again mandatory water restrictions these basic Homeowner privileges are being denied to them and I would bet this restriction and high rates will continue for years to come.

The Town approved (Annex might be a better word) the New Poudre School without doing anything with the traffic concerns for both the students who walk to school and the increase of vehicle traffic the school had caused.

And this will lead up to Connell Asphalt plant Connell they expect up to 150-200 trips a day during their peak season these are Class 8 truck trailers that will be making the majority of the trips, this along with the New County landfill will once again cause traffic backups on Owl Canyon exit this exit is north of town and I`m sure none of the town Employee use this route during their daily commutes but I will ensure you the volume of traffic will surprise you as this is a major truck route to Laramie WY and now include trash trucks and Connells vehicles it will get even worse, let's not forget about the age of the bridge and that in time CDOT will someday replace it where will this traffic be rerouted?

Sure they will use Cr6 to Cr 66 and even widen Cr66 and work with the railroad on the crossing. Let's not forget First street as they will pave it! All of this adds increased traffic to a small town that currently struggles with traffic congestion.

Not all town`s want to grow and I believe the majority residents want that of Wellington Not to grow

Growth is vital to a vibrant community but it has to be managed and managed correctly.

This is why I oppose the Connell Asphalt plan being approved. Wellington needs to fix their existing problems before they create a new one.

I would like my letter to be part of the public record on this matter

Regards,

James Raymond

To the Town of Wellington Colorado

Wellington has been my home for over sixteen years.

The site for this Asphalt Plant is next to Wellington Community Park. Has the planning commission taken into account the well being of our children who play in our park? Or the families who come together to enjoy the park.. The games that are played in the park and even dog owners who bring their dogs to play and run in the park.

The idea I may have to move for health reasons, or the devaluation of my home. And the loss of property tax to the city, I would think would be a worry to Wellington..

Fox News this evening showed where the EPA just downgraded Colorado Air Quality for the Front Range. Something to think about!

Have you the Town of Wellington Planning Commission put into plan a contingency procedure, Incase there is an accident at the Asphalt Plant, that involves lethal gases, or chemicals that could become airborne and be harmful to our community

Respectfully
X, Trustees

https://www.denver7.com/news/local-news/proposal-to-move-asphalt-plant-from-timnath-to-wellington-met-with-resistance

Written Public Comments
3:00pm 5/30/2023

Re: Stopping Asphalt Plant

M.E. Cahill <doc_critter@yahoo.com>
Wed 5/3/2023 10:40 AM
To: Cody Bird <birdca@wellingtoncolorado.gov>

Thank you for your response but I would actually like to withdraw my opposition. Speaking with the LCHD and air quality control. I found that they had only one violation and it was corrected. That the community of Tinmath have not complained of bad smells or hazards to their well being since opening. I officially withdraw my opposition that I may have been hasty in writing.

Sincerely,
Mary E. Cahill
Wellington Resident

Thank you

Sent from Yahoo Mail on Android

On Mon, May 1, 2023 at 5:29 PM, Cody Bird <birdca@wellingtoncolorado.gov> wrote:

> Thank you for the message. Your communication is saved and will be provided to the Planning Commission.
>
> The agenda item you are commenting on was scheduled for the May 1, 2023 Planning Commission meeting. You can view the May 1, 2023 Planning Commission packet at this link https://www.wellingtoncolorado.gov/Archive.aspx?AMID=56.
>
> The applicant has requested a continuance for the site development plan consideration for more time to complete the studies and reports for topics identified at the March 6, 2023 meeting. If the Planning Commission votes to table the agenda item to a later date, there will be additional opportunities to provide written and verbal comments.
>
> Thank you.
>
> TOWN OF WELLINGTON
> **Cody Bird, AICP**
> Planning Director
> Town of Wellington
> (970) 568-3554
> birdca@wellingtoncolorado.gov
> wellingtoncolorado.gov
>
> ---
>
> **From:** M.E. Cahill <doc_critter@yahoo.com>
> **Sent:** Monday, May 1, 2023 11:20 AM

Written Public Comments
3:00pm 5/30/2023

To: Cody Bird <birdca@wellingtoncolorado.gov>
Subject: Stopping Asphalt Plant

To Whom It May Concern;

I am in opposition of the Asphalt Plant being moved here. It is one thing to get inundated with country smells of cows when the wind blows right but quite another with the industrial chemical smells of this type of Plant. I suffer from lung disease and it is the last thing I want to deal with is the health issues to our air quality. I request that we take into consideration the impact would have on our citizens and the air quality we appreciate living here.

Mary

Mary E. Cahill
Resident of Wellington, CO

Sent from Yahoo Mail on Android

Lily Perry
3289 Firewater Lane
Wellington, Colorado 80549

May 8, 2023

The Town of Wellington
P.O. Box 127
Wellington, Colorado 80549

Good morning,

I am a thirteen year old girl who lives on Firewater Lane in Buffalo Creek, very close to where the future Asphalt plant may be built. I have some concerns for the health and environmental safety of this subdivision. According to a few websites I found, Asphalt plants can be very harmful to the environment, including all the people. I am aware of the toxic fumes Asphalt plants produce, and I think it to be very concerning, especially so close to so many homes.

If you look on the website: co.wright.mn.us you can find many troubling liabilities regarding the Asphalt plants around Colorado, and many other places. I hope you will find the time to read through these informational pages.

If there is one thing I think to be the most troubling, and I quote from the previously listed website, "While a state study indicates the air quality in a neighborhood next to a controversial paving plant meets safety standards, neighbors say their problems with the plant are as much about quality of life as quality of air. The odor of asphalt coming from the R.C. & Sons paving plant has been a prime complaint of several residents of the nearby Grandview neighborhood."

"Dr. Mitchell said that tiny particles in asphalt production plant emissions can cause lung damage, exacerbate breathing conditions and ultimately cause more severe problems." New York Times article.

These are problems that are not to be ignored. I hope I have given you a good reason to rethink the Asphalt plant. I don't believe it will help the residents here in Buffalo Creek, when they have the great possibility to lose more than they gain. Skin disease, cancer, trouble with breathing. Is it worth the risk of people's lives?

Sincerely,

Lily Perry

Written Public Comments
3:00pm 5/30/2023

Letter to Planning Board

Lisa Clay <lclay@advancetank.com>

Tue 5/23/2023 10:01 AM

To: Cody Bird <birdca@wellingtoncolorado.gov>

1 attachments (48 KB)

Planning Board letter 5-22-23.docx;

Good Morning Cody,

I am sorry to have to write this letter but feel that the tenor of the comments I have heard at both Planning Board, Board of Trustees and online needs the truth to be told.

Please call with any questions. Thank you for your time-

Lisa

Lisa K. Clay
CEO
Advance Tank and Construction
970-568-3444
DD: 970-237-6438
http://www.advancetank.com

-

To: Wellington Town Planning Board

From: Lisa K. Clay
CEO

Re: Connell Batch Plant

Date: May 23, 2023

The Town has for review the lay-out of the Connell Batch Plant on land located off County Road 66. Advance Tank bought this land in 2001 after having bought the land between our present grounds and the County Road 66 property in late 1999. Advance Tank (ATC) then owned all land between County Road 64 and County Road 66 with the railroad to the East and much of Boxelder to the West. ATC did this because we wanted to make sure that we had room to grow as well as allow for a buffer between ourselves and any future growth. We worked with the Town to have this land zoned Industrial. The Town was happy to have industrial land in this logical location because it was bordered by the railroad tracks on one side and agricultural land on the West.

A few years later, the Buffalo Creek Subdivision was started. It was put in between a working dairy and the industrial land that ATC owned. As houses started to sell in the area, no concerns were raised even though ATC's property was zoned light industrial and industrial. If someone buying in Buffalo Creek had taken the time to review the zoning and what was allowed, an asphalt batch plant was listed as an appropriate use on the industrially zoned property. It still is.

Much of the land was initially sold in the light industrial area which is east of Buffalo Creek. There is 35+ acres remaining that went under contract with Connell Resources for a batch plant in January 2022. In March of 2022, Wellington adopted new land use codes, but did not change the zoning for the property. It changed the set back rules to 1000 feet from 500 feet, which is why Connell went to the board of adjustments for a variance. That variance was approved as well as the variance on the height of the silos.

With the zoning specifically stating that an asphalt batch plant is an allowable use, both Connell and ATC felt that this was a good use of the remaining 35+ acres. Connell started the design of the plant on the property that was under contract. Connell has agreed to do the following improvements to the property:

1) Sinclair Oil Company owns a high-pressure gas line that runs Northwest to Southeast on the property. Connell will put a road over most of the high-pressure gas line to protect it from getting punctured as well as to help with dust mitigation.
2) The Sanitary Sewer that stops at the north end of Pieper's Industrial Park will be brought all the way up to County Road 66.

3) Relocate the existing Wellington 18" water main that runs through the property directly west of the Sinclair gas line. This will be relocated to the west side of the property with a new easement granted to remove Wellington's existing waterline easement from conflicting with Sinclair's gas line easement. They currently have overlapping easements and the existing water main is too close to the gas line to be considered within code. Connell will provide the labor and equipment at no cost to assist the Town with alleviating this current conflict.
4) Paving CR 66 from west of the property line to Larimer County Road 7, this includes paving widths to accommodate bike lanes.
5) Paving all the onsite haul roads to limit dust.
6) Building and paving a northbound right turn lane from CR7 to eastbound Owl Canyon Road.
7) Relocate the existing non-designated emergency access road that runs through the middle of the property to the west side of the property and allow use by the Town, PFA, & North Poudre Irrigation. There is no current recorded easement or designation for this road on the property, just a 30' waterline easement, which has been turned into an access road.
8) Regrading, repaving, and installing new storm culverts at the BNSF railroad crossing. This is in partnership with BNSF and Larimer County to make a safer at grade railroad crossing on CR66.

All of this comes at an expense to Connell, much of which saves the Town from paying for these issues somewhere down the road, especially the relocation of the water line away from the high-pressure gas line, granting road access and paving roads.

Connell worked diligently with the Wellington Planning Department and said it would accommodate its requests many of which are above, but also putting 15’ landscaped berms around the property to be a visual buffer. This berm will include many trees which will help mitigate some of the concerns I heard from the planning board, the board of trustees and some residents. One trustee said it would be ugly and he did not want this in his town. If you do not see it through the trees, what can be ugly, the trees? The trees also mitigate sound, air quality issues and fumes.

However, the biggest item that mitigates all the concerns raised by residents is operating the plant properly per state and county regulations and testing. Connell has agreed to all testing asked for by the county and even postponed coming to this group to get the Air Dispersion study done. Connell has not failed any of these inspections. To combat local lore, most family-owned businesses do not like to hurt their employees or their community. As a fellow business owner, the last thing I want is someone hurt.

Connell spent time talking with all neighbors that border the property or have easements on or under the property. All gave them the welcome sign. Those closest to the property feel good about what is going next to their property. They are not concerned about property values plummeting and all the other heinous things mentioned about this use. Connell offered to talk with Buffalo Creek but was turned down which is inconsistent with their actions. If you really want to learn about the batch plant, speak to those who know it and how it is run. Learn the facts directly, and not what you find on the internet. And on that note, remember that Buffalo Creek planted itself due east of a working dairy. The dairy fumes can be strong some days. Did anyone look to see what was in those fumes before buying their home? Did they worry about property values? Did they check to see how the vacant land to the east was zoned?

As I said at the March 6th Planning Committee meeting, Connell is a Northern Colorado Company with its employees living in many northern Colorado communities. It spends its money in these communities not only for business, but also as a good corporate citizen donating to non-profits. Its employees also

spend the money they earn in the communities in which they live, including Wellington. With the Town's revenue significantly below budget, a company like Connell can help boost some of those short falls and bring needed business and infrastructure to the community.

As one of the older and larger businesses in the community, ATC has been a good corporate citizen to this community. We have no desire to get into a fight with Wellington. Based on zoning, and the use by right listed within the Industrial zoning, we contracted with Connell for the sale of 35+ acres of property. Should this sale fall through due to the actions of those representing the Town of Wellington, those actions will devalue our land. This will cause us to seek legal action because we are left no other choice.

Should you have any questions, you may reach me at 970-568-3444. Mr. Bird has my email address if that would be easier.

Sincerely,

Lisa K. Clay

Written Public Comments
3:00pm 5/30/2023

Asphalt Plant Opposition

N. M. <NisthinaMcWhirt@live.com>

Thu 5/25/2023 5:26 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Good afternoon,

We would like to voice opposition for the asphalt plant being considered for placement in Wellington.

Thank you for your time,
Shawn and Nisthina Monzingo

Print

Planning Commission June 5, 2023 Public Comment - Submission #3171

Date Submitted: 5/26/2023

Timeline

Please use the form below to submit public comment for the June 5, 2023, Planning Commission meeting.

Comments received before 3 p.m. Tuesday, May 30, 2023, will be included in the meeting agenda packet available prior to the meeting. Click here to access meeting agendas and minutes.

Written comments received after 3 p.m. Tuesday, May 30, 2023, will be published in an amended packet. All written comments must be received by 3 p.m. Friday, June 2, 2023.

Public comment may be given in person at the meeting on June 5.

First and Last Name*

James Raymond

Email Address*

jeraymond2@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3209 Iron Horse Way Wellington Co 80549

Public Comment for the Planning Commission June 5, 2023 Meeting

Cody Bird Planning Director Town Of Wellington Mr. Bird Iâ€™m writing you to express my disapproval of the possible Connell asphalt plant approval to move and set up operations in the Town Of Wellington I have attended all public meeting in regards to the matter and I do not think it is a good fit for the town, as you have wittiness the majority of the town residents have showed disapproval of Connell`s move to Wellington. I have lived in Buffalo Creek for the past 10 years and I would challenge the vision and the growth management of the town since I became a resident in January of 2013. The Town Of Wellington has proven to me that they are not capable of making the right decision and understanding how their decisions will effect this town in the long term below are examples of past poor management decisions in my opinion. Building a new Municipal Building on Third Street Parking for both Staff and visitors have impacted the local neighborhood and the park that is across from this municipal building. Yes the town had outgrown their old building but was this location the right choice? The town continues approving housing developments with the growth of the new developments come with traffic we struggle with the only exit into Wellington HWY 1 off of I25 this has become a bottleneck during peak hours both during the morning and evening commutes and during weekends The current age of the bridge has shown visible wear and concern of the integrity of the structure how is the Town going to manage traffic once CDOT decides it is time to replace this structure send the traffic down to Owl Canyon this will only increase the traffic on Owl Canyon (Letâ€™s not forget the landfill Traffic and the traffic to Laramie) The town has created with the approval of the New Housing Developments huge strain on the Wellington â€œPotable Water Systemsâ€ How many homes were approved and built after the June 27th 2017 approval of â€œResolution No.16-2017 Voluntary Watering Restrictionsâ€ they were approved and became effective immediately upon passage and sign by both Mayor Tim Singewald and Town Clerk Ed Cannon. Even though these newer developments were lucky to have â€œNon-Potable Waterâ€ for outdoor irrigation and letâ€™s not forget the New Poudre School, I do believe they requested a 3â€ water tap for â€œPotable water? The inside water consumption is still Potable Water which comes from the Towns Water Treatment Plant if the town knew back in June of 2017 that there was concerns of maximum throughput of the plant and went far enough to pass Resolution No16-2017 why did the approval of building permits continue and what strain did this put on an already strained Water Treatment Plant? Local residents who do not have the luxury of a non-potable water supply are feeling the effects of these poor decisions today, some homeowners take pride in their yards and even having a small backyard gardens with high water rates and once again mandatory water restrictions these basic Homeowner privileges are being denied to them and I would bet this restriction and high rates will continue for years to come. The Town approved (Annex might be a better word) the New Poudre School without doing anything with the traffic concerns for both the students who walk to school and the increase of vehicle traffic the school had caused. And this will lead up to Connell Asphalt plant Connell they expect up to 150-200 trips a day during their peak season these are Class 8 truck trailers that will be making the majority of the trips, this along with the New County landfill will once again cause traffic backups on Owl Canyon exit this exit is north of town and I`m sure none of the town Employee use this route during their daily commutes but I will ensure you the volume of traffic will surprise you as this is a major truck route to Laramie WY and now include trash trucks and Connells vehicles it will get even worse, letâ€™s not forget about the age of the bridge and that in time CDOT will someday replace it where will this traffic be rerouted? Sure they will use Cr6 to Cr 66 and even widen Cr66 and work with the railroad on the crossing. Let's not forget First Street as they will pave it! All of this adds increased traffic to a small town that currently struggles with traffic congestion. Not all town`s want to growâ€¦â€¦ and I believe the majority residents want that of Wellington, Not to grow. Growth is vital to a vibrant community but it has to be managed and managed correctly. This is why I oppose the Connell Asphalt plan being approved. Wellington needs to fix their existing problems before they create a new one. I would like my letter to be part of the public record on this matter Regards, James Raymond

Optional File Attachment

Choose File No file selected

Optional File Attachment

Choose File No file selected

Optional File Attachment

Choose File No file selected

Print

Planning Commission June 5, 2023 Public Comment - Submission #3179

Date Submitted: 5/30/2023

Timeline

Please use the form below to submit public comment for the June 5, 2023, Planning Commission meeting.

Comments received before 3 p.m. Tuesday, May 30, 2023, will be included in the meeting agenda packet available prior to the meeting. Click here to access meeting agendas and minutes.

Written comments received after 3 p.m. Tuesday, May 30, 2023, will be published in an amended packet. All written comments must be received by 3 p.m. Friday, June 2, 2023.

Public comment may be given in person at the meeting on June 5.

First and Last Name*

Brittany Cowan

Email Address*

family.cowan@outlook.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

Public Comment for the Planning Commission June 5, 2023 Meeting

Dear Planning Commission, I would like to first thank you for your time in reading these comments and truly listening to what myself, as well as MANY other residents have expressed about the proposed asphalt plant by Connell Resources. I have many concerns about this, but mostly I have concerns about the safety and well being of our community. This plant is NOT acceptable in our community as it directly violates the Land Use Code adopted by the town. While Connell Resources has stated that their emissions are safe, it has been shown that they have been in violation of the Air Pollution and Control Division for many months at a time. "John Warren, president of Connell Resources, said modern technologiesâ€" put into use more recently than some older studies on emissionsâ€" render the emissions from his plant safe. Or, at least, no less safe than car exhaust. â€œ99.9% of our emissions come from the heating associated with drying the aggregates, and in our case, we use natural gas,â€ Warren said. â€œI mean, it's automobile exhaustâ€"it has the same characteristics as those properties.'" Connell Resources was immediately failed on inspection because their NOx was significantly above the acceptable limit of 8.5 tons per year. The test wasn't even completed to test other aspects because it was an automatic fail. Connell Resources was above 15.59 tons per year, almost DOUBLE the limit.
https://npr.brightspotcdn.com/c4/c3/904609054da8a7623fc82e5c065a/apcd-stack-test-memo-redacted.pdf NOx is "NOx is the collective term for the nitrogen oxides NO and NO2, which are significant components of harmful air pollution."
https://www.noxfondet.no/en/articles/what-is-nox/ Per the article, "NOx is formed in combustion processes such as engines, power plants, and boilers, as well as industrial processes with very high temperatures (e.g., in smelters). NOx emissions in Norway mainly come from transportation (especially road transport and shipping), oil and gas activities, and land-based industry. Harmful Effects NOx contributes to respiratory diseases, the formation of ground-level ozone, and acid rain. The direct harmful effects of NOx are associated with impaired lung function and worsening of asthma, as well as respiratory diseases (e.g., COPD) and cardiovascular disease. Ground-level ozone is harmful to both humans and vegetation. Acid rain is harmful to ecosystems and vegetation and can lead to, among other things, fish mortality. In addition to environmental and health damage, NOx also contributes to damage to materials and buildings through acid rain and ground-level ozone. NOx emissions are particularly a local/regional problem, but NOx can also be transported over longer distances with air currents. In the upper atmosphere, NOx is involved in various processes that are important for the greenhouse gas budget, with both cooling and warming effects. NOx is a significant component of visible pollution (smog) that can be seen over large cities. According to the Norwegian Institute of Public Health, over 4 million deaths globally in 2019 were caused by complex pollution from particulate matter, nitrogen dioxide, and ozone." This not only shows that Connell is harmful, but also renders any air quality studies they may produce showing that their plant is "fine" is inaccurate as they clearly do not follow guidelines set out. Not only this, but I found it quite disturbing that Connell was able to get the last meeting in May postponed to June. This is the industry they work in. Air studies would have been readily available. But more importantly, those people who were on the schedule for the June 5 meeting were BUMPED because Connell couldn't do what they said they would do. How rude to those people who already had that date planned. There are so many things wrong with how this is playing out. I hope you can see that the 2,640' setback MUST be applied and the plant not built here. Please keep our town safe, rather than look for economic gains.

Optional File Attachment

Information reguarding the proposed Asphalt Plant.pdf

Optional File Attachment

Choose File | No file selected

Optional File Attachment

Choose File | No file selected

Dear Planning Committee,

It is with great importance and emphasis that I write to you today. I am asking you to please take into account the town of Wellington's Land Use Code and enforce the necessary setback for the planned asphalt plant in Wellington.

While I know the argument that state agencies regulate asphalt plants, it DOES NOT NEGATE the fact that this proposed asphalt plant **DOES** in fact curate toxic chemicals and violate the Land Use Code. As long as toxic chemicals are curated (whether regulated or not) a setback must be implied per the town of Wellington's Land Use Code. This will be discussed in more depth further down in my statement.

While the proposed site is permitted as "Right to Use", it is ONLY right to use as long as it complies with the Land Use Code that was adopted on March 22, 2022.

Below you will find significant evidence as to why this does NOT meet the current Land Use Code as well as why the Heavy Industrial and Manufacturing setback of 2,640 ft from any residential district must be applied in this case.

Per the Land Use Code:

1.01.1 Purpose. The purpose of this Land Use Code is to create a vital, cohesive, well-designed community in order to enhance the Town's small-town character and further the residents' goals as identified in the Comprehensive Plan. These zoning regulations are designed to:

A. Promote the health, safety, values, and general welfare of Town residents.

The first point made in the Land Use Code is to "promote the health, safety… and general welfare of Town residents." Allowing an asphalt plant to be built less than 1,000 feet from the nearest home and proposed homes in the Sundance development goes against the Land Use Code.

"Asphalt plants mix gravel and sand with crude oil derivatives to make the asphalt used to pave roads, highways, and parking lots across the U.S. These plants release millions of pounds of chemicals to the air during production each year, including many cancer-causing toxic air pollutants such as arsenic, benzene, formaldehyde, and cadmium. Other toxic chemicals are released into the air as the asphalt is loaded into trucks and hauled from the plant site, including volatile organic compounds, polycyclic aromatic hydrocarbons (PAHs), and very fine condensed particulates.[EPA]"

Two other points of the Land Use Code are:

B. Establish a variety of zoning district classifications according to the use of land and buildings with varying intensities of uses and standards whose interrelationships of boundary zones form a compatible pattern of land uses and buffer areas which enhance the value of each zone.

F. Promote good design and arrangement of buildings or clusters of buildings and uses in residential, business, and industrial development.

By allowing this asphalt plant to be built so close to residential homes, it will negatively impact the home values near the proposed site.

"Health Impacts & Loss of Property Value. The Blue Ridge Environmental Defense League (BREDL), a regional environmental organization, has done two studies on the adverse impacts on property values and health for residents living near asphalt plants. A property value study documented losses of up to 56% because of the presence of a nearby asphalt plant. In another study, nearly half of the residents reported negative impacts on their health from a new asphalt plant. The door-to-door health survey found 45% of residents living within a half mile of the plant reported a deterioration of their health, which began after the plant opened. The most frequent health problems cited were high blood pressure (18% of people surveyed), sinus problems (18%), headaches (14%), and shortness of breath (9%). [BREDL]."

Noise pollution is also a concern from the plant. According to David Wang, "Noise generated by loader loading, induced draft fan operation, drying cylinder rotation, aggregate hoist lifting, and vibrating screen screening," is a source of noise pollution. This goes against the Land Use Code as well:

K. Establish regulations that promotes adequate light and air, maintains acceptable noise levels, and conserves energy and natural resources.

Another major concern is this plant's location within the Boxelder Watershed.

"Asphalt plants have the potential to contaminate ground water and surface waters through spills and leaks of chemicals. Contaminated groundwater can migrate towards nearby streams and lakes. Possible sources of groundwater pollution are: • Fuel tanks, pipework and fueling stations, • Solvents, • Other chemical agents used and stored onsite. Asphalt plants should not be sited in flood plains."

According to the Land Use Code, industrial areas should be located interior to the large block of industrial/light industrial. The proposed asphalt plant DOES NOT follow this.

"3.04.2 I – Industrial District. A. Intent. The Industrial District is intended to provide a location for large-format buildings for manufacturing, warehousing and distributing, indoor and outdoor storage. Locations for this zone require good access to major arterial streets and adequate water, sewer and power. Industrial areas should generally be located interior to the large block of industrial/light industrial areas."

Also, per the Land Use Code:

C. Limitations. Any use in this District shall conform to the following requirements:

1. Dust, fumes, odors, smoke, vapor and noise shall be confined to the site and be controlled in accordance with the state air pollution laws.

While the proposed plant may be regulated by state agencies, they cannot guarantee that these toxins will be confined to the site. In fact, pollution has been known to be carried over two and a half miles from asphalt sites.

Per the proof listed below on articles published by the EPA, US Department of Health and Human Services, scientists and others, the proposed asphalt plant in our town MUST be labeled as heavy industrial and the 2,640 feet setback from any residential district must be imposed:

B. Any Industrial and Manufacturing, Heavy use producing and curating toxic chemicals or conducting animal slaughtering shall be located at least:

1. Two thousand six hundred forty (2,640) feet from any residential district, religious land use, medical care facility, or school.

"Asphalt Fumes are Known Toxins. The federal Environmental Protection Agency (EPA) states "Asphalt processing and asphalt roofing manufacturing facilities are major sources of hazardous air pollutants such as formaldehyde, hexane, phenol, polycyclic organic matter, and toluene. Exposure to these air toxins may cause cancer, central nervous system problems, liver damage, respiratory problems and skin irritation." [EPA]. According to one health agency, asphalt fumes contain substances known to cause cancer, can cause coughing, wheezing or shortness of breath, severe irritation of the skin, headaches, dizziness, and nausea. [NJDHSS] Animal studies show PAHs affect reproduction, cause birth defects and are harmful to the immune system. [NJDHSS] The US Department of Health and Human Services has determined that PAHs may be carcinogenic to humans. [DHHS]."

I appreciate your time to correct this error in planning and ensure that the proposed asphalt site is enforced CORRECTLY. Again, while I know the argument that state agencies regulate asphalt plants, it DOES NOT NEGATE the fact that this proposed asphalt plant **DOES** in fact curate toxic chemicals and violate the Land Use Code. As long as toxic chemicals are curated (whether regulated or not) a setback must be implied per the town of Wellington's Land Use Code.

Please see the additional evidence below which outlines the toxic chemicals curated from asphalt plants as well as other concerning issues.

Sincerely,

Jade and Brittany Cowan and family

Additional Information:

About Asphalt Plant Pollution

Asphalt plants mix gravel and sand with crude oil derivatives to make the asphalt used to pave roads, highways, and parking lots across the country. These plants release millions of pounds of chemicals to the air during production each year, including many cancer-causing toxic air pollutants such as arsenic, benzene, formaldehyde, and cadmium. Other toxic chemicals are released into the air as the asphalt is loaded into trucks and hauled from the plant site, including volatile organic compounds, polycyclic aromatic hydrocarbons (PAHs), and very fine condensed particulates.[EPA]

Asphalt Fumes are Known Toxins. The federal Environmental Protection Agency (EPA) states "Asphalt processing and asphalt roofing manufacturing facilities are major sources of hazardous air pollutants such as formaldehyde, hexane, phenol, polycyclic organic matter, and toluene. Exposure to these air toxics may cause cancer, central nervous system problems, liver damage, respiratory problems and skin irritation." [EPA]. According to one health agency, asphalt fumes contain substances known to cause cancer, can cause coughing, wheezing or shortness of breath, severe irritation of the skin, headaches, dizziness, and nausea. [NJDHSS] Animal studies show PAHs affect reproduction, cause birth defects and are harmful to the immune system. [NJDHSS] The US Department of Health and Human Services has determined that PAHs may be carcinogenic to humans. [DHHS]

Flawed Tests Underestimate Health Risks. In addition to smokestack emissions, large amounts of harmful "fugitive emissions" are released as the asphalt is moved around in trucks and conveyor belts, and is stored in stockpiles. A small asphalt plant producing 100 thousand tons of asphalt a year may release up to 50 tons of toxic fugitive emissions into the air. [Dr. R. Nadkarni] Stagnant air and local weather patterns often increase the level of exposure to local communities. In fact, most asphalt plants are not even tested for toxic emissions. The amounts of these pollutants that are released from a facility are estimated by computers and mathematical formulas rather than by actual stack testing, estimates that experts agree do not accurately predict the amount of toxic fugitive emissions released and the risks they pose. According to Dr. Luanne Williams, a North Carolina state toxicologist, 40% of the toxins from asphalt plant smokestacks even meet air quality standards and for the other 60% of these emissions, the state lacks sufficient data to determine safe levels.

There is documented evidence from health experts and federal and state regulators of the serious health effects of asphalt plant emissions. We must heed these early warning signs and take action to prevent communities from further exposure to cancer-causing substances released by asphalt plants. The following actions are needed:

Moratoriums on asphalt plant construction and operation in communities where people live and go to school;
Stricter testing and enforcement of air quality standards at asphalt plants; and
Improved air standards that address all toxic contaminants including fugitive emissions.

Even if an asphalt plant meets all air pollution standards, people living nearby are still exposed to cancer-causing substances that can cause long-term damage. These standards are based on the principle of "acceptable risk", and assume each state will enforce the standards, the plants will operate perfectly, and the owners can be trusted to operate on an honor system where they are expected to follow all the laws and regulations that apply to their facility without any government oversight. In the majority of cases, it is unknown whether the `theoretical' air emissions predicted by computer models and used by plant owners accurately reflect air emissions from a plant's daily operations. We must put safety first and shut down or overhaul the current system that fails to protect communities from the daily health hazards of asphalt plant pollution.
Reference:
https://cms2.revize.com/revize/cityofcovington/covington/docs/downtownplan/Asphalt%20Facilities%20Analysis%20for%20Downtown%20Covington%20AHBL%20Final%20Revised_06_03_2010%20Clean%20Copy.pdf

II. Impacts of Asphalt Plants Asphalt plants have the potential for a variety of impacts due to the volume and type of materials handled, the heat requirements of the manufacturing process and associated emissions from burning of fuels, and the equipment used.

While required Best Available Control Technologies and other regulatory requirements work to minimize impacts of asphalt plants, there may still be potential for impacts, particularly due to equipment failure or human error. Below is a discussion of potential environmental impacts followed by a discussion on how these impacts may affect development in Covington’s Downtown.

Air quality Asphalt plants have the potential to emit particulate matter, polycyclic aromatic hydrocarbons (PAHs), and gaseous volatile organic compounds (VOCs). These pollutants are considered detrimental to human health (some are suspected carcinogens). The degree to which emissions are hazardous also depends on the fuel used in the production process. Natural gas or propane produce the least hazardous emissions, whereas oil or diesel may create more harmful emissions.

The mixer portion of an asphalt plant is the most significant source of gaseous emissions, however fugitive emissions may be released from other sources such as bitumen tanks, skip hoists, and loading stations. The main sources of particulates include stack emissions, as well as fugitive emissions from storage piles and transport of materials.

The amount of “stack dust” emitted depends on a number of production factors, including: • The nature and the moisture content of the used mineral materials, • The treatment of the mineral materials in the drum, • The amount and temperature of the waste gas, • The waste gas velocity in the drum, • The shape of the extraction hood, • The total output of the plant.

While technology, proper emission control systems, and periodic inspection and reporting may all help to minimize pollutants, asphalt plants are allowed to emit pollutants up to a certain level

under state and federal law. These emissions could have an impact on immediate ambient air quality that can be noticeable to the general public in the vicinity of the facility.

While EPA air quality standards (incorporated in WAC 173-400) would not allow an asphalt plant that causes or contributes to a violation of ambient air quality standards to be permitted, there is always some potential for the release of harmful pollutants above allowed levels.

Where pollution control technologies fail, or human operators make errors, plumes of gases may be released. Emissions from asphalt plants and associated activities also have potential for creating odor impacts.

The main source of odor for asphalt plants is typically bitumen. "Among the compounds identified in bitumen and its emissions, some have been listed as carcinogenic by the International Agency for Research on Cancer (IARC) and/or listed as carcinogenic, mutagenic, toxic to reproduction (CMR) and/or hazardous by the European Union."

Odor may be generated from the loading of bitumen tanks, and emptying of the mixer onto conveyors, or into trucks. While controls such as vapor condensers and baghouses are effective at reducing the everyday adverse impact of odors, the potential for offsite odors still exists. Routine site inspection to ensure good housekeeping practices are being used for storage and on-site movement of materials, and equipment is operating as specified, may be among the steps taken to minimize air quality impacts.

Siting asphalt plants downwind from residential areas and/or tightly regulating hours of operation may help to minimize odor and impacts to ambient air quality. The predominant wind patterns in the Covington TO: Richard Hart, City of Covington 04/05/10 FROM: AHBL, Inc 4 Regulatory Options for Asphalt Batch Plants area are generally from the southwest. The majority of Covington's downtown is to the east/northeast of the proposed asphalt plant site. This means that existing and new development would at least partially be downwind from the proposed asphalt plant site.

D. Water quality Asphalt plants have the potential to contaminate ground water and surface waters through spills and leaks of chemicals. Contaminated groundwater can migrate towards nearby streams and lakes. Possible sources of groundwater pollution are: • Fuel tanks, pipework and fueling stations, • Solvents, • Other chemical agents used and stored onsite. Asphalt plants should not be sited in flood plains.1 In addition to good housekeeping and best management practices to minimize spills and leaks associated with the manufacturing and delivery process, facilities often channel stormwater to avoid contamination or remove

"An asphalt plant is regarded everywhere as a quintessential heavy industrial use. It is associated with noise, with smells, with dust, with heavy truck traffic."

The pollution asphalt plants have

David Wang

David Wang

Overseas Manager at Santai Machinery CO.,LTD
Published Oct 10, 2018

What pollution do asphalt plants have in production?

1 Pollutants

The pollutants generated during the operation of the asphalt mixing plant mainly include the following aspects, as shown in chart 1.

(1) Harmful gases. The flue gas generated by the drum burner, the asphalt discharge produced by the finished product discharge port, the asphalt tank, the heavy oil tank heating and insulation, and the SOx, NOx, CO, CO2 discharged from the chimney.

(2) Dust. The loading process and the mixing of soot and dust generated in the main building and the gathering site.

(3) smell. The odor generated by the storage, unloading, and heating of the asphalt, as well as the odor of the burner during operation and the odor generated by the asphalt mixture on the truck.

(4) Noise. Noise generated by loader loading, induced draft fan operation, drying cylinder rotation, aggregate hoist lifting, and vibrating screen screening.

(5) Waste water and waste liquid. Waste water and waste liquid are mainly derived from cold aggregate storage (infiltration or mixing with natural soil), fuel oil tanks, heat transfer oil, oil and gas storage tanks, pipelines and gas stations, solvents, additives, etc.

(6) Waste. The waste is derived from the secondary recovery powder of the bag filter, laboratory analysis solvent, and the like.

(7) Visual aspects. Mainly the visual impact of the main building or chimney of the mixing station, and also the color of the paint in the mixing station; the other includes the steam in the wet aggregate discharged from the chimney, the storage area of the cold material and the lighting of the factory.

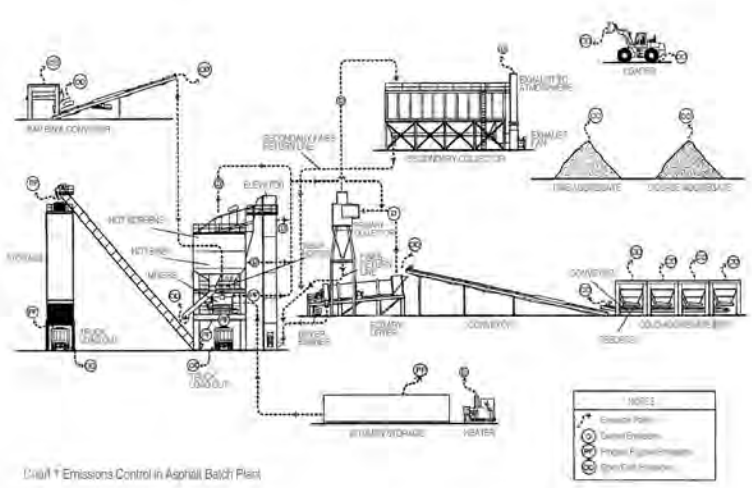

Figure 1 Emissions Control in Asphalt Batch Plant

2 Harm of pollutants

These pollutants can cause the following hazards to the environment and the human body.

(1) Asphalt smoke. Asphalt smoke contains thousands of substances, and the main harmful substances are acridine, phenols, pyridines, anthraquinones and benzopyrenes. Benzopyrene in asphaltic fumes is highly carcinogenic and toxic, causing headaches, dizziness, nausea and vomiting, pharyngitis, rhinitis, and enlarged liver.

(2) Dust. Dust mainly damages the body's respiratory system. After the inhalable particles in the air are inhaled into the human body, they enter the lungs through the nose, pharynx and bronchus. Some stimulating gas particles can be adsorbed on the nasopharynx to cause rhinitis and pharyngitis. The fine particles entering the lungs are blocked by the local tissues of the lungs. The role is easy to cause bronchitis, pulmonary fibrosis and emphysema.

(3) Sulfur dioxide. After entering the respiratory tract, sulfur dioxide is mostly soluble in water, so most of it is blocked in the upper respiratory tract, causing corrosive sulfite, sulfuric acid and sulfate on the moist mucous membrane to enhance the stimulation. The combined action of sulfur dioxide and fly ash can promote the proliferation of alveolar fibers, damage the lung tissue, and develop emphysema.

(4) Carbon monoxide. The degree of damage of carbon monoxide to the body depends mainly on the concentration and the length of time the body absorbs. Carbon monoxide poisoning can cause hypoxia in the body tissues, and the most significant impact on the heart and brain, often leading to softening and necrosis of brain tissue.

(5) Nitrogen oxides. Nitrogen oxides are less irritating to the mucous membranes of the eyes and upper respiratory tract, mainly invading the bronchioles and alveoli in the deep respiratory tract, causing pulmonary edema.

(6) Noise. Noise can not only seriously affect the auditory organs, but also cause people to lose hearing, but also affect sleep and nervous system, making people feel impatient and easy to get angry. Since noise can irritate the nervous system and cause it to be suppressed, people who work in a noisy environment for a long time are prone to neurasthenia.

(7) Odor. The odor generated by asphaltic cigarettes seriously affects the growth and development of humans, animals, and plants. If people are exposed to such odors for a long time, they may cause respiratory diseases and skin diseases, and may induce cancer.

Chart 2 Emissions Sources KG/T

Process		Particle Qty	PM10	PM2.5
Batch mix plant	Open dust emission	16	2.35	0.135
	Water filter	0.07	0.045	0.014
	Bag filter	0.021	0.014	0.004
Continuous type plant	Open dust emission	14	3.25	0.15
	Water filter	0.023	0.015	0.002
	Bag filter	0.017	0.012	0.001

Print

Planning Commission June 5, 2023 Public Comment - Submission #3176

Date Submitted: 5/30/2023

Timeline

Please use the form below to submit public comment for the June 5, 2023, Planning Commission meeting.

Comments received before 3 p.m. Tuesday, May 30, 2023, will be included in the meeting agenda packet available prior to the meeting. Click here to access meeting agendas and minutes.

Written comments received after 3 p.m. Tuesday, May 30, 2023, will be published in an amended packet. All written comments must be received by 3 p.m. Friday, June 2, 2023.

Public comment may be given in person at the meeting on June 5.

First and Last Name*

Jade Cowan

Email Address*

jade.cowan@outlook.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3857 Mount Hope St

Public Comment for the Planning Commission June 5, 2023 Meeting

Dear Members of the Planning Commission, I am writing to express my strong opposition to the approval of the proposed asphalt plant application by Connell Industries in our community. I believe that the establishment of an asphalt plant in close proximity to residential areas, schools, and parks would have detrimental effects on the well-being and safety of our community members. Firstly, I would like to draw attention to the statement made by Connell Industries, indicating that they curate toxic chemicals. This admission raises serious concerns as it directly violates the land use code in place. Regardless of any mitigation measures they may propose, the fact remains that the production of toxic chemicals is inherent to their operations. Consequently, a setback of 2,640 feet should be mandatory according to the land use code regulations. Furthermore, it is important to note that Connell Industries has been in violation of regulations for several months, casting doubt on their commitment to effectively mitigate the negative impacts associated with their activities. This history of non-compliance raises serious doubts about the credibility and reliability of their claims. As a community, we cannot trust that Connell Industries will truly prioritize the health and well-being of our residents. The air quality in our town is already a cause for concern, and the addition of an asphalt plant would only exacerbate the issue. The emission of pollutants and particulate matter from such a facility would further degrade the air we breathe, posing potential health risks to the community. Additionally, the close proximity of schools, parks, and residential areas to the proposed plant site raises alarm bells, as these locations should be safeguarded to ensure the safety and well-being of our children, families, and residents. In light of the potential adverse effects on air quality, violation of land use code, and proximity to sensitive areas, I strongly urge the Planning Commission to reject the approval of the asphalt plant application submitted by Connell Industries. Our community deserves to live in a healthy and safe environment, and allowing such an operation to proceed would compromise the quality of life for all residents. I kindly request that you carefully consider the concerns raised by myself and others who share my viewpoint. Your decision has the power to shape the future of our community, and I trust that you will prioritize the well-being of the residents of Wellington above any potential economic gains. Thank you for your time and attention to this matter. I look forward to a favorable response that reflects the best interests of our community. Sincerely, Jade Cowan

Optional File Attachment

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Optional File Attachment

Choose File No file selected

Optional File Attachment

Choose File No file selected

Print

Planning Commission June 5, 2023 Public Comment - Submission #3180

Date Submitted: 5/30/2023

Timeline

Please use the form below to submit public comment for the June 5, 2023, Planning Commission meeting.

Comments received before 3 p.m. Tuesday, May 30, 2023, will be included in the meeting agenda packet available prior to the meeting. Click here to access meeting agendas and minutes.

Written comments received after 3 p.m. Tuesday, May 30, 2023, will be published in an amended packet. All written comments must be received by 3 p.m. Friday, June 2, 2023.

Public comment may be given in person at the meeting on June 5.

First and Last Name*

Benjamin Trabing

Email Address*

trabing@ucar.edu

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3147 Alybar Dr. 7D, Wellington, CO, 80549

Public Comment for the Planning Commission June 5, 2023 Meeting

See attached pdf.

Optional File Attachment

Connel_Plant_Trabing.pdf

Optional File Attachment

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Optional File Attachment

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May 30, 2023

Dear Board of Trustees,

Thank you for considering comments from the community and I would like to voice my concern for the construction of the Connell Resources asphalt plant in the industrial zone northeast of the Wellington Community Park. First, I would like to mention that I am qualified to discuss the asphalt plant emissions and the impact on our community as I have a B.S. in meteorology from the University of Oklahoma and a M.S. and Ph.D. in atmospheric science from Colorado State University. As a researcher, I find it helpful to consider the number of peer-reviewed studies that have affirmed that asphalt plants emit toxic chemicals that are hazardous to people and animals. The toxic and flammable chemicals at asphalt plants are the reason why asphalt plants are classified as heavy industry and are required by many U.S. states to complete comprehensive studies of how far and in what direction emissions from the plant will travel to assess the risk to local communities. It would be a mistake to not consider the impacts that the asphalt plant would have to the health and safety of people in the residential areas around the proposed asphalt plant.

In a past meeting it was stated that the only pollution from the batch asphalt plant will be in the form of steam; however, this statement is misleading. The emissions from the plant due solely to burning natural gas will produce mainly carbon dioxide and water vapor (steam) although additional compounds such as carbon monoxide are also produced. In contrast, the purpose of burning natural gas is to heat the asphalt (also called bitumen) which does in fact emit harmful fumes. The emissions from heated asphalt are the main concern for the community because it contains several chemical compounds that are hazardous to people and animals.

When asphalt is heated, it releases an increasing amount of fumes into the atmosphere that contain health risks. These fumes include benzothiazole, polycyclic aromatic compounds (PAHs), volatile organic compounds (VOCs), Hydrogen Sulfide, and small particulate matter ($PM_{2.5}$). The amounts of these compounds will be dependent on the mixture of rock aggregates, liquid asphalt, and any solvents used by the plant. To get a sense of the health risks, a survey found that 45% of people living within 2640 ft suffered adverse health conditions within 2 years after the opening an asphalt plant in North Carolina. Strict Hydrogen Sulfide exposure limits are set for asphalt plant workers around the world; however, no such limits are set for the residential communities around asphalt plants. Hydrogen sulfide is both toxic to people and highly flammable which has been a contributing factor to explosions and fires at asphalt plants in the past. Although a well-regulated asphalt plant should have a minimal risk for fires and explosions, the possibility will never be zero which is why asphalt plants are a heavy industry and should not be near residential areas.

In addition to the immediate health risks from breathing in the hazardous chemicals emitted by asphalt plants, please consider that VOCs and other chemical compounds will also contaminate the soil in the area surrounding the plant. Another major waste product of asphalt plants is formaldehyde. Formaldehyde is a well-known carcinogen that is water soluble, meaning that it readily dissolves in water and will contaminate local groundwater. This puts the dog pond at the

community park at great risk of contamination with the concentration of cancerous chemicals continually building up over time as the asphalt plant operates.

Thank you again for considering my concern that the proximity of the proposed plant to the community park, neighboring residential communities, and Eyestone Elementary School poses a public health risk to our community. Asphalt plants are considered heavy industry because of the toxic and flammable chemicals used in daily operations. The pollutants from asphalt plants are airborne and a report from Berzeit University estimated that asphalt plant pollution can travel 1-1.5 miles from the source. My son, who attends Eyestone Elementary School and regularly plays at the community park, has asthma and will be at greater risk for respiratory distress due to the toxic air pollutants emitted by the proposed asphalt plant.

Sincerely,

Benjamin Trabing

Dr. Benjamin Trabing
(352)229-9108
trabing@ucar.edu

Addendum

June 5, 2023 Planning Commission Agenda Packet

This addendum to the June 5, 2023 Planning Commission agenda packet contains new information provided after the June 5 packet was originally published on May 31, 2023. The new information provided includes:

1) Presentation slides provide by the applicant
2) Written public comments received before 3:00pm on June 2, 2023*

***Note:** One new written public comment included as attachments prior written public comments submitted for prior meeting agendas. The new comment with the attachments of the prior comments are included in this addendum.


WELLINGTON ASPHALT MIXING PLANT
JUNE 5 2023
CONNELL
TOWN OF WELLINGTON
ditesco

1

ABOUT CONNELL RESOURCES, INC.

- Founded in Loveland in 1946, Incorporated in 1969
- Serving North Colorado Community for 77 Years
- LOCAL, Family and Employee-Owned
- Operates within a 60-mile radius of Fort Collins
- 265 full time employees (18 of whom are residents of Wellington)
- Self-perform earthwork, pipeline utilities (water, sanitary sewer, storm sewer), aggregate production, and asphalt paving
- Current Asphalt Mixing Plant SE of Harmony and I-25 for nearly 20 years. Connell has operated the Asphalt Mixing Plant on two other sites west of I-25 for 10 years prior to moving east of I-25

CONNELL WELLINGTON MIXING PLANT CONNELL TOWN OF WELLINGTON ditesco 2

2

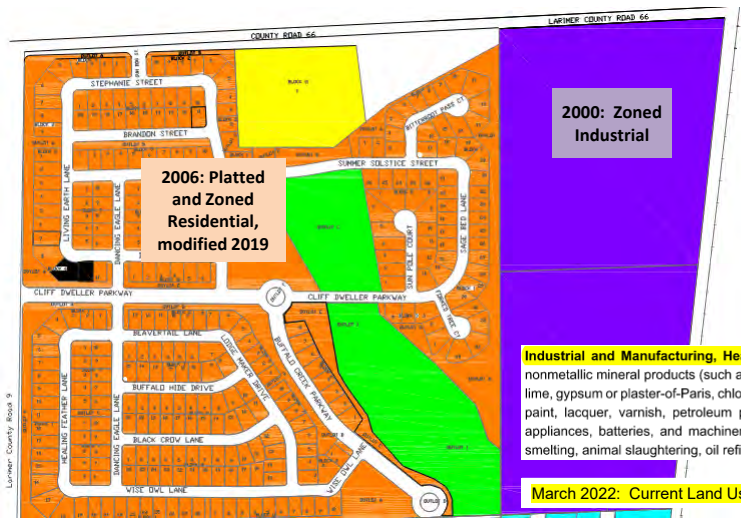
ZONING AND PROPOSED USE

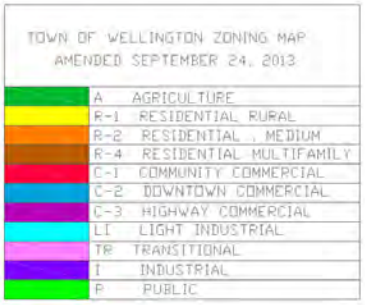
- Proposed Asphalt Mixing Plant operation is being relocated from its current site at Harmony and I-25 near Costco Wholesale
- Proposed site – 3548 E County Road 66
- The proposed site has been zoned ***Industrial and Manufacturing Heavy*** since 2000 and has retained this zoning designation through multiple Town Comprehensive Plan (2021), Zoning Map, and Land Use Code Updates (2022).
- Asphalt Mixing Plant is a use permitted by right in the Town of Wellington's Land Use Code

CONNELL WELLINGTON MIXING PLANT CONNELL TOWN OF WELLINGTON ditesco 3

3

PROJECT INTRODUCTION – ZONING MAP





Industrial and Manufacturing, Heavy Manufacturing of paper, chemicals, plastics, rubber, cosmetics, drugs, nonmetallic mineral products (such as concrete and concrete products, glass), primary metals, acetylene, cement, lime, gypsum or plaster-of-Paris, chlorine, corrosive acid or fertilizer, insecticides, disinfectants, poisons, explosives, paint, lacquer, varnish, petroleum products, coal products, plastic and synthetic resins, electrical equipment, appliances, batteries, and machinery. This group also includes asphalt mixing plants, concrete mixing plants, smelting, animal slaughtering, oil refining, and magazine contained explosives facilities.

March 2022: Current Land Use Code for setbacks and building heights adopted.

CONNELL WELLINGTON MIXING PLANT

4

4

SITE PLAN

- Site Plan provides thoughtful development which adheres to the 6 conditions of approval imposed by BOA.
- Asphalt Mixing Plant northeastern corner of the site (nearest to the railroad and furthest from residential neighborhood)
  1. Site Plan must be reviewed and approved by Planning Commission
  2. Height variance (up to 70-ft) is for the silos only
  3. A 15-foot earthen berm and landscaping is required along the west side of the site
  4. There will be no signage on the silos
  5. Signage and operator policies will not allow engine braking (“Jake Brakes”)
  6. Compliance with all applicable County and State permits for operation of an Asphalt Mixing Plant

PURPOSE OF HEARING

- The Site Plan is consistent with the Comprehensive Plan and the intent stated in this Land Use Code.
- The lot size and lot dimensions are consistent with what is shown on the approved final plat.
- No buildings or structures infringe on any easements.
- The proposed site grading is consistent with the requirements of any applicable adopted storm drainage criteria or master drainage plans.
- The density and dimensions shown conform with Article 4 of this Code or the approved PUD requirements.
- The applicable Development Standards have been adequately addressed and the proposed improvements conform with Article 5 of this Code.

6

6

BOA CONDITIONS OF APPROVAL

- Site Plan must be reviewed and approved by the Planning Commission
- The height variance (up to 70-ft) is for silos only
- A 15-foot earthen berm and landscaping is required along the west side of the site
- There will be no signage on the silos
- Signage and operator policies will not allow engine braking (“Jake Brakes”)
- Compliance with all applicable Local, County and State permits for operation of an Asphalt Plant

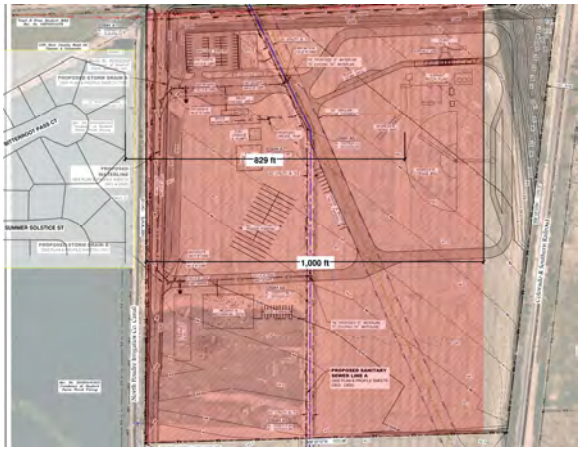
BOA VARIANCES

Applicant requested and Board of Adjustment (BOA) granted two variances on October 27 2022.

1. Reduced Setback – Section 4.03.21 A of the Code requires Heavy Industrial uses must be setback 1,000 feet from any residential use or District.

BOA granted a variance to this requirement, allowing a reduction in setback requirement from 1,000' to 800'.

Planning Commission is bound by these BOA approved variances and the deadline to appeal the approval variances has since passed.



BOA VARIANCES - CONTINUED

Applicant requested and Board of Adjustment (BOA) granted two variances on October 27 2022.

2. Increased Height – Section 3.04.4 of the Code restricts maximum building height to 45'

BOA approved an increase in height of the silos to 70' from 45'. This variance only applies to the silos structure.

Planning Commission is bound by these BOA approved variances and the deadline to appeal the approval variances has since passed.

CONNELL WELLINGTON MIXING PLANT CONNELL TOWN OF WELLINGTON ditesco 9

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CONNELL WELLINGTON MIXING PLANT

10

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ADDITIONAL INFORMATION, INVESTIGATIONS, AND STUDIES

- Site Location
- Landscaping
- Traffic Planning and Impacts
- Wildlife Impact Study
- Noise Assessment Study
- Permitting - Requirements
  Reporting
  Enforcement
- Stormwater and Drainage
- Ground Water Monitoring
- Air Quality – Dispersion Modeling
  Health Risk Assessment

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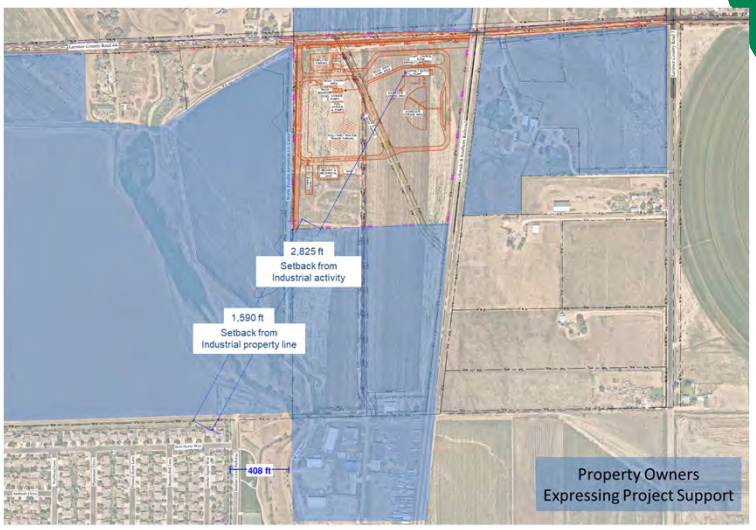
SITE LOCATION

- All directly adjacent Property Owners have expressed support for the project.
- Site layout has been thoughtfully planned to reduce impacts to adjacent properties and the Wellington community.



CONNELL WELLINGTON MIXING PLANT

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LANDSCAPING

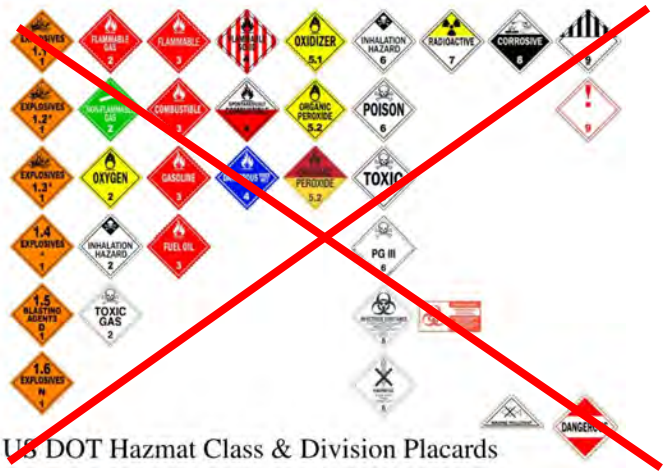
- Applicant has included 18.38% of the Property to be landscaped
  - Primarily perimeter buffering
  - 80-110' landscape area
  - Proposed access road along property line will increase buffering area
  - All proposed berms are 10'-15' as required by BOA to screen industrial activity

13

13

TRAFFIC PLANNING & IMPACTS

- Roadway Infrastructure Improvements
  - Paving CR 66 from west property line to CR 7
  - Improved RR Crossing at CR 66
  - Northbound right turn lane on CR 7 to eastbound Owl Canyon Road
  - Pavement width to include bike lanes
- All incoming and outgoing truck traffic will be routed on CR 66 to CR 7, then north to Owl Canyon to access I-25
- There will NOT be any truck traffic on CR 66 west of the site unless it's a local delivery or local project
- There will NOT be any truck traffic on local roadways in Town unless it's a local delivery or local project



US DOT Hazmat Class & Division Placards

CONNELL WELLINGTON MIXING PLANT

15

15

WILDLIFE IMPACT STUDY

"Potential habitat for threatened and endangered species is not present on or near the project area."

"Based on the limited habitat value on and near the project site, no wildlife mitigation strategies are warranted on this property. There are not anticipated to be any significant impacts to existing wildlife or habitat."

Technical Memo

To: Larimer County Planning Department
From: Cedar Creek Associates, Inc.
Date: April 19, 2023
Subject: Cornell LLC – Preliminary Wildlife Mitigation Plan

Cedar Creek Associates, Inc. (Cedar Creek) was contracted by Cornell LLC to conduct an evaluation of wildlife features on a target property located on E County Road 64 in Wellington, Colorado. The project area comprises approximately 30.6 acres within parcel #8928000019. The site is primarily agricultural fields and a laydown yard for storing equipment. The proposed development site was assessed on April 12, 2023, to identify habitats and potential wildlife impacts to development.

Wildlife Habitat

Due to the current land uses on the property, there is limited wildlife habitat located on the property. Figure 1 shows that the majority of the site is actively farmed with a small portion on the northeast side open range. Farmed land over limited wildlife habitat value due to the homogenous landscape and anthropogenic activity. The southwest corner of the parcel is used for equipment storage. Within the vicinity of the target parcel, there are several large trees associated with residential areas to the east and northwest. These trees were surveyed for raptor nests, but no nests were found.

The Colorado Parks and Wildlife (CPW) Threatened and Endangered Species List and High Priority Habitat database (SB181) were queried for potential habitat on and in the vicinity of the project area. Potential habitat for threatened and endangered species is not present on or near the project area. The High Priority Habitat database revealed Aquatic Native Species Conservation Waters associated with Boxelder Creek to the west of the project (Figure 1). However, the project area falls outside the buffer for that feature. The High Priority database also indicated Pronghorn Winter Concentration area which overlaps the project area (Figure 1). While there is the potential for valuable pronghorn habitat, the current land uses limit its habitat value.

Mitigation

Based on the limited habitat value on and near the project site, no wildlife mitigation strategies are warranted on this property. There are not anticipated to be any significant impacts to existing wildlife or habitat.

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VOLUNTARY COMMUNITY NOISE ASSESSMENT STUDY

- *Larimer County Noise Ordinance No. 97-03 specifies **maximum sound levels of 55dbA** at receiving property lines.*
  - A community noise assessment was completed on May 19, 2023 to demonstrate future operations will comply with the County and State ordinances.
  - Site Plan has incorporated sound mitigation measures through berming and selective layout.
  - Committed to restricting the use of engine brakes (Jake Brakes) for east and westbound trucks on CR 66. Signs will be posted on CR 66.
  - Will install white noise back up alarms on equipment being used at the asphalt facility.

VOLUNTARY COMMUNITY NOISE ASSESSMENT STUDY

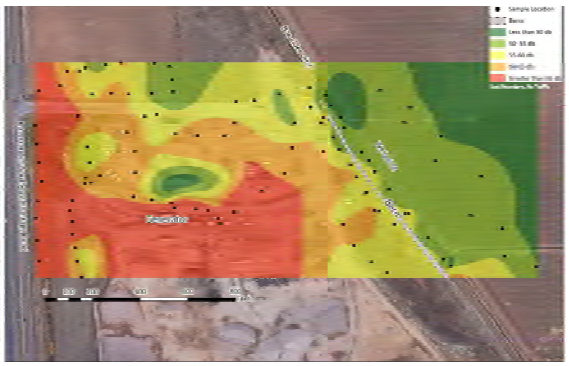


Table 2: Inverse Square Law Calculations

Sound Pressure Level db(A)	Distance (ft)	Sound Pressure Level db(A)	Distance (ft)	Sound Pressure Level db(A)	Distance (ft)
83 (source)	1	55.0	150	38.6	1000
70.6	25	52.5	200		
64.6	50	46.5	400		
58.6	100	44.6	800		

PERMITTING

Environmental Permits for Wellington Site

Permit Type	Permit Number	AIRS ID	Purpose	Governing Entity	Enforcement Fine Range	Governing Agency Inspection Freq.	CRI Inspection Frequency	CRI Testing Frequency
Air	00LR0746*	069-0373	HMA plant permit	CDPHE-APCD	$15,000 - $54,833 per day per violation	Target Freq: Every 2 Years	Monthly, Annual, Per O/M Plan	Monthly, Annual, Per O/M** Plan
Air	20LR0484.XA*	069-0353	HMA plant genset permit	CDPHE-APCD	$15,000 - $54,833 per day per violation	Target Freq: Every 2 Years	Monthly, Annual, Per O/M Plan	Monthly, Annual, Per O/M** Plan
Air	TBD	TBD	Facility air permit for aggregate processing	CDPHE-APCD	$15,000 - $54,833 per day per violation	Target Freq: Every 2 Years	Monthly, Annual	NA
Air	Various	Various	Individual permits for crushing equipment	CDPHE-APCD	$15,000 - $54,833 per day per violation	Target Freq: Every 2 Years	Monthly, Annual	Depends on each crushing unit
Stormwater	COR900000	NA	Facility industrial stormwater discharge	CDPHE-WQCD	$10,000 - $47,357 per day per violation	Target Freq: Every 2 Years	Quarterly, Annual & Post Storm Events	Bi-monthly, Quarterly, Annual
Petroleum Storage	TBD	NA	AST registration with Colorado	CDLE-OPS	$0-$37,500 /day/violation with no cap	Target Freq: Every 2 Years	Monthly, Annual	Annual
SPCC	NA	NA	Plan for petroleum storage	CDLE-OPS	$0-$37,500 /day/violation with no cap	Target Freq: Every 2 Years	Monthly, Annual	Annual

*Permit number will change when permit issued for new facility

**CDPHE-APCD Approved Operation/Maintenance Plan

CDPHE-APCD (Colorado Department Public Health Environment - Air Pollution Control Division)

CDPHE-WQCD (Colorado Department Public Health Environment - Water Quality Control Division)

CDLE-OPS (Colorado Department Labor & Employment - Oil & Public Safety)

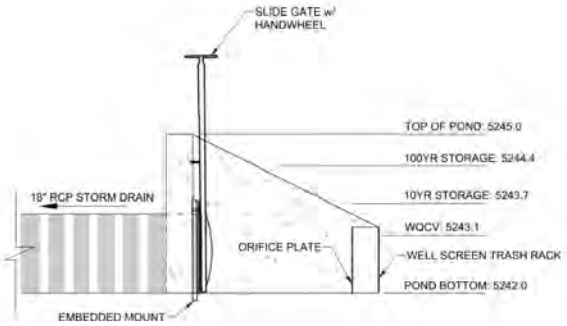
PERMITTING - CONTINUED

Connell Resources has had One CDPHE Compliance Advisory

- On June 25, 2021, Connell was performing an unobserved compliance stack test at its current facility. During the early stages of the test, the plant staff realized that an auger in the facility was experiencing a mechanical malfunction and causing an inaccurate reading. The plant staff ended the test so that the auger could be repaired. ***Connell self-reported the issue to CDPHE the same day.***
- On July 27, 2021, Connell received correspondence from CDPHE that stopping a test prior to completion was considered a failed test.
- On August 2, 2021 Connell contested CDPHE's determination and requested that CDPHE grant an opportunity to re-test with the facility repairs complete. CDPHE granted the request for retesting
- On October 21, 2021 Connell retested with passing emissions
- On October 20, 2022 CDPHE Issued a Compliance Advisory
- On November 8, 2022 Connell again contested CDPHE's determination
- On December 5, 2022 CDPHE offered a Settlement Agreement that stated:
    - ***"Entering into this settlement shall not constitute an admission of violation of the air quality laws, or the alleged facts relating thereto, nor shall any third party infer it to be such an admission in any administrative or judicial proceeding…"***

STORMWATER AND DRAINAGE

- Stormwater design conforms to the Town of Wellington design standards
- The proposed release rates match the existing release rates on the site for the 10-year and 100-year storm event
- The on-site detention pond mitigates flooding and provides water quality measures
- The outlet structure includes a trash rack, orifice plate, and slide gate to protect water quality
- The pond drains to a North Poudre Irrigation Company lateral. Connell and NPIC are working together to ensure proper stormwater management
- Stormwater Discharge Permit through CDPHE will be maintained with a stormwater management plan



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VOLUNTARY GROUND WATER MONITORING

- Facility is extremely unlikely to impact groundwater
- Voluntary Monitoring Plan (*not required by Local, State or Federal regulation*)
- Plan is outside of any requirements for SPCC (Spill Prevention Containment and Countermeasures) Permitting (fuel storage)
- Monitoring wells will be registered with the State Engineers Office

CONNELL RESOURCES, INC

GROUNDWATER MONITORING PROPOSAL

FOR TOWN OF WELLINGTON PLANNING COMMISSION

Connell Resources is in the planning stages of moving an asphalt mixing plant to an industrial parcel in Wellington, Colorado. This proposal outlines a groundwater monitoring plan for this future site.

OVERVIEW

Connell Resources is pleased to prepare this proposal for a groundwater monitoring program at the future site in Wellington. The purpose of this groundwater monitoring program is to get a baseline for groundwater quality and identify potential contamination areas, if any, prior to beginning mobilization and disturbance.

Basic Plan Components

Prior to disturbance by Connell Resources, two groundwater monitoring wells will be installed. An environmental consultant will be hired to assist in identifying the best on-site placement of the monitoring wells and registering the monitoring wells with the State Engineering Office.

- Initial groundwater samples will be analyzed for metals, semi-volatile organic compounds (SVOCs) and volatile organic compounds (VOCs) from both well points per the Colorado Discharge Permit System Short-Term Construction Dewatering Application.
- The results from initial sampling will be reviewed by Connell Resources and an environmental consultant to determine groundwater quality.
- Annual testing will occur from both well points for benzene, toluene, ethylbenzene, and xylene (BTEX) at a minimum, assuming no parameters of concern were identified during initial sampling.
- Every 5 years, both well points will be resampled for metals, SVOCs, and VOCs.
- Records and test results will be available to the Town of Wellington upon request with reasonable notice.

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ODOR MITIGATION

Excerpt from Larimer County Site Plan Referral Review dated December 21, 2022

"This property in review is surrounded by a mix of commercial and residential uses as well as public recreation, therefore the more strict residential threshold for odors shall be complied with. Please note that it is a violation if odors are detected at property lines after the odorous air has been diluted with seven (7) or more volumes of odor free air using a nasal ranger operated by certified staff. Larimer County staff are certified in odor compliance and will evaluate complaints."

- Primary fuel source is Compressed Natural Gas (CNG)
  - Clean burning with little to no odor
  - Latest inspection – November 8 2021
- Our AMP is outfitted with numerous systems which capture and refilter emissions to reduce odors
- Connell owns the same odor control monitoring equipment as Larimer County and 3 full time EHS Staff members trained in monitoring odor compliance.

From CDPHE Field Inspection Report November 8 2021
"No odor complaints have been received by the department for this site. No odor noted at the time of inspection by inspector. In Compliance."

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VOLUNTARY AIR QUALITY STUDIES – MAJOR VS MINOR SOURCES

Larimer County Major Source Emitters

Emitter	2014 Reportable Greenhouse Gas Emissions* (Tons of CO2)	2021 Reportable Greenhouse Gas Emissions (Tons of CO2)
Colorado State University	46,500	43,820
Anheuser Busch	50,493	43,712
Larimer County Landfill	145,812	195,915
Broadcom - Fort Collins	213,562	125,324
Rawhide	2,173,850	1,738,576

*https://www.coloradoan.com/story/news/2016/07/14/meet-larimer-countys-5-biggest-polluters/86818052/

- EPA and CDPHE recognize Asphalt Mixing Plants as a *minor* source emitter.
- In comparison to the five major source emitters in the chart to the left, Connell's maximum allowable CO emissions are ***19.5 tons/year. Actual production for 2022 was 10.53 tons.***
- Other permitted minor source emitters in Wellington include fuel stations and commercial and light industrial facilities. (At least 5 currently active) These active permits allow releases of VOC's, Benzene, Hexane, Toluene, and Ethylbenzene.

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VOLUNTARY AIR QUALITY STUDIES

- Connell ***voluntarily*** completed an Air Dispersion Model dated May 18, 2023 by Antea Group
- Connell ***voluntarily*** completed Health Risk Assessment and Evaluation dated May 26, 2023 by Sanborn Head
- The results of each study indicate
  - Compliance with all Local, State and Federal air quality standards.
  - Connell's Wellington Mixing Plant will have minimal impact to local air quality.
  - Connell's Wellington Mixing Plant will have *de minimis* effect on public health.

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VOLUNTARY AIR QUALITY STUDIES – DISPERSION MODEL

Connell Resources
Wellington, CO

Modeling demonstrated screening levels will not be exceeded for chronic long-term and acute short-term levels at nearby residences, Wellington Community Park, and Eyestone Elementary School.

Table 7: AerMod Calculated HAP Emissions and Discrete Receptors - Chronic Values

Pollutant (CAS No.)	Emission Rate (ton/yr)	Chronic Screening Value ($\mu g/m^3$)	Calculated Annual Average HAP Exposure ($\mu g/m3$)					
			Receptor 1: Residential[1]	Receptor 1 Above Screening Value (Yes/No)	Receptor 2: Park[2]	Receptor 2 Above Screening Value (Yes/No)	Receptor 3: School[3]	Receptor 3 Above Screening Value (Yes/No)
Acetaldehyde (75-07-0)	0.195	0.45	0.0024	No	0.00026	No	0.00022	No
Hexane[4] (110-54-3)	0.138	70	0.0017	No	0.00019	No	0.00016	No
Hexane[5] (110-54-3)	0.143	70	0.0017	No	0.00021	No	0.00016	No
Formaldehyde[6] (50-00-0)	0.103	0.077	0.0013	No	0.00014	No	0.00012	No
Formaldehyde[7] (50-00-0)	0.465	0.077	0.0056	No	0.00069	No	0.00053	No
Toluene (108-88-3)	0.435	40	0.0053	No	0.00064	No	0.00050	No
Quinone (106-51-4)	0.0405	0.4 a	0.00049	No	0.000050	No	0.000050	No
Benzene (71-43-2)	0.0420	0.13	0.00051	No	0.000060	No	0.000050	No
Ethylbenzene (100-41-4)	0.330	0.40	0.0040	No	0.00044	No	0.00038	No
Xylene (1330-20-7)	0.405	10	0.0049	No	0.00054	No	0.00047	No
Total PAH	0.0345	0.11 b	0.00042	No	0.000050	No	0.000040	No
HCl (7647-01-0)	0.0315	2	0.00038	No	0.000040	No	0.000040	No

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Health Risk Assessment Evaluation
Connell Resources Inc. Proposed Hot-Mix Asphalt Plant

Stephen Zemba, PhD
Wellington Planning Commission Meeting
June 5, 2023

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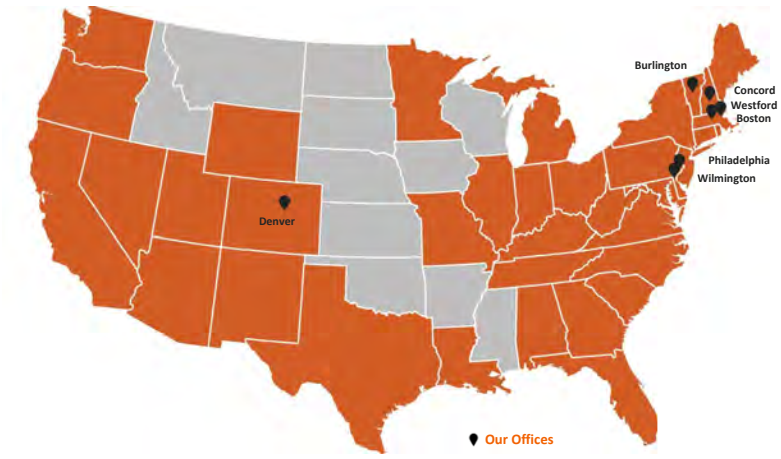
OVERVIEW

- Employee-Owned, Est. in 1993
- Multi-disciplinary:
  - solid waste
  - environmental
  - hydrogeology
  - geotechnical
  - civil
  - chemical
  - mechanical
  - electrical
  - risk assessment
- Approximately 180 employees
- Concord, NH (Headquarters)

Where We're Registered



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SERVICES

- Air Services and Modeling
- Brownfields Redevelopment
- Data Management & Visualization
- Due Diligence
- Geotechnical Design
- Landfill Gas Management
- Legal Support
- Natural Gas Infrastructure Design
- Permitting & Compliance
- Renewable Energy
- Site Characterization & Remediation
- Solid Waste Facility Design
- Water Resources

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Solid Waste

Energy

Industrial

Development

CLIENT SERVICE AREAS

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Air Impact Assessment (Antea Group)

- Voluntary study – Not required by the Colorado Department of Public Health & Environment (CDPHE)
- Estimates changes to local air quality that will result from operation of the proposed hot-mix asphalt plant

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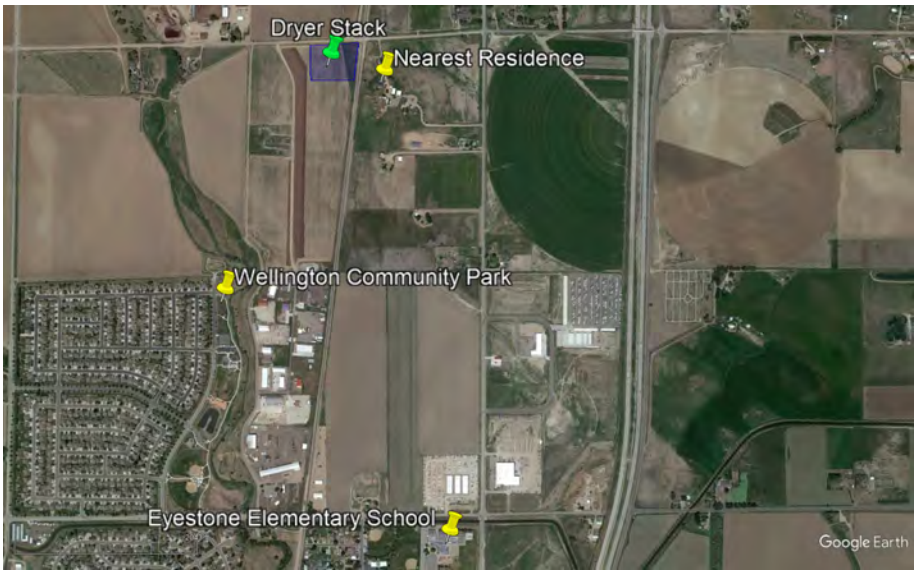
Key Locations Examined in the Air Quality Impact Study



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Air Impact Assessment -- Scope of Pollutants

Criteria Pollutants

- Particulate Matter
  - Total
  - Smaller than 10 µm (PM_{10})
  - Smaller than 2.5 µm ($PM_{2.5}$)
- Nitrogen Oxides (NO_X)
- Sulfur Dioxide (SO_2)
- Carbon Monoxide (CO)

Key Air Toxics

- Acetaldehyde
- Hexane
- Formaldehyde
- Toluene
- Quinone
- Benzene
- Ethylbenzene
- Xylenes
- Polycyclic Aromatic Hydrocarbons (PAHs)
- Hydrogen Chloride (HCl)

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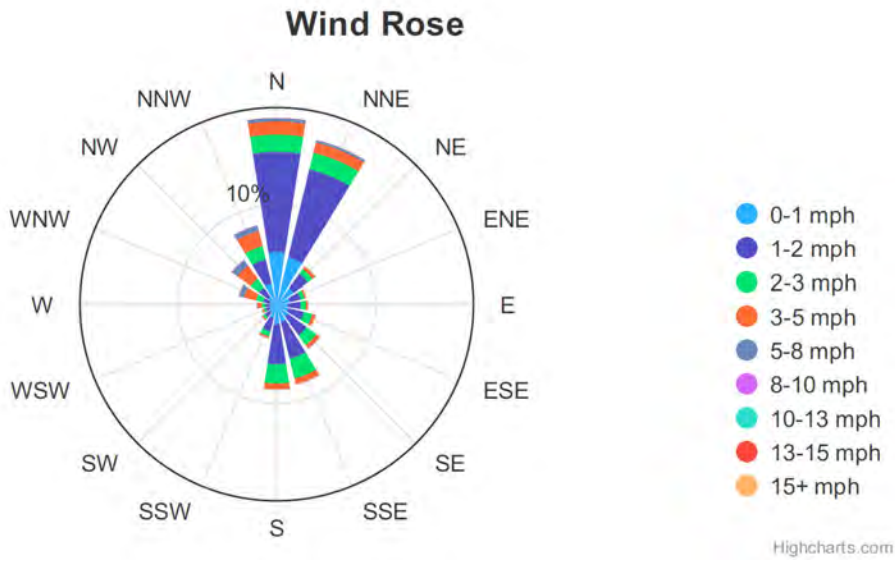
Hourly Meteorological Data (from Antea Group)



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Antea Group's Criteria Pollutant Assessment

Connell Resources
Wellington, CO
Table 3: Summary of AerMod Calculated Emissions and NAAQS

Pollutant	Averaging Period	AerMod Concentration for Wellington Location ($\mu g/m^3$)	NAAQS Primary Concentration[1] ($\mu g/m^3$)	AerMod Wellington Percent of NAAQS
PM-10	24-hour	0.15	150	0.1%
PM-2.5	24-hour	0.042	35	0.1%
	1-year	0.0025	12	0.02%
NOx	1-hour	7.1	188 ab	4%
	1-year	0.10	100 ab	0.1%
SO2	1-hour	7.5	196 a	4%
CO	1-hour	17	40,000 a	0.0%
	8-hour	10	10,000 a	0.1%

Notes
$\mu g/m^3$ = micrograms per cubic meter
1 = National Ambient Air Quality Standards (NAAQS) for public health protection, including the health of sensitive populations
a = Conversion of units from ppm provided by NAAQS to $\mu g/m^3$ provided by California Air Resource Board
b = Standard provided for NO_2

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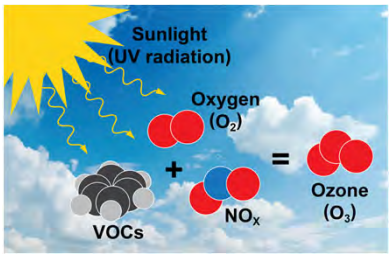
Air Quality in Larimer County – Ozone Non-Attainment

- Principal air quality issue in Larimer county is ozone (O_3)
- Ozone is created in the atmosphere from chemical reactions involving nitrogen oxides (NOx) and volatile organic compounds (VOCs)
- Ozone is a *regional* issue, and relocating the hot-mix asphalt plant will not substantially affect overall ozone production



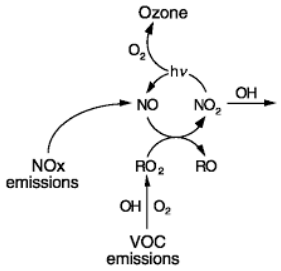


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Image Sources: U.S. Environmental Protection Agency, Oklahoma Department of Environmental Quality

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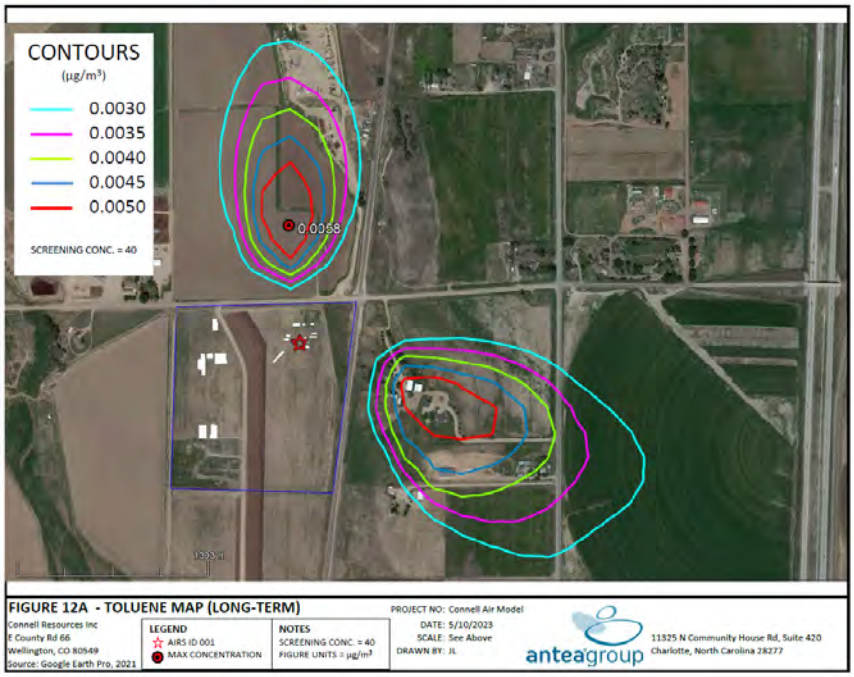
Air Modeling

- AERMOD – USEPA/CDPHE approved model
- Emission source – Aggregate dryer stack (red star)
- Results depict long-term (annual) impacts for toluene



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Health Risk Assessment

- Incremental Cancer Risk
  - Chemicals known or suspected to cause cancer
  - Estimated as: Concentration in Air × Unit Risk Factor
  - Typical acceptable levels
    - 1 to 100 per million (10^{-6} to 10^{-4})
  - Background cancer incidence risks
    - Men: 41 per 100, or 410,000 per million
    - Women: 39 per 100, or 390,000 per million

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https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2023/2023-cancer-facts-and-figures.pdf

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Health Risk Assessment

- Incremental Cancer Risk Example
  - Assume: A site/project adds a 1 in a million incremental cancer risk
  - A person's chance of getting cancer would increase by the following amounts:
    - Man: From 410,000 per million to 410,001 per million
    - Woman: From 390,000 per million to 390,001 per million

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https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2023/2023-cancer-facts-and-figures.pdf

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Incremental Cancer Risk

Chemical	Highest Modeled Concentration (µg/m³)	Inhalation Unit Risk (m³/µg)	Incremental Cancer Risk (per million)
Acetaldehyde	0.0024	0.0000022	0.0053
Formaldehyde	0.0013	0.000013	0.017
Benzene	0.00051	0.0000078	0.0040
Ethylbenzene	0.004	0.0000025	0.010
PAHs - Benzo(a)pyrene	0.000000058	0.0006	0.000035
Total Incremental Cancer Risk (per million)			0.036

- Assumed exposure for 70 years
- Incremental risk of 0.036 per million is less than 1 per million *de minimis* risk
- Risks at park and school 8 and 11 times lower

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Health Risk Assessment

- Hazard Quotient (HQ)
  - Address adverse health effects *other than cancer*
  - Calculated as: $$HQ = \frac{\text{Exposure Concentration}}{\text{Safe Concentration}}$$
  - Acceptable HQ = 1 if a single chemical
  - Add HQs together for multiple chemicals as a screening Hazard Index (HI)

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Non-Cancer Hazard Quotients

Chemical	Highest Modeled Concentration (µg/m³)	Safe Concentration (µg/m³)	Hazard Quotient (HQ)
Acetaldehyde	0.0024	9	0.00027
Hexane	0.0017	700	0.0000024
Formaldehyde	0.0013	9.8	0.00013
Toluene	0.0056	5000	0.0000011
Quinone	0.00049	1	0.00049
Benzene	0.00051	30	0.000017
Ethylbenzene	0.004	1000	0.0000040
Xylenes	0.0049	100	0.000049
PAHs - Benzo(a)pyrene	0.000000058	0.002	0.000029
PAHs - Other	0.00042	3	0.00014
HCl	0.00038	20	0.000019
		Total Hazard Index	0.0012

- Safe concentrations from U.S. EPA and state databases
- Overall Hazard Index (HI) is 800 times smaller than acceptable value of 1
- HI's at park and school 9 and 10 times lower

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Comparison to Background

Chemical	Highest Modeled Concentration (µg/m³)	NATA Background Concentration (µg/m³)	Percent of Background
Acetaldehyde	0.0024	0.64	0.4%
Formaldehyde	0.0013	0.73	0.2%
Benzene	0.00051	0.15	0.3%
Ethylbenzene	0.004	0.036	11%
PAHs (Total)	0.00042	0.0078	5.4%

- NATA = 2014 National Air Toxics Assessment (U.S. EPA)
- Background concentrations for Wellington census tract

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Conclusions

- Emissions from the hot-mix asphalt plant ***will not*** present significant risks to human health
- Highest incremental modeled concentrations ***will be*** small compared to existing background levels (from other sources)

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MITIGATION OF SITE IMPACTS

Additionally, Connell has incorporated the following design principles into the Site Plan to mitigate impacts:

- Satisfied BOA conditions of approval
- Site emissions monitored and controlled by County, State, and Federal standards
- Site operations limited
- 15-foot landscaped berm
- Cognizant site planning
- Relocation and improvements to local infrastructure
- Xeric-low water use landscape predominantly non-potable water – Town water NOT used in plant processes or landscape irrigation

CONNELL WELLINGTON MIXING PLANT CONNELL TOWN OF WELLINGTON ditesco 45

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SITE PLAN CRITERIA

The Project meets all criteria of approval for a Site Plan, as set forth in **Section 2.12.3** of the Code.

- ✓ The Site Plan is consistent with the Comprehensive Plan and the intent stated in this Land Use Code.
- ✓ The lot size and lot dimensions are consistent with what is shown on the approved final plat.
- ✓ No buildings or structures infringe on any easements.
- ✓ The proposed site grading is consistent with the requirements of any applicable adopted storm drainage criteria or master drainage plans.
- ✓ The density and dimensions shown conform with Article 4 of this Code or the approved PUD requirements.
- ✓ The applicable Development Standards have been adequately addressed and the proposed improvements conform with Article 5 of this Code.

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SITE PLAN CRITERIA - COMPREHENSIVE PLAN

The Site Plan is consistent with the Comprehensive Plan and the intent stated in the Land Use Code.

- Site Plan is consistent with the Future Land Use Map included with the Comprehensive Plan, which identifies the corridor where the site is located as Industrial and contemplates Industrial uses such as an Asphalt Mixing Plant.
- The is the only parcel in the Town that can accommodate Heavy Industrial land uses, including Asphalt Mixing Plants. Due to the proximity to the railroad, and Sinclair easement it is not an ideal site for many uses.

Site Plan is consistent with several goals of the Comprehensive Plan

- *GOAL 1 – Thriving Economy* – diversify the Town economic base to attract key businesses to the area. The site plan meets this goal because the Town is heavy agriculture, and the Asphalt Mixing Plant diversifies economic opportunities.
- *GOAL 2 – Thriving Economy* – develop a supportive business environment that aids in creating a thriving local economy. The site plan meets this goal by providing commercial land uses that provide job opportunities and needed services.

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SITE PLAN CRITERIA - CONTINUED

INDUSTRIAL/ LIGHT INDUSTRIAL

Desired Intent & Character

Industrial and light industrial areas are intended to provide a diversity of building types and sizes that support the diverse businesses that contribute to Wellington's economy. These areas should provide sufficient hard surface to allow for movement of goods and should have convenient access to truck routes, railroads, and other major thoroughfares. They should also provide pedestrian connectivity and green space, offering visual relief and natural protection from adjacent uses.

Industrial areas should generally be located interior to the large block of industrial/ light industrial areas as identified on the future land use map.

Light industrial areas differ from traditional industrial areas as these are intended to support light manufacturing jobs that create minimal noise, smell, and road traffic. Typically, light industrial areas should serve as a separator between heavier industrial and surrounding land uses, such as residential and commercial areas.

Potential Industrial Uses: Primarily large format buildings for manufacturing, assembly, warehousing, distribution, and processing. Complementary uses may include research and development.

Potential Light Industrial Uses: small-scale buildings for start-ups, small offices, and live-work flex spaces.

Suggested Net Density Range: N/A

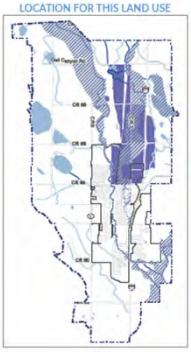
Suggested Intensity Range: 0.1 – 1.0 FAR

COMMUNITY VOICES:

"We need a manufacturing base to generate tax."

"Locally owned [businesses] if possible."

LOCATION FOR THIS LAND USE



REPRESENTATION OF SUGGESTED DENSITY, USES, AND AMENITIES.

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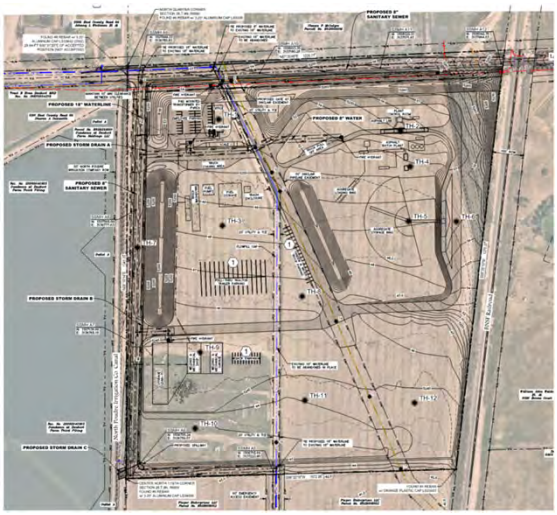
SITE PLAN CRITERIA - CONTINUED

- FINAL PLAT - Consistency with Final Plat
- EASEMENTS - No Infringement on Easements
- SITE GRADING - Consistency with Drainage



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SITE PLAN CRITERIA - DENSITY/DIMENSIONS

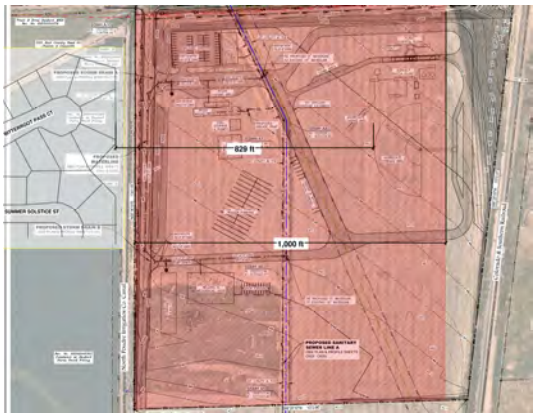
Density and Dimensions conform with Article 4 of the Code

Pursuant to **Section 4.03.2**1 of the Code – Industrial, Manufacturing, Heavy uses must be setback at least 1,000 feet from a residential district or use.

The BOA approved a variance to this requirement and reduced the setback to 800-feet

The BOA's decision is final and cannot be appealed.

Staff found the site plan meets this criterion of approval with the approved variances.



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SITE PLAN CRITERIA - DEVELOPMENT STANDARDS

Development Standards have been adequately addressed and proposed improvements conform with Article 5 of the Code

- *Landscape* – Complies with requirements set forth in **Section 5.04.14**
  - Primarily focused at the public facing building entry and the perimeter of property for screening industrial activities from the exterior of the property
  - Perimeter of property includes a minimum 8' wide area to include pervious surface along with 1 tree per 40 linear feet, 40% Evergreens
- *Screening and Buffering* – Site plan includes screening and buffering in compliance with **Section 5.04.18**
- *Parking* – Site plan includes 1 parking space per 1,000 sf per **Section 5.05.7**
- *Architecture/Building Design* –**Section 5.09.2 – Final design provided at Building Permit**
- *Stormwater and Sewer* – Site plan addresses grading and erosion control to ensure stormwater drainage, flood control and water quality issues per **Section 5.10** *addressed previously in presentation*
- *Transportation and Connectivity* – Site plan provides safe and efficient transportation to accommodate the expected increased traffic generated by the development per **Section 5.11**

Site plan meets this criterion of approval, the approved variances and conditions of approval by BOA.

51

51

CONCLUSION

1) Connell meets all Town of Wellington's Criteria for Site Plan Approval

2) We have listened to and addressed all the questions raised by the Planning Commission, Larimer County Health Department, Wellington Residents and other referral agencies by performing due diligence in:
   1) ***Voluntary*** Wildlife Impact Study
   2) ***Voluntary*** Community Noise Assessments
   3) ***Voluntary*** Air Dispersion Modeling
   4) ***Voluntary*** Community Health Risk Assessments

3) Scientific data provided through studies and assessments demonstrates the asphalt plant will have a de minimis effect on public health.

4) We are committed to:
   1) Meeting all Local, State and Federal ordinances and permit requirements
   2) Performing voluntary Groundwater Monitoring
   3) Continuing to be good neighbors and positively contribute to the Northern Colorado Community as a local family and employee-owned company

CONNELL WELLINGTON MIXING PLANT CONNELL TOWN OF WELLINGTON ditesco 52

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Addendum
June 5, 2023 Agenda Packet

Written Public Comments
3:00pm 6/2/2023

Letter regarding Connell Asphalt Plant

Tom Peterson <tompeterson@co-asphalt.com>

Thu 6/1/2023 2:53 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

1 attachments (3 MB)

CAPA Letter to Town of Wellington re Connell Plant 6-1-2023.pdf;

Mr. Bird;

See attached regarding the Connell Asphalt Plant. Thank you for the consideration.

Tom Peterson

Thomas Peterson, P.E.
Executive Director
Colorado Asphalt Pavement Association
tompeterson@co-asphalt.com
(303) 229-6710

Colorado Asphalt Pavement Association

June 2, 2023

Cody Bird, AICP
Planning Director
Town of Wellington

RE: Connell Resources Asphalt Plant – Concerns with Emissions

Mr. Bird;

This letter addresses health concerns regarding the proposed Connell Asphalt Plant. Connell Resources has been operating this plant for over 20 years in the vicinity of I-25 @ Harmony Road. The company has a proven record of being a responsible operator and complying with all permit requirements and restrictions. Consider the following:

- Asphalt mix plants (AMP) are heavily regulated and required to comply with air permits issued by the Colorado Department of Public Health, Air Pollution Control Division, Stationary Sources Branch. The permit restrictions are established to ensure clean air and to protect public health and enforced by the CDPHE-APCD-Stationary Sources Branch, Enforcement and Compliance Unit. The trace levels of volatile organic compounds (VOCs) emitted from asphalt plants are well within the permit restrictions. Additional set back is not needed and unnecessary at the proposed Connell site in Wellington.

- There are approximately 65 stationary asphalt mix plants operating within Colorado. Nearly all of them are near a people environment including homes, shopping centers, schools, farms, or environmentally sensitive areas including rivers, lakes, streams, or ponds. Many of them have setbacks that are similar to what is being proposed with the Connell Plant. Attached are three examples, namely, the Martin Marietta Plant in Colorado Springs, the Schmidt Construction Plant in Castle Rock and the Holcim Plant in Denver. All three are operating efficiently and have setbacks similar to what is being proposed by Connell.

- The emissions from the Connell Plant will not increase an individual's or community's health risk. The trace levels of VOCs from an AMP are similar in type and quantity to emissions from common everyday sources. AMPs have been well-characterized regarding their gaseous emission potential, of which over 99.9% are associated with the combustion of fuel used to dry the aggregate (rock) during the pavement mixing process. Such emissions are not dissimilar to combustion-related emissions from everyday processes like residential and school facility heating systems or automobile exhaust. The

quantity and type of AMP emissions have also been compared to emissions from fast-food restaurants and gas stations, all located within Wellington's town borders.

I trust that this information is helpful. Please let me know if you have any questions or if I can be of any assistance.

Sincerely,

Thomas Peterson, P.E.
Executive Director, Colorado Asphalt Pavement Association
tompeterson@co-asphalt.com; (303) 741-6150 x 152

ASSESSOR

GIS
Geographic Information System
El Paso County
Colorado

N

December 28, 2022

481'

ADJOINING 53000

FALCON FIRE PROTECTION
1
DISTRICT EXEMPTION PLAT
PLAT #11771

ROCKY MOUNTAIN INDUSTRIAL
1
2

SANDY CT.

PARK
4
3
FIL. NO. 1A
PLAT #12968

DR.
TR. A
TR. B
TR. C
TR. D
TEMPEST
SECHURA DR.

The Sands, Fil. 1
Built 2020

COLORADO
Department of Public Health & Environment

SAFE
COALITION FOR SAFE ASPHALT FOR EVERYONE

481'
COLORADO
Department of Public Health & Environment
CDPHE
SAFE
COALITION FOR SAFE ASPHALT FOR EVERYONE

COLORADO
Department of Public Health & Environment

SAFE
COALITION FOR SAFE ASPHALT FOR EVERYONE

773'
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773'

COLORADO
Department of Public Health & Environment
SAFE
COALITION FOR SAFE ASPHALT FOR EVERYONE
SOUTH PLATTE RIVER
211'

Addendum
June 5, 2023 Agenda Packet

Written Public Comments
3:00pm 6/2/2023

Objection to the proposed Asphalt plant site

Claudia Simpson <claudiasimpson11@gmail.com>

Thu 6/1/2023 5:02 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Dear Planning Board,

Please reconsider the site of this proposed Asphalt plant. It will be built too close to our neighborhoods, parks and schools. The toxic chemicals released by this plant will not only affect our town, but will decrease property values, increase traffic with large trucks on a daily basis and overall give our town a lower quality of life status. There are no plans in place for emergency spills. At the very least, we need to bring back the 2,640ft setback. There are other areas in Weld County or land in unincorporated Larimer County that would be much better fit for this Asphalt plant, than right inside our town of Wellington. Please remember your decision will affect all of us that live in Wellington. Thank you, Claudia Simpson

P.S. please include this letter in the amended packet.

Businesses needed in Town , Including Connell Resources

Matt Mullett <frsmatt@gmail.com>

Fri 6/2/2023 10:56 AM

To: Cody Bird <birdca@wellingtoncolorado.gov>;Calar Chaussee <chausseec@wellingtoncolorado.gov>;Ashley Macdonald <macdonas@wellingtoncolorado.gov>;Jon Gaiter <gaiterjm@wellingtoncolorado.gov>;Rebekka Dailey <daileyrm@wellingtoncolorado.gov>;Brian Mason <masonb@wellingtoncolorado.gov>;Shirrell Tietz <tietzs@wellingtoncolorado.gov>;David Wiegand <wiegandd@wellingtoncolorado.gov>

Cody , Mayor and Board
I just wanted to let you know I am very much in Support of bringing in Good businesses into are town and after doing my research without a doubt I know Connell Resources would be a great Business and Great company to make are town better and financially stronger, a good business to build up are committee and help bring in the other business we need in town.
I will keep doing what I can to do what is good for are town , and I am trusting in you all to do the same. Cheers!
Thank you!
Matt Mullett

3925 Water Lily Dr.
Wellington, CO 80549
970-566-3826
frsmatt@gmail.com

Addendum
June 5, 2023 Agenda Packet

Written Public Comments
3:00pm 6/2/2023

Asphalt Plant letter

Todd Smith <toddsmith7355@gmail.com>
Fri 6/2/2023 11:36 AM
To: Cody Bird <birdca@wellingtoncolorado.gov>

1 attachments (41 KB)
Asphalt plant 6-23.pdf;

Please include this letter for the Wellington Board of Directors meeting.

Thank you,
Todd Smith

Dear Planning Board, June 1, 2023

The Connell site plan doesn't meet the more stringent requirements that apply to toxic chemicals and so cannot be located at the proposed location. Land use code 4.03.21,B, regarding the production and curating of toxic chemicals requires these sites be located at least 2,640 feet from any residential district, religious land use, medical care facility, or school.

What are the toxic chemicals? These are just some of the chemicals known to be part of a asphalt plant.

Acetaldehyde, Benzene, Hydrogen sulfide, Chromium, PAHS, Cadmium, Arsenic, volatile organic compounds including, benzene, toluene, formaldehyde and xylene along with smaller amounts of other toxic chemicals. According to the Colorado Department of Public Health and Environment current regulations for emissions only assess particulate matter, not toxic chemicals in the forms of HAPs and PAHs.

Here are the toxic effects of Arsenic:

- Nausea and vomiting
- Decreased production of red and white blood cells
- Abnormal heart rhythm
- Damage to blood cells
- Darkening of the skin

Several studies have shown breaking inorganic arsenic can cause increase effect of lung cancer. The department of health and human services and EPA "have determined that inorganic arsenic is known human carcinogen."

Source: http://wwwn.cdc.gov

Here are the toxic effects of Formaldehyde:

- Nasal and eye irritation
- Neurological effect
- Increase effects of asthma
- Changes in lung function

“The department of health and human services determined in 2011 that formaldehyde is a known human carcinogen based on sufficient human and animal inhalation studies. “

Source: http://wwwn.cdc.gov

Here is a list of common symptoms of exposure to VoC…

- Eye, nose & throat irritation
- Headaches
- Nausea and vomiting
- Dizziness
- Worsening of asthma systems
- Cancer
- Liver and Kidney damage

Source: https://www.deq.nc.gov/water-quality

Source: https://www.health.state.mn.us

“The national institute of occupational safety and health recommended that asphalt fumes and asphalt based paints be considered a potential occupational carcinogen.”

Source: https://www.cdc.gov/niosh/docs/2001-110/default.html

Source: https://www.deq.nc.gov/water-quality

As a nurse for almost 30 years watching people get sicker and sicker with more chronic diseases from our over exposure to toxic chemicals, hormone disruptors, unclear water, plastics, and unhealthy food choices. Is this really what we want in our small town? I know I don't and I don't support the facility at all. It's my home and where I feel safe and enjoy being outside. This plant is going to contribute to more chronic health issues for all of us, especially the younger generation. Don't we care about our health or our children's health at all? This is not air anyone should be breathing and as a patient advocate for almost 30 years I will continue to advocate for the health of myself and my community. Living south of the plant with the prevailing north winds, we will be exposed chronically to the polluted air from the plant. I already have health issues from not being able to detox as other people are and I don't want to breathe the toxins. These fumes affect our cell membranes and our liver detox pathways making us more inflammed and leads to chronic illness. Please, consider the lives of your residents over the money generated. It is not worth the risk. I have seen it first hand. Thanks for taking the time to read and consider this. Those of us speaking out are very passionate about the consequences of this plant. By God's will this will not pass!

This batch asphalt plant produces and curates toxic chemicals. The planning board should NOT approve this plant at all.

Thanks for your consideration,

Aimee Smith RN, Master Nutrition Therapist, Board Certified in Holistic Nutrition

Print

Planning Commission June 5, 2023 Public Comment - Submission #3193

Date Submitted: 5/31/2023

Timeline

Please use the form below to submit public comment for the June 5, 2023, Planning Commission meeting.

Comments received before 3 p.m. Tuesday, May 30, 2023, will be included in the meeting agenda packet available prior to the meeting. Click here to access meeting agendas and minutes.

Written comments received after 3 p.m. Tuesday, May 30, 2023, will be published in an amended packet. All written comments must be received by 3 p.m. Friday, June 2, 2023.

Public comment may be given in person at the meeting on June 5.

First and Last Name*

Louise Norris

Email Address*

louisen78@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

7250 Kit Fox Drive, Wellington CO 80549

Public Comment for the Planning Commission June 5, 2023 Meeting

I am writing to ask you to please reject the proposal to allow an asphalt plant to be built north of Buffalo Creek. I love this community and have lived in Wellington for 14 years. It's been a great place to live and raise our family. But an asphalt plant would have a very negative impact on residents' health, property values, and quality of life. The emissions would be detrimental to the entire community's health, and for people who live in Buffalo Creek, the noise and smell would no doubt be unbearable. WMHS and Eyestone Elementary are both within a mile of the proposed asphalt plant, which would put hundreds of children in close proximity to those emissions every day. I know that we need asphalt plants. But they shouldn't be located directly adjacent to residential areas or close to schools. I'm asking you to please work with the owners of the asphalt company to try to find a location that's at least several miles outside of town.

Optional File Attachment

Choose File | No file selected

Optional File Attachment

Choose File | No file selected

Optional File Attachment

Choose File | No file selected

Print

Planning Commission June 5, 2023 Public Comment - Submission #3203

Date Submitted: 6/1/2023

Timeline

Please use the form below to submit public comment for the June 5, 2023, Planning Commission meeting.

Comments received before 3 p.m. Tuesday, May 30, 2023, will be included in the meeting agenda packet available prior to the meeting. Click here to access meeting agendas and minutes.

Written comments received after 3 p.m. Tuesday, May 30, 2023, will be published in an amended packet. All written comments must be received by 3 p.m. Friday, June 2, 2023.

Public comment may be given in person at the meeting on June 5.

First and Last Name*

Dawn Burch

Email Address*

drbdogos@outlook.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

7856 Elder Circle, Wellington, CO

Public Comment for the Planning Commission June 5, 2023 Meeting

I think having the Asphalt Plant will be good revenue for the town of Wellington. we will probably be able to have our roads redone and a fair price.

Optional File Attachment

Choose File No file selected

Optional File Attachment

Choose File No file selected

Optional File Attachment

Choose File No file selected

Print

Planning Commission June 5, 2023 Public Comment - Submission #3204

Date Submitted: 6/1/2023

Timeline

Please use the form below to submit public comment for the June 5, 2023, Planning Commission meeting.

Comments received before 3 p.m. Tuesday, May 30, 2023, will be included in the meeting agenda packet available prior to the meeting. Click here to access meeting agendas and minutes.

Written comments received after 3 p.m. Tuesday, May 30, 2023, will be published in an amended packet. All written comments must be received by 3 p.m. Friday, June 2, 2023.

Public comment may be given in person at the meeting on June 5.

First and Last Name*

Donna Rodriguez

Email Address*

fearles1co@aol.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

7351 View Pointe Cr

Public Comment for the Planning Commission June 5, 2023 Meeting

Why not have Connell Resources, a very upstanding and reputable company, be our partner in the growth of our town? So many people have claims of all the negative impacts this asphalt plant will have on our town, but what about the positives? Never mind that most of the negative information being reported is inaccurate, but what about the tax revenue that will be generated by having them here? I just read a report that most of the town's revenue for 2023 is below budget. The tax revenues can help build the infrastructure of the town, which is greatly needed. People are worried about the smell and possible pollution from the plant, yet these are the same people that moved into a neighborhood right across the street from a dairy farm. I guess these things were not that important back when they purchased a home in their neighborhood. Connell could also bring jobs to the area. If we are going to grow as a town, we should choose a company that will stand behind their name. Thanks, Donna Rodriguez Town resident for 22 years

Optional File Attachment

Choose File | No file selected

Optional File Attachment

Choose File | No file selected

Optional File Attachment

Choose File | No file selected

Print

Planning Commission June 5, 2023 Public Comment - Submission #3208

Date Submitted: 6/2/2023

Timeline

Please use the form below to submit public comment for the June 5, 2023, Planning Commission meeting.

Comments received before 3 p.m. Tuesday, May 30, 2023, will be included in the meeting agenda packet available prior to the meeting. Click here to access meeting agendas and minutes.

Written comments received after 3 p.m. Tuesday, May 30, 2023, will be published in an amended packet. All written comments must be received by 3 p.m. Friday, June 2, 2023.

Public comment may be given in person at the meeting on June 5.

First and Last Name*

Brittany Cowan

Email Address*

family.cowan@outlook.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

Public Comment for the Planning Commission June 5, 2023 Meeting

Please see attached file.

Optional File Attachment

23.pdf

Optional File Attachment

Choose File No file selected

Optional File Attachment

Choose File No file selected

Dear Planning Commission,

First, I would like to thank you for your time and investment in ensuring our town is a safe place to live. I would like to address a few items based on the most recent packet. I want to remind you of your duty to **protect the community**, not make decisions based on the financial gain of a few individuals.

1. While Connell Resources did in fact produce air studies, it does **NOT** matter what the results were. Please let me refute the statements made by Mr. Bird:
    a. Per Mr. Bird in reference to the Land Use Code:
        i. "At prior Planning Commission meetings and in public comments received, Subsection 4.03.21.B. has been brought up as possibly needing additional consideration.

            • 4.03.21.B. states: Any Industrial and Manufacturing, Heavy use producing and curating toxic chemicals or conducting animal slaughtering shall be located at least:
            1. Two thousand six hundred forty (2,640) feet from any residential district, religious land use, medical care facility, or school.
            2. One thousand three hundred twenty (1,320) feet from any commercial use.
            3. Six hundred sixty (660) feet from any Industrial and Manufacturing, Light use."

While Mr. Bird makes an attempt to state that hot asphalt plants do not produce or curate toxic chemicals, this is proven as FALSE.

According to dictionary.com, **TOXIC** is defined as one word: "**POISONOUS**."
https://www.dictionary.com/browse/toxic

ONE of the biproducts of asphalt production is Nitrogen Oxide (NOx). Although the amount is regulated by governing bodies, it is 100% fact that it is **PRODUCED**.

The definition of NOx can be found on the EPA's website.
"Nitrogen Oxides are a family of **poisonous,** highly reactive gases."
https://www3.epa.gov/region1/airquality/nox.html

Do you see the word **POISONOUS**? As demonstrated above, poisonous is the definition of **Toxic**.

TOXIC CHEMICALS ARE PRODUCED.
This has now been proven, requiring this site plan to be DENIED, or sent back to the board of adjustments to require a setback of 2,640' per the Land Use Code.

NOTHING MORE HAS TO BE PROVEN.
It is not hard to see that this plant does NOT fit the Land Use Code as it is planned at this time.

But since we're on the topic, I would like to include a photo of the HAP Emissions produced by hot mix asphalt plants that Connell Resources provided via the Antea Group:

Connell Resources
Wellington, CO
Table 1: Emission Source Information

Emission Point ID	Description	Location	Elevation (ft)	Height (ft)	Termination Orientation	Temperature (F)	Equivalent Exit Diameter (ft)	Flow Rate (cfm)	Easting (m)	Northing (m)
AIRS_ID_001	Main Emission Point	Wellington	5258	45	Vertical	218.93	6.00	85,000	499457.266	4508236.216

Pollutant	Emission Rate (ton/yr)
PM	2.7
PM10	0.7
PM2_5	0.2
NOX	8.3
SO2	8.7
CO	19.5
Acetaldehyde	0.195
Hexane	0.138
Formaldehyde	0.103
Toluene	0.465
Quinone	0.0405
Benzene	0.042
Ethylbenzene	0.33
Xylene	0.405
Total_PAH	0.0345
HCl	0.0315
VOC	4.8

Known toxic chemicals:

All information is taken from the EPA's website:

Acetaldehyde is considered a probable human carcinogen (Group B2) based on inadequate human cancer studies and animal studies that have shown nasal tumors in rats and laryngeal tumors in hamsters.

Hexane - Monitoring data indicate that hexane is a widely occurring atmospheric pollutant.

Formaldehyde - EPA considers formaldehyde a probable human carcinogen.

Toluene - The central nervous system (CNS) is the primary target organ for toluene toxicity in both humans and animals for acute (short-term) and chronic (long-term) exposures. CNS dysfunction and narcosis have been frequently observed in humans acutely exposed to elevated airborne levels of toluene; symptoms include fatigue, sleepiness, headaches, and nausea.

I don't think I need to continue to show that all of the items listed above are TOXIC chemicals produced by CRI.

While Mr. Bird also states, "The Industrial District requires that dust, fumes, odors, smoke, vapor and noise shall be confined to the site and controlled in accordance with state air pollution laws," the air dispersion models produced by CRI show that air pollution (NOx and other biproducts of the plant) will in fact TRAVEL OUTSIDE OF THE PROPOSED SITE, again proving that this does not fit the Land Use Code.

Mr. Brownstein also tries to defend CRI on their failed June 25, 2021 compliance test due to a faulty piece of equipment. I would like to point out that CRI did NOT report this faulty piece of equipment until AFTER the test was conducted.

Based on Exhibit F provided by Mr. Brownstein, CRI's timeline shows a startup of the "faulty" burner on 3/15/2021. This had been running for over three months before the violation. It cannot be proven that it had not been faulty for the entire three months it was running, producing significantly higher rates of NOx than the limit.

Per CRI's response to the violation:

"CRI is aware that continued production at the rate of 0.077 lb/ton of asphalt produced will exceed the NOx limit of 8.5 TYP if 220,825 tons of asphalt are made in a 12-month period. To prevent this from happening, and to meet self-certification requirements, CRI is making significant changes by switching from on-spec used oil and investing in either propane or CNG to fuel the HMA plant"

Mr. Martin goes on to say that the switch didn't happen until December 2021, meaning the plant was in fact producing higher rates of POISONOUS NOx.

The noise level is also a concern. Can it be proven that 15' earth berms will contain the 83 decibels Connell Resources has been shown to produce by an on site generator and mitigate it down to the required 55 decibels?

I would also like to point out that, in the **HUNDREDS** of pages of public comment, there were only THREE individuals who were in favor of this facility going into our town. The developer of Sundance who would have financial gain, a citizen who believes this will bring additional revenue to the town, and Ms. Lisa Clay who will also benefit financially from the sale of the land from Advance Thank to Connell Resources. What does this say about the feelings of the town? **You have a duty to uphold the Land Use Code.**

I would like to remind you of a few additional points of the Land Use Code:

A. Promote the health, safety, values, and general welfare of Town residents.

As shown numerous times, this proposed plant directly violates this statement.

B. Establish a variety of zoning district classifications according to the use of land and buildings with varying intensities of uses and standards whose interrelationships of boundary zones form a compatible pattern of land uses and buffer areas which enhance the value of each zone.

F. Promote good design and arrangement of buildings or clusters of buildings and uses in residential, business, and industrial development.

By allowing this asphalt plant to be built so close to residential homes, it will negatively impact the home values near the proposed site.

"Health Impacts & Loss of Property Value. The Blue Ridge Environmental Defense League (BREDL), a regional environmental organization, has done two studies on the adverse impacts on property values and health for residents living near asphalt plants. A property value study documented losses of up to 56% because of the presence of a nearby asphalt plant. In another study, nearly half of the residents reported negative impacts on their health from a new asphalt plant. The door-to-door health survey found 45% of residents living within a half mile of the plant reported a deterioration of their health, which began after the plant opened. The most

frequent health problems cited were high blood pressure (18% of people surveyed), sinus problems (18%), headaches (14%), and shortness of breath (9%). [BREDL]."

In all of the pages of packet information, NOTHING has addressed the impact to home values, but as shown above, studies have proven this WILL impact home values in Wellington.

Please, "for the health, safety, values and general welfare of Town residents," DO NOT ACCEPT THIS PROPOSED SITE PLAN.

Thank you for your time,
Jade and Brittany Cowan and family

Print

Planning Commission June 5, 2023 Public Comment - Submission #3209

Date Submitted: 6/2/2023

Timeline

Please use the form below to submit public comment for the June 5, 2023, Planning Commission meeting.

Comments received before 3 p.m. Tuesday, May 30, 2023, will be included in the meeting agenda packet available prior to the meeting. Click here to access meeting agendas and minutes.

Written comments received after 3 p.m. Tuesday, May 30, 2023, will be published in an amended packet. All written comments must be received by 3 p.m. Friday, June 2, 2023.

Public comment may be given in person at the meeting on June 5.

First and Last Name*

Benjamin Trabing

Email Address*

trabing@ucar.edu

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3147 Alybar Dr

Public Comment for the Planning Commission June 5, 2023 Meeting

See attached file regarding comments on the air dispersion modeling.

Optional File Attachment

Connell_Plant.pdf

Optional File Attachment

Choose File No file selected

Optional File Attachment

Choose File No file selected

June 2, 2023

Dear Board of Trustees,

I have briefly reviewed the air dispersion modeling study performed for the Connell asphalt plant and am concerned that the results are misleading and incomplete.

First, the study uses average pollutants over the year to insert into the model, which does not address the reasonable worst-case scenario, because the plant does not operate 24/7. It is fair to say that the asphalt plant operates more during the summer when heating costs are lower compared to the winter and mostly during the day, meaning that the source of the pollution could be substantially higher than the estimates at many operating times. A reasonable worst-case scenario considering the maximum daily estimated emissions was not considered as part of the air dispersion modeling study.

Second, the results are presented as yearly averages for the three significant locations: the park, the school, and the residential area to the west. This assessment does not adequately assess these areas' risk for airborne toxins emitted from the asphalt plant. For example, let's consider the residential area to the west of the proposed plant. The winds are only going to blow the emissions westward <10% of the time based on Wellington's climatology. This means that during those times when the winds are blowing westward, the actual amount of airborne toxins will be 10-100 times larger than what is estimated in the report. Because the winds cannot blow in every direction all the time, the yearly concentrations are not a fair way to represent the community's risk at each of these locations. Instead, a frequency analysis should have been completed describing how often the thresholds for the various pollutants were met or exceeded at each location.

In addition, the study was only completed for the year 2006. The atmospheric data used by the model therefore likely has a lower spatial and temporal resolution and is not as good as the data from this decade. There is a saying in the atmospheric science community about how good model results are, 'Garbage in means Garbage out.' I am afraid that the use of older data is not representative of the weather conditions today and will also contribute to inaccurate representation of the community risk to airborne toxins.

Finally, there are other external factors that have also not been considered in the air dispersion model study such as rainfall and rain runoff. Some of the airborne toxins such as formaldehyde are water soluble, meaning it can dissolve and be transported in water. Once in the atmosphere, formaldehyde can dissolve in rain and then fall offset of the plant location. Since formaldehyde is a known carcinogen, a hydrodynamic model should have also been used to estimate where the toxin will accumulate such as in the pond at the community park.

I would argue that the air dispersion study cannot be used to justify the construction of the asphalt plant due to its numerous limitations. The only thing this emission study truly proves, is that hazardous airborne pollution is emitted and that the impact to the community is not zero.

Sincerely,

Benjamin Trabing

Benjamin Trabing, PhD

Print

Planning Commission June 5, 2023 Public Comment - Submission #3210

Date Submitted: 6/2/2023

Timeline

Please use the form below to submit public comment for the June 5, 2023, Planning Commission meeting.

Comments received before 3 p.m. Tuesday, May 30, 2023, will be included in the meeting agenda packet available prior to the meeting. Click here to access meeting agendas and minutes.

Written comments received after 3 p.m. Tuesday, May 30, 2023, will be published in an amended packet. All written comments must be received by 3 p.m. Friday, June 2, 2023.

Public comment may be given in person at the meeting on June 5.

First and Last Name*

Matthew Mullett

Email Address*

frsmatt@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3925 Water Lily Dr.

Public Comment for the Planning Commission June 5, 2023 Meeting

Cody , Mayor and Board I just wanted to let you know I am very much in Support of bringing in Good businesses into are town and after doing my research without a doubt I know Connell Resources would be a great Business and Great company to make are town better and financially stronger, a good business to build up are committee and help bring in the other business we need in town. I will keep doing what I can to do what is good for are town , and I am trusting in you all to do the same. Cheers!

Optional File Attachment

Choose File No file selected

Optional File Attachment

Choose File No file selected

Optional File Attachment

Choose File No file selected

Print

Planning Commission June 5, 2023 Public Comment - Submission #3221

Date Submitted: 6/2/2023

Timeline

Please use the form below to submit public comment for the June 5, 2023, Planning Commission meeting.

Comments received before 3 p.m. Tuesday, May 30, 2023, will be included in the meeting agenda packet available prior to the meeting. Click here to access meeting agendas and minutes.

Written comments received after 3 p.m. Tuesday, May 30, 2023, will be published in an amended packet. All written comments must be received by 3 p.m. Friday, June 2, 2023.

Public comment may be given in person at the meeting on June 5.

First and Last Name*

Ayla Leistikow

Email Address*

ayla.leistikow@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

8605 citation ct

Public Comment for the Planning Commission June 5, 2023 Meeting

On page 250 of the June 5th meeting packet, Connell submitted a document that shows the main criteria pollutants and key air toxics. As stated they are acetaldehyde, hexane, formaldehyde, toluene, quinone, benzene, ethylbenzene, xylene, PAHs, and Hydrogen Chloride. The applicant themselves are providing this board with information that matches the CDPHE and the Larimer County Health Department in stating this plant produces toxic chemicals. At the March 6th meeting you saw the CDPHE emails stating this plant emits (produces and discharges) Hazardous air pollutants and PAHs, and how they are not assessed in emissions. At the May 1st meeting you saw a document from the CDPHE stating a hazardous air pollutants (HAPS) are known as toxic air pollutants, or air toxics. The Larimer County Health Department environmental planner stated in the Coloradoan that this plant produces air toxics. This board cannot ignore the facts from the Colorado Department of Public Health and Environment, the Larimer County Health Department, and now the applicant themselves. Approve with a condition: The Condition is the 2,640ft setback for producing and curating toxic chemicals applies.

Optional File Attachment

6 planning meeting comments.pdf

Optional File Attachment

1 planning meeting comments.pdf

Optional File Attachment

Choose File | No file selected

Public Comments
Received 2pm-5pm - 3-6-2023

Asphalt plant

Aimee Smith <[redacted]>
Mon 3/6/2023 4:03 PM
To: Cody Bird <birdca@wellingtoncolorado.gov>

To whom it may concern,

I am unable to attend the meeting tonight but would like it known that I think having an asphalt plant is extremely detrimental to everyone's health and well-being. Those are toxins being put into the air that we all breathe increasing the risk of lung disease, cancers, and health issues. I have lived in Wellington for 20+ years and like it because the air is cleaner and it is less populated. We already have water shortages and unhealthy water now we may risk exposure to bad air.
As a nurse and holistic nutritionist, all of these exposures increases are risk of disease and peoples lives aren't worth having a plant. Please take these things into consideration and reject this plant for the sake of all residents!

Sincerely,
Aimee Smith
Viewpointe neighborhood.

Sent from my iPhone

Public Comments
Received 2pm-5pm - 3-6-2023

ASPHALT PLANT

Lloyd J. Thomas, Ph.D. <[redacted]>
Mon 3/6/2023 3:07 PM
To: Cody Bird <birdca@wellingtoncolorado.gov>

To whom It May Concern,

I just now saw a copy of the letter regarding the proposed asphalt plant I cannot make the meeting on this short notice, but I am horrified our town would even consider such a plant. We are a bedroom community and such a plant would pose a myriad of toxins and noises I certainly hope the town is not that desperate for revenue that you would sacrifice the residents' health. Count me and my wife as a definite NO

Concerned and Unhappy,

Lloyd J. Thomas, Ph.D.
3421 Polk Circle West
Wellington, CO 80549

Public Comments
Received 2pm-5pm - 3-6-2023

Asphalt Plant

Brittany Cowan <[redacted]>
Mon 3/6/2023 2:47 PM
To: Cody Bird <birdca@wellingtoncolorado.gov>

We are unable to come to tonight's planning meeting, but want to make it known that our family is NOT in support of the plan for an asphalt plant near Wellington.

Thank you for all you do and we hope you take this into consideration to keep our town safe for all members.

Thank you,
Jade and Brittany Cowan

Public Comments
Received 2pm-5pm - 3-6-2023

Please add to the Connell Resources Packet

Ben Leistikow <[redacted]>
Mon 3/6/2023 2:38 PM
To: Paul Whalen <whalenp@wellingtoncolorado.gov>;Cody Bird <birdca@wellingtoncolorado.gov>

Cody and Paul,

I'm submitting the attached letter and documentation to be added to the packet for the Connell Resources Planning Board meeting. Please let me know if there are questions.

Thank You
Ben Leistikow
[redacted]

Public Comments
Received 2pm-5pm - 3-6-2023

March 2, 2023

Dear Planning Board,

The intent of this letter is that the Connell site plan doesn't meet the more stringent requirements that apply to toxic chemicals and so cannot be located at the proposed location. Land use code 4.03.21,B, regarding the production and curating of toxic chemicals requires these sites to be located at least 2,640 feet from any residential district, religious land use, medical care facility, or school.

Batch asphalt plants produce toxic chemicals in the forms of HAPs and PAHs and produce asphalt which is also toxic until it hardens per OSHA. The toxicity of each HAP can be found in the Agency for Toxic Substances and Disease Registry (ATSDR). The Merriam-Webster dictionary states that to cure or curing is to prepare or alter especially by chemical or physical processing for keeping or use. Batch asphalt plants physically change aggregate and chemicals to be asphalt so that if can be used in roads, which seems to meet the definition of curating.

Webster dictionary describes curate as to select for distribution and Vocabulary.com describes curate as organize and oversee items. The Connell plant team will be overseeing the production of asphalt and distributing it around the area so it also meets these requirements.

This batch asphalt plant produces and curates toxic chemicals. The planning board should not approve this plan due to the producing and curating setback of 2,640 feet. There is no variance for this specific setback.

Thanks for your consideration,
Ben Leistikow

Toxic Organic Micropollutants and Associated Health Impacts

- Muhammad Ijaz,
- Toqeer Ahmed &
- Alishbah Iftikhar Ahmad

- Chapter
- First Online: 28 June 2022

Part of the Emerging Contaminants and Associated Treatment Technologies book series (ECAT)

Abstract

Toxic organic micropollutants (TOMPs) are produced during any incombustion process e.g., industrial plants and road transport. These chemicals are highly toxic and some of these are carcinogens. These include poly aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), polychlorinated dibenzodioxins (dioxins), polychlorinated dibenzofurans (furans), and polybrominated diphenyl ethers (PBDEs). PAHs are emitted from municipal incinerators, coal gasification plants, aluminum industries, and coal tar and asphalt production facilities. PCBs have been used as a coolant in electric transformers and capacitors. Other uses include as a plasticizer in plastics, paints, dyes, carbonless copy papers and during heat transfer. The main sources of dioxins and furans are incinerators, industrial processes, incomplete combustion, and volcanic eruption. PBDEs are flame retardants and have been used in plastics, electronic enclosures, cell phones, personal computers, textiles, foam-based packaging, adhesives, and paint products.

There is no threshold limit for these pollutants as these can cause health damages even in small quantities. PCBs have been declared as Group I carcinogens by the International Agency for Research on Cancer (IARC). PCBs are also linked with adverse effects on kidney, liver, endocrine, and neurological systems. PAHs are genotoxins with irreversible genetic damage to humans. Exposure to PAHs leads to risk of lung, bladder, and skin cancers. Dioxins and furans cause cancer, endocrine disruption, effects on reproductive systems, and impairment of immune system. PBDEs are associated with neurodevelopment, liver and thyroid dysfunction, and endocrine disruption.

https://link.springer.com/chapter/10.1007/978-3-030-96523-5_9

Once released into the environment, these micropollutants undergo physical, chemical, and biological processes such as atmospheric transport, volatilization, deposition, partitioning, and bioaccumulation. There is a need to implement regulatory measures for safe handling, transport, and use of organic micropollutants and to reduce the health impacts through appropriate treatment.

Keywords

- **Carcinogenic**
- **Health impacts**
- **Organic micropollutants**
- **Toxicity**

References

- Agarwal DK, Kaw JL, Srivastava SP, Seth PK (1978) Some biochemical and histopathological changes induced by polyvinyl chloride dust in rat lung. *Environmental research*, *16*(1–3), 333–341

  CrossRef CAS Google Scholar

- Aktar, M. W., D. Sengupta and A. J. I. t. Chowdhury (2009). "Impact of pesticides use in agriculture: their benefits and hazards." **2**(1): 1.

  Google Scholar

- Akutsu K, Obana H, Okihashi M, Kitagawa M, Nakazawa H, Matsuki Y, Hori S (2001) GC/MS analysis of polybrominated diphenyl ethers in fish collected from the Inland Sea of Seto, Japan. *Chemosphere*, *44*(6), 1325–1333

  CrossRef CAS Google Scholar

- Alaee M, Sergeant DB, Ikonomou MG, Luross JM (2001) A gas chromatography/high-resolution mass spectrometry (GC/HRMS) method for determination of polybrominated diphenyl ethers in fish. *Chemosphere*, *44*(6), 1489–1495

  CrossRef CAS Google Scholar

Public Comments
Received 2pm-5pm - 3-6-2023

Rev ew > Env ron Mo Mutagen. 2005 Mar-Apr;45(2-3):106-14. do : 10.1002/em.20095.

Carcinogenic polycyclic aromatic hydrocarbon-DNA adducts and mechanism of action

W am M Ba rd [1], Lou sa A Hooven, Br nda Mahadevan

Aff at ons

PM D: 15688365 DO : 10.1002/em.20095

Abstract

Po ycyc c aromat c hydrocarbons (PAHs) are a c ass of w despread env ronmenta carc nogens. Most of our know edge of the r mechan sms of metabo c act vat on to DNA-b nd ng "u t mate carc nogen c" metabo tes has come from ana ys s of the DNA nteract on products formed by these h gh y react ve ntermed ates. Stud es of the r ro e n form ng DNA-b nd ng ntermed ates dent ca to those formed n v vo from the PAH tse f have a so a owed dent f cat on of the part cu ar cytochrome P450 enzymes nvo ved n act vat ng var ous structura c asses of carc nogen c PAHs. t has been estab shed that PAHs, after metabo c act vat on n v vo, are capab e of nduc ng mutat ons n oncogenes and, by nduc ng mu t p e mutat ons, may resu t n tumors. PAHs a so cause changes n ce u ar gap- unct on commun cat on s m ar to those caused by the tumor promoter 12-O-tetradecanoy phorbo -13-acetate. Thus, PAHs may a so act through a promot ona mechan sm n add t on to serv ng as tumor n t ators. Prev ous stud es on these mechan sms are descr bed and summar zed.

Related information

MedGen
PubChem Compound
PubChem Compound (MeSH Keyword)
PubChem Substance

LinkOut - more resources

Full Text Sources
W ey

Other Literature Sources
The Lens - Patent C tat ons

Miscellaneous
NC CPTAC Assay Porta

Public Comments
Received 2pm-5pm - 3-6-2023

3/3/23 Town Planning Meeting

Kimjosh Cruz-Rodenbeck <[redacted]>

Mon 3/6/2023 2:24 PM

To: Calar Chaussee <chausseec@wellingtoncolorado.gov>;Rebekka Dailey <daileyrm@wellingtoncolorado.gov>;Jon Gaiter <gaiterjm@wellingtoncolorado.gov>;Brian Mason <masonb@wellingtoncolorado.gov>;David Wiegand <wiegandd@wellingtoncolorado.gov>;Shirrell Tietz <tietzs@wellingtoncolorado.gov>;Cody Bird <birdca@wellingtoncolorado.gov>

To the Mayor, Trustees and Adjustment Board of the Town of Wellington,

I am one of your con tituent who live in the Buffalo Creek Subdivi ion I would like to take thi opportunity to express my disappointment in the process that has led to the town approving the height and distance from residential zoning variances awarded to the proposed asphalt plant that is to go into the commercially zoned land just north of the Wellington Community Park.

I heard about the asphalt plant only AFTER the variances had been approved. I was not afforded an opportunity to sit in on the meeting in which this approval happened, make public comment about the then proposed asphalt plant or even know that it was in the works. The only way I found out about it was through my HOA after the fact. I am not ure what the legal requirement for public notification are, but I feel like the town ha let all of u down, if not legally, then morally. An asphalt plant within 2 miles of two schools and the largest park in town where the most vulnerable members of our community congregate for hours a day does not seem like an appropriate location for a plant that we already know will spew out toxic chemicals into our air.

I have sought out research on all sides of the issue, hoping to find independent research that indicates that asphalt plants cause zero harm to those who are exposed to them over the long term. The only research I have found that says it's safe is paid for by the asphalt industry. All other research, domestic and international, has documented harmful effect to tho e who live, work and go to chool near a phalt plant

I implore all of you to put the brakes on this project. Give your constituents an appropriate opportunity to voice their concerns by properly advertising all meetings regarding the asphalt plant. You represent US. You are duty bound to make ure WE are a educated a po ible on thi pivotal deci ion for OUR town

Based on my current understanding of the research, I know that I do NOT want an asphalt plant anywhere in the town of Wellington. I don't want my children playing near it, going to school near it or living near it. We already have issues with the water in thi town Plea e don't give u i ue with our air al o

Respectfully,
Kim Cruz-Rodenbeck

Public Comments
Received 2pm-5pm - 3-6-2023

Re: Asphalt Plant in Wellington

Amanda Barry <[redacted]>
Mon 3/6/2023 2:08 PM
To: Cody Bird <birdca@wellingtoncolorado.gov>

Cody,

I apologize for this email not being any more eloquent or detailed than I'd like it to be, but I am just now seeing the notice of today's town planning meeting about the proposed hot asphalt plant behind Wellington Community Park, and I don't have time to articulate all of which I'd like to express by the 3pm deadline. It's important to me to at least quickly express that my wife and I do not support having said asphalt plant here, or anywhere else nearby that isn't REMOTE.

To keep it direct, our main reasons are exactly what is listed on this flyer that was left at our door. The health impact, air and noise pollution, loss of property value, etc. Literally everything laid out on this flyer is what we would argue if we were able to attend the town meeting.

Last year alone, I was floored at how many Air Quality warnings and notices we got for Wellington as the climate currently stands. We do not need anything else adding to the cause of the preexisting conditions.

My wife and I don't have any children of our own, but there are a number of children in our housing community that ACTUALLY play outside, riding bikes, scooters, and running around. They play at the park that will be directly impacted by this asphalt plant. That's a lot of lungs, breathing a lot of air, that will breathe in a lot of unnecessary toxins if this plant starts up. Additionally, when our nieces and nephews visit, we will be very uncomfortable having them run around outside, and won't want to bring them to that park. We also have outdoor animals that we'd prefer breathe the cleanest air possible.

For the sake of, and well being of, all humans, animals, and our planet, we respectfully demand that this plant be forbidden from operating in our town.

Please let us know if there is anything else we can do. Thank you for your time.

Infinitely,

Amanda Barry and Ashley Cummings
Residents of Wellington, CO

P.S. How can I keep myself up to date with this? Will there be reports published that I can access to follow the progress?

Public Comments
Received 2pm-5pm - 3-6-2023

Asphalt Plant Email Planning Committee

Dave Perricone <[redacted]>

Mon 3/6/2023 2:06 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Dear Planning Board,

The intent of this letter is to bring attention to the land use code 4 03 21,B, 1 It states that any Industrial or Manufacturing, Heavy use producing and curating toxic chemicals or conducting animal slaughtering shall be located at least 2,640 feet from any residential district, religious land use, medical care facility, or school The town has due diligence to find the correct unbiased research and data to make sure the land use code is properly followed What research and data were used to make the decision that this Heavy Industrial Batch (hot) Asphalt Plant does not meet the criteria for producing and curating toxic chemicals?

I contacted the Colorado Health Department to answer my questions and those answers conflict with decisions made by the town Batch Asphalt plants do produce, discharge and curate toxic chemicals in the forms of HAPs and PAHs. The Colorado Health Department describes these toxic chemicals as Hazardous Air Pollutants (HAPs). The main HAPs are Formaldehyde, Acetaldehyde, Benzene, Toluene, Ethylbenzene, and Xylene I also found that Hydrogen Sulfide, Chromium, Cadmium, and Arsenic can also be found as toxic pollutants at various levels in asphalt plant emissions The town can even calculate how many pounds of formaldehyde this plant will produce and discharge in an area that has a Community Park, neighborhoods, Library, and 2 Schools. If this plant uses recycled asphalt, it can emit higher levels of HAPs and PAHs due to the recycled asphalt composition

According to the Toxicology and Environmental Epidemiology Department of the Colorado Department of Public Health and Environment, current regulations for this type of asphalt plant only assess particulate matter emissions There is no information about the levels of HAPs and PAHs that would surround this plant and or changes that would happen with distance. Additionally, this plant will be producing hot asphalt which is a toxic chemical product, it is only nontoxic when it is fully hardened and not releasing toxic fumes OSHA has a section on asphalt (Bitumen) fumes and explains that when exposed to this petroleum product, health effects from exposure include headache, skin rash, sensitization, fatigue, reduced appetite, throat and eye irritation, cough, and cancer.

Pregnant women and children are the most susceptible to breathing these known HAPs and PAHs. The American Journal of Obstetrics studies revealed that PAHs, can be found in the placenta and exposure is associated with adverse pregnancy outcomes. The CDC has found an association between Benzene and spina bifida during maternal exposure Formaldehyde is a known carcinogen, and according to the National Library of Medicine is linked to spontaneous abortions, congenital malformations, and premature birth. Children face more risks from toxic chemical pollution because they have a faster breathing rate which leads to absorbing more toxic chemicals than adults and are outside for longer periods of time.

This batch asphalt plant produces and curates' toxic chemicals. The planning board should not approve this plan due to the production and curating setback of 2,640 feet There is no variance for this specific setback

Wellington has ample space and there is absolutely no reason this plant should be active so close to the neighborhoods of the town.

Thanks for your consideration,
David Perricone
6601 Viburnum St
Wellington, CO 80549

Public Comments
Received 2pm-5pm - 3-6-2023

Public Comments
Received 2pm-5pm - 3-6-2023

From: Brickey - CDPHE, Jonathan jonathan.brickey@state.co.us
Subject: Questions on asphalt plant pollutant emission
Date: Jan 6, 2023 at 2:58:33 PM
To: ayla.leistikow@gmail.com
Cc: cdphe_toxcall - CDPHE, CDPHE cdphe_toxcall@state.co.us

Ayla,

My name is Jonathan Brickey, and I'm a unit supervisor with the Colorado Air Pollution Control Division. You had submitted some questions about asphalt plants, and I believe I can help with at least one: "Do batch asphalt plants process and curate toxic chemicals?"

While there is no state definition of "toxic chemicals" specifically, we do regulate Hazardous Air Pollutants (HAPs), which are defined in our regulations as:

"[A]ir pollutant that presents through inhalation or other routes of exposure, a threat of adverse human health effects (including, but not limited to, substances that are known to be, or may reasonably be anticipated to be carcinogenic, mutagenic, teratogenic, neurotoxic, that cause reproductive dysfunction, or that are acutely or chronically toxic) or adverse environmental effects whether through ambient concentrations, bioaccumulation, deposition, or otherwise and that has been listed pursuant to Section 112 of the Federal Act, or Section 25-7-109.3 of the state Act."

When it comes to asphalt plants, the main HAPs emitted into the air are formaldehyde, acetaldehyde, and benzene, toluene, ethylbenzene and xylene (collectively known as BTEX), along with smaller amounts of other HAPs.

The exact amount of projected HAPs emissions depends on the type of asphalt plant and what type of fuel is burned by the plant. Projected emissions are based on "emission factors", which are multiplied by the total amount of produced asphalt to estimate the emission rate. Here's a table of HAP emission factors used for

Public Comments
Received 2pm-5pm - 3-6-2023

asphalt production:

		HAP Emission Factors (lb HAP/ton of asphalt produced)							
Plant Type	Fuel	Formaldehyde	Acetaldehyde	Benzene	Toluene	Ethylbenzene	Xylene	Quinone	Hexane
Batch Mix	Natural Gas	0.00074	0.00032	0.00028	0.001	0.0022	0.0027	0.00027	ND
Batch Mix	Diesel Fuel Oil	0.00074	0.00032	0.00028	0.001	0.0022	0.0027	0.00027	ND
Batch Mix	Waste Oil	0.00074	0.00032	0.00028	0.001	0.0022	0.0027	0.00027	ND
Drum Mix	Natural Gas	0.0031	ND	0.00039	0.00015	0.00024	0.0002	ND	0.00092
Drum Mix	Diesel Fuel Oil	0.0031		0.00039	0.0029	0.00024	0.0002		0.00092
Drum Mix	Waste Oil	0.0031	0.0013	0.00039	0.0029	0.00024	0.0002	0.00016	0.00092

(From AP-42 Chapter 11.1, available here)

For example, if a batch mix asphalt plant operating on natural gas produces 500,000 tons of asphalt, they will emit:

500,000 tons asphalt x 0.00074 lb formaldehyde/ton asphalt =
370 lbs of formaldehyde

I can't speak to the specific adverse health effects of each HAP, but I'm sure CDPHE's Toxicology and Environmental Epidemiology Office can better assist with those questions. In general, it's safe to say that toxic substances can impact your health, but whether they can harm you depends on what you're exposed to, how you're exposed, how much, how long, and how often you are exposed. For specifics, I recommend you reach out to their office directly at cdphe_toxcall@state.co.us or (303)692-2606. You can also access their office's website here.

Thanks,

Jonathan Brickey, P.E. *(he/him)*
Construction Permitting Unit Supervisor
Construction Permitting Unit II

COLORADO
Air Pollution Control Division
Department of Public Health & Environment

Public Comments
Received 2pm-5pm - 3-6-2023

From: cdphe_toxcall - CDPHE, CDPHE cdphe_toxcall@state.co.us
Subject: Re: Asphalt batch plant
Date: Jan 12, 2023 at 1:47:07 PM
To: Ayla Leistikow ayla.leistikow@gmail.com

Ayla,

Thanks so much for contacting us, we have some information to answer the questions you have asked.

1. What are the adverse health effects of the main asphalt plant HAPs (formaldehyde, acetaldehyde, benzene, toluene, ethylbenzene, and xylene.)?

This EPA resource- Health Effects Notebook for Hazardous Air Pollutants - has fact sheets on each of the HAPs you listed above. **Keep in mind that any kind of health effect is dependent on:**

- **what you are exposed to**
- **how you are exposed**
- **how much, how long, and how often you are exposed**

Also, not everyone has the same risk. Age, gender, genetics, lifestyle, and other factors play a role in how exposure to a toxic substance impacts health.

2. Do asphalt plants release PAHs? If so, what are the adverse health effects?

PAHs are found in asphalt and would be emitted during operations at an asphalt plant. The Agency for Toxic Substances and Disease Registry (ATSDR) has a fact sheet on PAHs. Again, the risks someone might face from PAHs are dependent on all the factors described above.

3. How far can the HAPs (also PAHs if applicable) be detected from the asphalt plant?
Current regulations for batch mix asphalt plants only assess particulate matter emissions, so we don't have information about the levels of HAPs/PAHs expected surrounding a facility like this or how that changes with distance. Currently, our Air Pollution Control Division includes reportable amounts of HAPs in the permits and operators pay fees based on these amounts. Recent regulations have focused more attention on air toxics in Colorado, to find out more please see our air toxics website and join our air toxics mailing list.

Thank you,
Mallory

--
TOXCALL

Public Comments
Received 2pm-5pm - 3-6-2023

Toxicology and Environmental Epidemiology Office
Colorado Department of Public Health and Environment

P 303.692.2606 | F 303.728.0904
4300 Cherry Creek Drive South, Denver, CO 80246
cdphe_toxcall@state.co.us | www.colorado.gov/cdphe

On Mon, Jan 9, 2023 at 2:48 PM Ayla Leistikow <ayla.leistikow@gmail.com> wrote:
Hello,
I have questions regarding batch mix asphalt plant operating off gas.

1. What are the adverse health affects of the main asphalt plant HAPs (formaldehyde, acetaldehyde, benzene, toluene, ethylbenzene, and xylene.)?

2. Do asphalt plants release PAHs? If so what are the adverse health affects?

3. How far can the HAPs (also PAHs if applicable) be detected from the asphalt plant?

Thank you so much for taking the time to answer my questions.

Thanks,
Ayla

Public Comments
Received 2pm-5pm - 3-6-2023

RE: Asphalt Plant

Jeff Meyer <[redacted]
Mon 3/6/2023 1:53 PM
To: Cody Bird <birdca@wellingtoncolorado.gov>

Alrighty Thank you
I am a resident of Buffalo Creek.

JEFF MEYER
Senior Production Scheduler
970-215-5034
jmeyer@newbelgium.com

NEW BELGIUM. BREWING

From: Cody Bird <birdca@wellingtoncolorado.gov>
Sent: Monday, March 6, 2023 1:18 PM
To: Jeff Meyer <[redacted]
Subject: Re: Asphalt Plant

*** Please be mindful of security when opening external emails. Contact IT Support if unsure! ***

Thank you for the reply. It would be helpful if the person(s) desiring to send the comments sent from their email just to avoid the confusion. As I mentioned in my prior email, it would also be useful to understand the context in which the individuals are sending the comments (resident, business, or other relationship to Wellington)

Thank you for your understanding and thank you for providing feedback on this application case.

TOWN OF WELLINGTON

Cody Bird, AICP
Planning Director

Town of Wellington
(970) 568-3554
birdca@wellingtoncolorado.gov
wellingtoncolorado.gov

From: Jeff Meyer <[redacted]>
Sent: Monday, March 6, 2023 12:30 PM
To: Cody Bird <birdca@wellingtoncolorado.gov>
Subject: RE: Asphalt Plant

Hello Cody,

Public Comments
Received 2pm-5pm - 3-6-2023

Dave sent it to me and I sent it your way If it needs to come from his email I can ask him to do so

---

From: Cody Bird <birdca@wellingtoncolorado.gov>
Sent: Monday, March 6, 2023 12:19 PM
To: Jeff Meyer <[redacted]>
Subject: Re: Asphalt Plant

*** Please be mindful of security when opening external emails. Contact IT Support if unsure! ***

Hello,

Thank you for the correspondence I have received your email and will include it in the information provided to the Planning Commission.

I received a similar email twice from jmeyer@newbelgium.com - one has a signature block for Jeff Meyer, the second says David Perricone Just seeking clarification for whom is sending each since they appear to be from the same email address. It would also be useful if you could include your property address and identify if you are a Town of Wellington resident, business owner or other.

Kind regards,

TOWN OF WELLINGTON

Cody Bird, AICP
Planning Director

Town of Wellington
(970) 568-3554
birdca@wellingtoncolorado.gov
wellingtoncolorado.gov

From: Jeff Meyer <[redacted]>
Sent: Monday, March 6, 2023 12 09 PM
To: Cody Bird <birdca@wellingtoncolorado.gov>
Subject: Asphalt Plant

Dear Planning Board,

The intent of this letter is to bring attention to the land use code 4 03 21,B, 1 It states that any Industrial or Manufacturing, Heavy use producing and curating toxic chemicals or conducting animal slaughtering shall be located at least 2,640 feet from any residential district, religious land use, medical care facility, or school The town has due diligence to find the correct unbiased research and data to make sure the land use code is properly followed What research and data were used to make the decision that this Heavy Industrial Batch (hot) Asphalt Plant does not meet the criteria for producing and curating toxic chemicals?

I contacted the Colorado Health Department to answer my questions and those answers conflict with decisions made by the town Batch Asphalt plants do produce, discharge and curate toxic chemicals in the forms of HAPs and PAHs. The Colorado Health Department describes these toxic chemicals as Hazardous Air Pollutants (HAPs). The main HAPs are Formaldehyde, Acetaldehyde, Benzene, Toluene, Ethylbenzene, and Xylene I also found that Hydrogen Sulfide, Chromium, Cadmium, and Arsenic can also be found as toxic pollutants at various levels in asphalt plant emissions The town can even calculate how many pounds of formaldehyde this plant will produce

Public Comments
Received 2pm-5pm - 3-6-2023

and discharge in an area that has a Community Park, neighborhoods, Library, and 2 Schools If this plant uses recycled asphalt, it can emit higher levels of HAPs and PAHs due to the recycled asphalt composition.

According to the Toxicology and Environmental Epidemiology Department of the Colorado Department of Public Health and Environment, current regulations for this type of asphalt plant only assess particulate matter emissions. There is no information about the levels of HAPs and PAHs that would surround this plant and or changes that would happen with distance Additionally, this plant will be producing hot asphalt which is a toxic chemical product, it is only nontoxic when it is fully hardened and not releasing toxic fumes. OSHA has a section on asphalt (Bitumen) fumes and explains that when exposed to this petroleum product, health effects from exposure include headache, skin rash, sensitization, fatigue, reduced appetite, throat and eye irritation, cough, and cancer

Pregnant women and children are the most susceptible to breathing these known HAPs and PAHs The American Journal of Obstetrics studies revealed that PAHs, can be found in the placenta and exposure is associated with adverse pregnancy outcomes The CDC has found an association between Benzene and spina bifida during maternal exposure. Formaldehyde is a known carcinogen, and according to the National Library of Medicine is linked to spontaneous abortions, congenital malformations, and premature birth Children face more risks from toxic chemical pollution because they have a faster breathing rate which leads to absorbing more toxic chemicals than adults and are outside for longer periods of time

This batch asphalt plant produces and curates' toxic chemicals The planning board should not approve this plan due to the production and curating setback of 2,640 feet. There is no variance for this specific setback.

Thanks for your consideration,
David Perricone

Public Comments
Received 2pm-5pm - 3-6-2023

Re: Asphalt Plant in Wellington

Amanda Barry <[redacted]>
Mon 3/6/2023 2:08 PM
To: Cody Bird <birdca@wellingtoncolorado.gov>

Cody,

I apologize for this email not being any more eloquent or detailed than I'd like it to be, but I am just now seeing the notice of today's town planning meeting about the proposed hot asphalt plant behind Wellington Community Park, and I don't have time to articulate all of which I'd like to express by the 3pm deadline. It's important to me to at least quickly express that my wife and I do not support having said asphalt plant here, or anywhere else nearby that isn't REMOTE.

To keep it direct, our main reasons are exactly what is listed on this flyer that was left at our door. The health impact, air and noise pollution, loss of property value, etc. Literally everything laid out on this flyer is what we would argue if we were able to attend the town meeting.

Last year alone, I was floored at how many Air Quality warnings and notices we got for Wellington as the climate currently stands. We do not need anything else adding to the cause of the preexisting conditions.

My wife and I don't have any children of our own, but there are a number of children in our housing community that ACTUALLY play outside, riding bikes, scooters, and running around. They play at the park that will be directly impacted by this asphalt plant. That's a lot of lungs, breathing a lot of air, that will breathe in a lot of unnecessary toxins if this plant starts up. Additionally, when our nieces and nephews visit, we will be very uncomfortable having them run around outside, and won't want to bring them to that park. We also have outdoor animals that we'd prefer breathe the cleanest air possible.

For the sake of, and well being of, all humans, animals, and our planet, we respectfully demand that this plant be forbidden from operating in our town.

Please let us know if there is anything else we can do. Thank you for your time.

Infinitely,

Amanda Barry and Ashley Cummings
Residents of Wellington, CO

P.S. How can I keep myself up to date with this? Will there be reports published that I can access to follow the progress?

Public Comments
Received 2pm-5pm - 3-6-2023

To Voice STRONG OPPOSITION TO: Proposed Hot Asphalt Plant Behind Wellington Community Park

Larry Rice <[redacted]>

Mon 3/6/2023 1:43 PM

To Cody Bird <birdca@wellingtoncolorado gov>
Cc: Shirrell Tietz <tietzs@wellingtoncolorado.gov>;David Wiegand <wiegandd@wellingtoncolorado.gov>;Brian Mason <masonb@wellingtoncolorado.gov>;Jon Gaiter <gaiterjm@wellingtoncolorado.gov>;Rebekka Dailey <daileyrm@wellingtoncolorado.gov>;Calar Chaussee <chausseec@wellingtoncolorado.gov>

Dear Mr. Bird,

Simply and to the point, we are two Wellington residents who reside and each own homes in Buffalo Creek subdivision to the west of the proposed Hot Asphalt Plant that is being considered for construction behind Wellington Community Park. Individually, we want to express in the strongest means possible that we oppose any such development in our community! Why? It plain terms that anyone can understand: IT STINKS! The smell, full of toxic gases and emissions. The eyesore (really, does anyone want to look out and see this ugly construction site?). The increased in heavy truck traffic within our town (as if we need any MORE traffic). The reduction in property values (who would like to have their home situated downwind of the asphalt fumes?). Noise pollution (yes, there are residents of Wellington who appreciate its small-town tranquility).

And why is this hot asphalt plan even being considered to be located in Wellington? Hmmm….let's think about that for a second. Money? Greed? Short-sighted, ill-informed thinking? All of the above? We think "all of the above."

We implore you, Mr. Bird, and the rest of the town trustees, including the mayor, to stop this ill-conceived idea from going any further. Do NOT allow this asphalt plan to be situated anywhere within Wellington. Not only for us current residents, but for those who might want to call Wellington their home in the future. It's just a plain bad idea that should have never have been considered in the first place. It's time to stop it now. Wellington does not need it. We do not need it!

Thanks you for your time and consideration. Please do the right thing.

Sincerely,

Larry Rice
Jim Raymond

Buffalo Creek Estates

Public Comments
Received Prior to 2pm - 3-6-2023

Asphalt Plant

Mary Kerin <[redacted]>
Fri 3/3/2023 2:32 PM
To: Cody Bird <birdca@wellingtoncolorado.gov>

Dear Cody,

I am hoping that you and the other Trustees will say no to the asphalt plant. It is too much of a health risk to the park, the town and the nearby residents. Thank you for your consideration.

James Kerin

Public Comments
Received Prior to 2pm - 3-6-2023

FW: Disappointed to say the least

Patti Garcia <garciapa@wellingtoncolorado.gov>
Mon 3/6/2023 9:44 AM
To: [redacted] <[redacted]>
Cc: Cody Bird <birdca@wellingtoncolorado.gov>

Hi Rachel –

The Planning Commission has the site plan for the Connell Asphalt Plant on their agenda on Monday night. Appeals of decisions made by the Planning Commission are made to the Board of Trustees so the Mayor and Trustees are not permitted to comment on this item as it could be considered ex-parte communications if there is an appeal.

I wanted to respond to you so that you understood why the Mayor or Trustees did not respond to your email.

Patti

TOWN OF WELLINGTON

Patti Garcia
Town Administrator
Mobile: (970) 473-6033
Email: garciapa@wellingtoncolorado.gov
Web: www.wellingtoncolorado.gov
8225 3rd Street, Wellington, CO 80549

Begin forwarded message:

From: Rachel Hayes <[redacted]
Date: March 5, 2023 at 12:09:12 MST
To: Shirrell Tietz <tietzs@wellingtoncolorado.gov>, David Wiegand <wiegandd@wellingtoncolorado.gov>, Brian Mason <masonb@wellingtoncolorado.gov>, dailerrm@wellingtoncolorado.gov, Calar Chaussee <chausseec@wellingtoncolorado.gov>, Cody Bird <birdca@wellingtoncolorado.gov>
Subject: Disappointed to say the least

Hi
My family and I moved here to Wellington because it was small and not too populated 3 years ago. Now we are highly disappointed with the towns increase in size, expansion and attempts to allow Marijuana growers and now an asphalt plant in our backyard. LITERALLY!
very sad and now we were just made aware (today/Sunday)of a meeting tomorrow Monday evening to discuss this further.

It's something that would make us sell and try to leave before it's complete as that is not where we want to raise our family/kids... we also have a school that was build near our homes out of convenience even though there are three plus school buildings. Now the elementary schools are separated making it so our kids DO NOT go to school near our house because it makes no sense to have our daughter go to school at one school for a couple of years then transfer to another school building and then a couple more years to a middle school / high school where our 6th grader would

Public Comments
Received Prior to 2pm - 3-6-2023

join high school kids
Very disappointing… hoping this does not happen as again we would be forced out of this small town so you can enjoy the money and new building and construction site you want
Thanks
Rachel Hayes , LPC

Sent from my iPhone

Public Comments
Received Prior to 2pm - 3-6-2023

Asphalt Plant Packet

Ayla Leistikow <[redacted]>
Fri 3/3/2023 7:30 AM
To: Cody Bird <birdca@wellingtoncolorado.gov>;Paul Whalen <whalenp@wellingtoncolorado.gov>

7 attachment (3 MB)
planningboard.pdf; Pub@hem.pdf; COMPOUND SUMMARY.pdf; and Dboase Rogistry.pdf; From cdphe_toxcall - CDPHE, CDPHE cdphe_toxcall@state.co.us.pdf; From Brickey - CDPHE, Jonathan jonathan.brickey@state.co.us.pdf; Health Risks Associated With Benzene Exposure in.pdf;

Cody,

Please add this attached letter and documents to the Connell Asphalt Plant packet. Let me know if you have any questions.

Thanks,
Ayla

Public Comments
Received Prior to 2pm - 3-6-2023

Dear Planning Board,

The intent of this letter is to bring attention to the land use code 4.03.21,B, 1. It states that any Industrial or Manufacturing, Heavy use producing and curating toxic chemicals or conducting animal slaughtering shall be located at least 2,640 feet from any residential district, religious land use, medical care facility, or school. The town has a due diligence to find the correct unbiased research and data to make sure the land use code is properly followed. What research and data were used to make the decision that this Heavy Industrial Batch (hot) Asphalt Plant does not meet the criteria for producing and curating toxic chemicals?

I contacted the Colorado Health Department to answer my questions and those answers conflict with decisions made by the town. Batch Asphalt plants do produce, discharge and curate toxic chemicals in the forms of HAPs and PAHs. The Colorado Health Department describes these toxic chemicals as Hazardous Air Pollutants (HAPs). The main HAPs are Formaldehyde, Acetaldehyde, Benzene, Toluene, Ethylbenzene, and Xylene. I also found that Hydrogen Sulfide, Chromium, Cadmium, Arsenic can also be found as toxic pollutants at various levels in asphalt plant emissions. The town can even calculate how many pounds of formaldehyde this plant will produce and discharge in an area that has a Community Park, neighborhoods, Library and 2 Schools. If this plant uses any recycled asphalt, it can emit higher levels of HAPs and PAHs due to the recycled asphalt composition.

According to the Toxicology and Environmental Epidemiology Department of the Colorado Department of Public Health and Environment, current regulations for this type of asphalt plant only assess particulate matter emissions. There is no information about the levels of HAPs and PAHs that would surround this plant and or changes that would happen with distance. Additionally, this plant will be producing hot asphalt which is a toxic chemical product, it is only nontoxic when it is fully hardened and not releasing toxic fumes. OSHA has a section on asphalt (Bitumen) fumes and explains that when exposed to this petroleum product, health effects from exposure include headache, skin rash, sensitization, fatigue, reduced appetite, throat and eye irritation, cough, and cancer.

Pregnant women and children are the most susceptible to breathing these known HAPs and PAHs. The American Journal of Obstetrics studies revealed that PAHs, can be found in the placenta and exposure is associated with adverse pregnancy outcomes. The CDC has found an association with Benzene and spina bifida during maternal exposure. Formaldehyde is a known carcinogen, and according to the National Library of Medicine is linked to spontaneous abortions, congenital malformations, and premature birth. Children face more risks from toxic chemical pollution because they have a faster breathing rate which leads to absorbing more toxic chemicals than adults, and are outside for longer periods of time.

This batch asphalt plant produces and curates toxic chemicals. The planning board should not approve this plan due to the producing and curating setback of 2,640 feet. There is no variance for this specific setback.

Thanks for your consideration,
Ayla Leistikow

Public Comments
Received Prior to 2pm - 3-6-2023

From: Brickey - CDPHE, Jonathan jonathan.brickey@state.co.us
Subject: Questions on asphalt plant pollutant emission
Date: Jan 6, 2023 at 2:58:33 PM
To: [redacted]
Cc: cdphe_toxcall - CDPHE, CDPHE cdphe_toxcall@state.co.us

Ayla,

My name is Jonathan Brickey, and I'm a unit supervisor with the Colorado Air Pollution Control Division. You had submitted some questions about asphalt plants, and I believe I can help with at least one: "Do batch asphalt plants process and curate toxic chemicals?"

While there is no state definition of "toxic chemicals" specifically, we do regulate Hazardous Air Pollutants (HAPs), which are defined in our regulations as:

"[A]ir pollutant that presents through inhalation or other routes of exposure, a threat of adverse human health effects (including, but not limited to, substances that are known to be, or may reasonably be anticipated to be carcinogenic, mutagenic, teratogenic, neurotoxic, that cause reproductive dysfunction, or that are acutely or chronically toxic) or adverse environmental effects whether through ambient concentrations, bioaccumulation, deposition, or otherwise and that has been listed pursuant to Section 112 of the Federal Act, or Section 25-7-109.3 of the state Act."

When it comes to asphalt plants, the main HAPs emitted into the air are formaldehyde, acetaldehyde, and benzene, toluene, ethylbenzene and xylene (collectively known as BTEX), along with smaller amounts of other HAPs.

The exact amount of projected HAPs emissions depends on the type of asphalt plant and what type of fuel is burned by the plant. Projected emissions are based on "emission factors", which are multiplied by the total amount of produced asphalt to estimate the emission rate. Here's a table of HAP emission factors used for

asphalt production:

		HAP Emission Factors (lb HAP/ton of asphalt produced)							
Plant Type	Fuel	Formaldehyde	Acetaldehyde	Benzene	Toluene	Ethylbenzene	Xylene	Quinone	Hexane
Batch Mix	Natural Gas	0.00074	0.00032	0.00028	0.001	0.0022	0.0027	0.00027	ND
Batch Mix	Diesel Fuel Oil	0.00074	0.00032	0.00028	0.001	0.0022	0.0027	0.00027	ND
Batch Mix	Waste Oil	0.00074	0.00032	0.00028	0.001	0.0022	0.0027	0.00027	ND
Drum Mix	Natural Gas	0.0031	ND	0.00039	0.00015	0.00024	0.0002	ND	0.00092
Drum Mix	Diesel Fuel Oil	0.0031		0.00039	0.0029	0.00024	0.0002		0.00092
Drum Mix	Waste Oil	0.0031	0.0013	0.00039	0.0029	0.00024	0.0002	0.00016	0.00092

(From AP-42 Chapter 11.1, available here)

For example, if a batch mix asphalt plant operating on natural gas produces 500,000 tons of asphalt, they will emit:

500,000 tons asphalt x 0.00074 lb formaldehyde/ton asphalt =
370 lbs of formaldehyde

I can't speak to the specific adverse health effects of each HAP, but I'm sure CDPHE's Toxicology and Environmental Epidemiology Office can better assist with those questions. In general, it's safe to say that toxic substances can impact your health, but whether they can harm you depends on what you're exposed to, how you're exposed, how much, how long, and how often you are exposed. For specifics, I recommend you reach out to their office directly at cdphe_toxcall@state.co.us or (303)692-2606. You can also access their office's website here.

Thanks,

Jonathan Brickey, P.E. *(he/him)*
Construction Permitting Unit Supervisor
Construction Permitting Unit II

COLORADO
Air Pollution Control Division
Department of Public Health & Environment

Public Comments
Received Prior to 2pm - 3-6-2023

From: cdphe_toxcall - CDPHE, CDPHE cdphe_toxcall@state.co.us
Subject: Re: Asphalt batch plant
Date: Jan 12, 2023 at 1:47:07 PM
To: Ayla Leistikow [redacted]

Ayla,

Thanks so much for contacting us, we have some information to answer the questions you have asked.

1. What are the adverse health effects of the main asphalt plant HAPs (formaldehyde, acetaldehyde, benzene, toluene, ethylbenzene, and xylene.)?

This EPA resource- Health Effects Notebook for Hazardous Air Pollutants - has fact sheets on each of the HAPs you listed above. **Keep in mind that any kind of health effect is dependent on:**

- **what you are exposed to**
- **how you are exposed**
- **how much, how long, and how often you are exposed**

Also, not everyone has the same risk. Age, gender, genetics, lifestyle, and other factors play a role in how exposure to a toxic substance impacts health.

2. Do asphalt plants release PAHs? If so, what are the adverse health effects?

PAHs are found in asphalt and would be emitted during operations at an asphalt plant. The Agency for Toxic Substances and Disease Registry (ATSDR) has a fact sheet on PAHs. Again, the risks someone might face from PAHs are dependent on all the factors described above.

3. How far can the HAPs (also PAHs if applicable) be detected from the asphalt plant?
Current regulations for batch mix asphalt plants only assess particulate matter emissions, so we don't have information about the levels of HAPs/PAHs expected surrounding a facility like this or how that changes with distance. Currently, our Air Pollution Control Division includes reportable amounts of HAPs in the permits and operators pay fees based on these amounts. Recent regulations have focused more attention on air toxics in Colorado, to find out more please see our air toxics website and join our air toxics mailing list.

Thank you,
Mallory

--
TOXCALL

Public Comments
Received Prior to 2pm - 3-6-2023

Toxicology and Environmental Epidemiology Office
Colorado Department of Public Health and Environment

P 303.692.2606 | F 303.728.0904
4300 Cherry Creek Drive South, Denver, CO 80246
cdphe_toxcall@state.co.us | www.colorado.gov/cdphe

On Mon, Jan 9, 2023 at 2:48 PM Ayla Leistikow <ayla.leistikow@gmail.com> wrote:
Hello,
I have questions regarding batch mix asphalt plant operating off gas.

1. What are the adverse health affects of the main asphalt plant HAPs (formaldehyde, acetaldehyde, benzene, toluene, ethylbenzene, and xylene.)?

2. Do asphalt plants release PAHs? If so what are the adverse health affects?

3. How far can the HAPs (also PAHs if applicable) be detected from the asphalt plant?

Thank you so much for taking the time to answer my questions.

Thanks,
Ayla

Public Comments
Received Prior to 2pm - 3-6-2023

PubChem

COMPOUND SUMMARY

Benzene

Cite Download

PubChem CID

241

Structure

2D 3D Crystal

Find Similar Structures

Chemical Safety

Flammable Irritant Health Hazard

Laboratory Chemical Safety Summary (LCSS) Datasheet

Molecular Formula

C_6H_6

Synonyms

benzene
benzol
71-43-2
Cyclohexatriene
benzole

More...

Molecular Weight

78.11

Dates

Modify	Create
2023-01-07	2004-09-16

Public Comments
Received Prior to 2pm - 3-6-2023

Description

Benzene is a clear, colorless, highly flammable and volatile, liquid aromatic hydrocarbon with a gasoline-like odor. Benzene is found in crude oils and as a by-product of oil-refining processes. In industry benzene is used as a solvent, as a chemical intermediate, and is used in the synthesis of numerous chemicals. Exposure to this substance causes neurological symptoms and affects the bone marrow causing aplastic anemia, excessive bleeding and damage to the immune system. Benzene is a known human carcinogen and is linked to an increased risk of developing lymphatic and hematopoietic cancers, acute myelogenous leukemia, as well as chronic lymphocytic leukemia. (NCI05)

▸ NCI Thesaurus (NCIt)

Benzene is a colorless liquid with a sweet odor. It evaporates into the air very quickly and dissolves slightly in water. It is highly flammable and is formed from both natural processes and human activities. Benzene is widely used in the United States; it ranks in the top 20 chemicals for production volume. Some industries use benzene to make other chemicals which are used to make plastics, resins, and nylon and synthetic fibers. Benzene is also used to make some types of rubbers, lubricants, dyes, detergents, drugs, and pesticides. Natural sources of benzene include volcanoes and forest fires. Benzene is also a natural part of crude oil, gasoline, and cigarette smoke.

▸ CDC-ATSDR Toxic Substances Portal

Benzene appears as a clear colorless liquid with a petroleum-like odor. Flash point less than 0 °F. Less dense than water and slightly soluble in water. Hence floats on water. Vapors are heavier than air.

▸ CAMEO Chemicals

Contents

1 Structures
2 Names and Identifiers
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13 Toxicity
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Public Comments
Received Prior to 2pm - 3-6-2023

> Glob Pediatr Health. 2018 Aug 17;5:2333794X18789275. doi: 10.1177/2333794X18789275. eCollection 2018.

Health Risks Associated With Benzene Exposure in Children: A Systematic Review

Mark A D'Andrea [1], G Kesava Reddy [1]

Affiliations

PMID: 30148190 PMCID: PMC6100118 DOI: 10.1177/2333794X18789275

Free PMC article

Abstract

Currently, there is a paucity of studies evaluating the adverse health effects of benzene exposure in children or clinical findings of those children who have been exposed. However, emerging studies show that benzene exposure can cause deleterious health effects in children. The objective of this study was to evaluate and summarize published studies on the adverse health effects of benzene exposure in children. More than 77 articles were examined and only the articles that dealt with adverse health effects on pediatric populations were included in the study. The evaluation of those studies provided current understanding of the health effects of benzene exposure in children. Findings from the currently available studies reveal that benzene exposure is associated with abnormalities in hematologic, hepatic, respiratory, and pulmonary functions in children. Published studies clearly support the need for further assessment of the potential adverse effects of benzene exposure in children, and clinical and laboratory findings of these children.

Keywords: Illness symptoms; benzene poisoning; blood disorders; chemical exposure; health impact; hematological toxicity; hepatotoxicity; pediatric populations; psychological effects; respiratory function.

Figures

Figure 1. A schematic illustration of benzene...

Figure 2. A flow chart illustrating the...

Related information

Public Comments
Received Prior to 2pm - 3-6-2023

PubChem

COMPOUND SUMMARY

Formaldehyde

Cite Download

See also: Paraformaldehyde (related); Formaldehyde Solution (related); Formaldehyde, dimer (related).

PubChem CID

712

Structure

2D 3D Crystal

Find Similar Structures

Chemical Safety

Corrosive Acute Toxic Irritant Health Hazard

Laboratory Chemical Safety Summary (LCSS) Datasheet

Molecular Formula

CH_2O or H_2CO

Synonyms

formaldehyde
formalin
methanal
Paraformaldehyde
50-00-0

More...

Molecular Weight

ATSDR Agency for Toxic Substances and Disease Registry

Cadmium

CAS ID#: 7440-43-9

Affected Organ Systems: Cardiovascular (Heart and Blood Vessels), Developmental (effects during periods when organs are developing), Gastrointestinal (Digestive), Neurological (Nervous System), Renal (Urinary System or Kidneys), Reproductive (Producing Children), Respiratory (From the Nose to the Lungs)

Cancer Classification: Please contact NTP, IARC, or EPA with questions on cancer and cancer classification.

Chemical Classification: Inorganic substances

Summary: Cadmium is a natural element in the earth's crust. It is usually found as a mineral combined with other elements such as oxygen (cadmium oxide), chlorine (cadmium chloride), or sulfur (cadmium sulfate, cadmium sulfide).

All soils and rocks, including coal and mineral fertilizers, contain some cadmium. Most cadmium used in the United States is extracted during the production of other metals like zinc, lead, and copper. Cadmium does not corrode easily and has many uses, including batteries, pigments, metal coatings, and plastics.

Public Comments
Received Prior to 2pm - 3-6-2023

Paul Whalen

From: Ayla Leistikow <[redacted]>
Sent: Friday, March 3, 2023 7:30 AM
To: Cody Bird; Paul Whalen
Subject: Asphalt Plant Packet
Attachments: planningboard.pdf; Pub@hem.pdf; COMPOUND SUMMARY.pdf; and Dboase Rogistry.pdf; From cdphe_toxcall - CDPHE, CDPHE cdphe_toxcall@state.co.us.pdf; From Brickey - CDPHE, Jonathan jonathan.brickey@state.co.us.pdf; Health Risks Associated With Benzene Exposure in.pdf

Cody,

Please add this attached letter and documents to the Connell Asphalt Plant packet. Let me know if you have any questions.

Thanks,
Ayla

Public Comments
Received Prior to 2pm - 3-6-2023

03/06/2023 Town Planning Meeting Asphalt Plant

Daniel Otamendi <[redacted]>

Mon 3/6/2023 12:50 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Good Afternoon Cody,

I am a resident of the Bufflao Creek Community and I am opposed to the Connel Asphalt Plant so near to the Wellington Community Park and our neighborhood. Attached is a document with a few more details.

Thank you,
Daniel Otamendi and Family

Public Comments
Received Prior to 2pm - 3-6-2023

We are the Otamendis, and we reside at 9076 Smoke Signal Way in the Buffalo Creek Community. We are strongly opposed to the placement of the Connell Asphalt Plant.

Batch asphalt plants release Hazardous Air Pollutants (HAPs) and Polycyclic Aromatic Hydrocarbons (PAHs). The Environmental Protection Agency has a Health Effects Notebook for Hazardous Air Pollutants. This notebook contains fact sheets for HAPs released from batch asphalt plants: Benzene, Formaldehyde, Acetaldehyde, Toluene, Ethylbenzene, and Xylene. HAPs are known or suspected to cause cancer or other serious health and environmental effects.

- **Benzene**: Benzene exposure can cause drowsiness, dizziness, headaches, as well as eye, skin, and respiratory tract irritation, and, unconsciousness. Long-term breathing in air (inhalation) containing benzene causes blood disorders. EPA has classified benzene as a known human carcinogen (cancer causing).
- **Formaldehyde**: Short-term and long-term inhalation exposure to formaldehyde can result in respiratory symptoms, and eye, nose, and throat irritation. EPA considers formaldehyde a probable human carcinogen.
- **Acetaldehyde**: Short-term exposure to acetaldehyde results in irritation of the eyes, skin, and respiratory tract. Symptoms of long-term exposure resemble those of alcoholism. Acetaldehyde is considered a probable human carcinogen.
- **Toluene**: Inhalation of toluene can cause fatigue, sleepiness, headaches, and nausea. At high levels of exposure, it can cause Central Nervous System dysfunction, attention deficits, and developmental effects.
- **Ethylbenzene**: Short-term exposure to ethylbenzene results in throat and eye irritation, chest constriction, and neurological effects such as dizziness.
- **Xylene**: Short-term inhalation exposure to xylene results in irritation of the eyes, nose, and throat, gastrointestinal effects, and neurological effects. Long-term inhalation of xylene results in headache, dizziness, fatigue, tremors, and lack of coordination, as well as respiratory, cardiovascular, and kidney effects.

PAHs are found in asphalt and would be emitted during operations at an asphalt plant. The Agency for Toxic Substances and Disease Registry (ATSDR) has a fact sheet on PAHs. The Department of Health and Human Services (DHHS) has determined that some PAHs may be cancer causing.

Current CDPHE regulations for batch mix asphalt plants only assess particulate matter emissions, so the levels of HAPs and PAHs expected surrounding a facility like this or how that changes with distance is unknown.

Health effects are dependent on what you are exposed to, how you are exposed, and how much, how long, and how often you are exposed – residents of the Buffalo Creek community and people visiting the Wellington Community park will be exposed (short and long-term) to these toxic chemicals.

Public Comments
Received Prior to 2pm - 3-6-2023

Letter for the Planning Meeting Tonight

Meghan Molin <[redacted]>
Mon 3/6/2023 12:12 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Cody, can you please ensure that this makes it to the meeting tonight? I cannot attend in public. I wanted to write a letter so that it's in the public record, anyhow.

Thank You!

Public Comments
Received Prior to 2pm - 3-6-2023

To Whom It May Concern:

I am writing out of professional concern for what I see as a lack of standard municipal planning surrounding the approval of the new (proposed) Connell plant in Wellington, Colorado. I am a LEED certified architectural designer, and hold a Bachelors in Environmental Science and a Masters Degree in Architecture. I have worked with local municipalities in a formal manner as a project manager for building projects, and have personally navigated local municipality planning (Fort Collins, Larimer County) processes for projects similar to Connell. I feel confident that Wellington is requiring far less in the planning process than our surrounding municipalities, and that our lack of rigor in requirements for the Connell approval process could potentially lead to public health hazard, or potentially down the road extra work and money for the town.

My main areas of concern can be addressed in the planning phase of this project, but will require a delay in approval of the project. My hope is that by implementing these requirements, Wellington will have a better idea what this project will mean in a short and long-term impact for the site and the town from an environmental standpoint, be better equipped to monitor the industry and potential health hazards, and finally have an appropriate plan for remediation tied directly to the project approval and on record.

First and foremost, a standard almost unilaterally for Industrial projects is an Environmental Impact Study. Often done by a third party to the project, this is a vital resource for Wellington to understand the short and long-term effects of this particular project on this particular site. Other local municipalities would have required it with an application, and it would have been a guide for conversation and a contingency for approval. The Environmental impact study would also be used in drafting the terms of a remediation plan… neither of which Wellington now includes in their process. The danger here is that if an accident occurs, or this project requires extensive remediation, Wellington will likely have to foot the bill. We have a large aquafer beneath our town. Ground water contamination is a very real issue, and should be of utmost priority for the town to protect. Knowing what impact this industry will have on the earth, air, sound and water of the site are of *vital* importance. It will give you real and measurable guardrails to contain this project and its potential impact on our town for years to come. Connell *is* part of a regulated industry. But the industry is regulated *because* there is room for both catastrophic accident regarding hazardous materials, and because there are byproducts from their business that impact public health. If the potential for public disaster did not exist, the industry would not have to be highly regulated.

Which brings me to a second point, and one that Wellington needs to consider. Other municipalities are involved in reviewing reports of the regulated industries. Wellington should not simply trust *any* corporation, entity, or person to be above board operating within acceptable parameters. I reviewed this letter with an architect friend of mine who deals in Industrial projects, and he assured me that his projects are required to send their testing results to both their regulating entities *and* to the municipality where they are housed (Fort Collins requires this, for instance). The municipalities review the data independently (with the help of the guidelines given in their environmental impact study, or procured through the State. Some

research will be needed to determine Wellington's understanding of state, county, and EPA allowances of these readings) and also have a plan of operation written in public record for what steps will be taken if testing doesn't meet that criteria. I would have the same concern on any site simply because this is sound practice, but because of the location of this proposed project—and the fact that the setback variance was allowed to be dropped to eight hundred feet from the closest housing development—there is very little room for error here. There is no buffer. Wellington must not only understand the scope of the contamination that potentially could or *will* develop over time on the site, the spread of potential contaminants in the air, potential contaminants in the water but also must monitor them so that our public that sits *so close* to this site will know the very *moment* something isn't meeting health standard. Assuming any corporation will be this transparent is foolhardy. Wellington must also have a plan of action written and agreed to by Connell that shows a chain of action taken by each entity when or if they become non-compliant. It is also wise to ask for the reporting agencies to copy the town when they conduct their own third-party testing, and not only require the on-site monitoring done by Connell.

Thirdly, and potentially most important from a long-term standpoint, I am alarmed that none of the planning approval documents seem to address remediation as a condition of approval of the project in the planning process. I recently attended the meeting about the county landfill with John Kefalas, and asked specifically who had set the terms of the remediation. In that instance, the State Engineering and State Health Department have set the terms of the remediation and the processes related to it, but my point is: it is in place *before the project is built*. Wellington has *got* to break this cycle of reactionary planning. We need to start thinking forward, and a remediation plan is *vital* to allowing industry to grow in a town that is so close to an aquafer, organic farms, livestock, schools, public parks, libraries, and houses. Historically, corporations and industry have done the absolute *bare minimum* to meet remediation requirements. An environmental impact study will allow you to have quantifiably data to use to set the terms of remediation. Research could—and should be—done to learn the terms of remediation that Connell is meeting in Timnath. Research could—and should—be done to learn what scope proper remediation of asphalt plants have looked like in other Colorado towns just to gain some idea of what best practices is. And then we should tie the approval of this project to some sort of specific agreement of the degree to which the site will be remediated, *including* specifics about testing for contaminants (again, using the environmental impact study to identify what needs to be tested for) with a specific set of criteria Wellington wants met. That criteria may end up being more stringent than EPA standards. The point being, we will have that conversation *before* it is time to remediate.

In my professional opinion, Wellington has an opportunity here to stand up for the health of our natural resources and residents. We have an opportunity to go into this project with eyes wide open to the short and long term impacts it will have on the site and the public health. Wellington can become a better steward and partner in reviewing important data, and a better steward of who we will be in the future. We should not push this project through approvals but I encourage the town of wellington to delay the approval of this project for a minimum of 90 days and vote on adding these items/criteria of approval *to* the planning process. These are not

Public Comments
Received Prior to 2pm - 3-6-2023

small things. I would rather us decide as a town to do things *right* even if they cost more money, make our friends mad, and take more time. Other municipalities have developed these guardrails because educated decisions often make better decisions.

Thank you,
Meghan Molin

Public Comments
Received Prior to 2pm - 3-6-2023

Re: Adjustments Meeting Letter

Cody Bird <birdca@wellingtoncolorado.gov>
Mon 3/6/2023 1:20 PM
To: Dominic Baranyi <[redacted]>

Dominic,

Thank you for the correspondence. I have received your email and will include it in the information provided to the Planning Commission.

Kind regards,

TOWN OF WELLINGTON

Cody Bird, AICP
Planning Director

Town of Wellington
(970) 568-3554
birdca@wellingtoncolorado.gov
wellingtoncolorado.gov

From: Dominic Baranyi <[redacted]>
Sent: Monday, March 6, 2023 12:23 PM
To: Cody Bird <birdca@wellingtoncolorado.gov>
Subject: Re: Adjustments Meeting - Letter

Dominic Baranyi, Finance Committee, 9048 Spirit St in Buffalo Creek -

It is extremely disappointing to be having this meeting tonight with all variance requests green-lit for construction of an Asphalt Plant behind Wellington Community Park. Our options are limited at this point but it's crucial that we are heard during this process. Fair use of land and following existing land codes is one thing, but facilitating variances to a Land Use Code codified recently is deplorable. We actively choose to live in our small town for many reasons, one being that we trust that our local leaders will hear our genuine concerns and do what is right and just for the citizens of Wellington. Building a poisonous asphalt plant that will erode millions of dollars in home equity for the people of Wellington while bringing in no additional revenue for the Town is simply not right. Everyone in Wellington should be concerned about this - our brand new school will be polluted and smell like a combination of manure and asphalt, our Town will not grow to support the cumbersome and expensive Water & Sewer treatment capital projects, and Wellington will be perpetually labeled as a hodunk rest stop on the way to Wyoming. Planning Commission, please, I implore you to find something. Find an "I not dotted" or a "t not crossed," find any technicality or simply find it in your hearts to stop this project at once. Our entire Town is counting on you to do the right thing and to save our brand new school and our neighborhoods from becoming an industrial wasteland.

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Asphalt Plant

brooke musial <[redacted]>

Mon 3/6/2023 10:30 AM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Hi,

I can't make the meeting tonight so I wanted to send this email so that you have another voice. I strongly oppose the asphalt plant being built where they are planning to put it currently here in Wellington. I have a very rare cancer gene and prevention is key for me and I do not want my air quality affected more than it already is here in Wellington. I live in the Buffalo Creek neighborhood. My children play at the community park at the end of our street. We do not want to breathe in the pollution when we go outside our home. Multiple studies have shown that living by an asphalt plant increases your risk for cancer. That is my biggest concern, however I also care about it being an eye sore and my property value. There are plenty of open spaces in the Wellington area that they could use instead that are not right on top of a neighborhood. Thank you for your time.

Brooke Musial

Sent from my iPhone

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Asphalt Plant

Jeffrey Shaw <[redacted]>

Mon 3/6/2023 10:23 AM

To: Cody Bird <birdca@wellingtoncolorado.gov>

My name is Jeff Shaw and I reside in Buffalo Creek. I am definitely opposed to the construction of the Asphalt Plant. Mainly because of the toxic chemicals it will omit into the air. Many of us folks with small children live here in Buffalo Creek, not to mention the 3 schools that will be within 1 mile of the plant. In addition our property values will decrease because of this. I see no benefit to having this plant anywhere near here.

Jeff Shaw

Public Comments
Received Prior to 2pm - 3-6-2023

Asphalt Plant Land Use Code 4.03.21,B,1

catherine lytle <[redacted]>
Mon 3/6/2023 9:15 AM

To: Cody Bird <birdca@wellingtoncolorado.gov>;Shirrell Tietz <tietzs@wellingtoncolorado.gov>;David Wiegand <wiegandd@wellingtoncolorado.gov>;Brian Mason <masonb@wellingtoncolorado.gov>;Jon Gaiter <gaiterjm@wellingtoncolorado.gov>;Rebekka Dailey <daileyrm@wellingtoncolorado.gov>;Calar Chaussee <chausseec@wellingtoncolorado.gov>

Dear Planning Board,

The intent of this letter is to bring attention to the land use code 4.03.21,B, 1. It states that any Industrial or Manufacturing, Heavy use producing and curating toxic chemicals or conducting animal slaughtering shall be located at least 2,640 feet from any residential district, religious land use, medical care facility, or school. The town has due diligence to find the correct unbiased research and data to make sure the land use code is properly followed. What research and data were used to make the decision that this Heavy Industrial Batch (hot) Asphalt Plant does not meet the criteria for producing and curating toxic chemicals?

I contacted the Colorado Health Department to answer my questions and those answers conflict with decisions made by the town. Batch Asphalt plants do produce, discharge, and curate toxic chemicals in the forms of HAPs and PAHs. The Colorado Health Department describes these toxic chemicals as Hazardous Air Pollutants (HAPs). The main HAPs are Formaldehyde, Acetaldehyde, Benzene, Toluene, Ethylbenzene, and Xylene. I also found that Hydrogen Sulfide, Chromium, Cadmium, and Arsenic can also be found as toxic pollutants at various levels in asphalt plant emissions. The town can even calculate how many pounds of formaldehyde this plant will produce and discharge in an area that has a Community Park, neighborhoods, Library, and 2 Schools. If this plant uses recycled asphalt, it can emit higher levels of HAPs and PAHs due to the recycled asphalt composition.

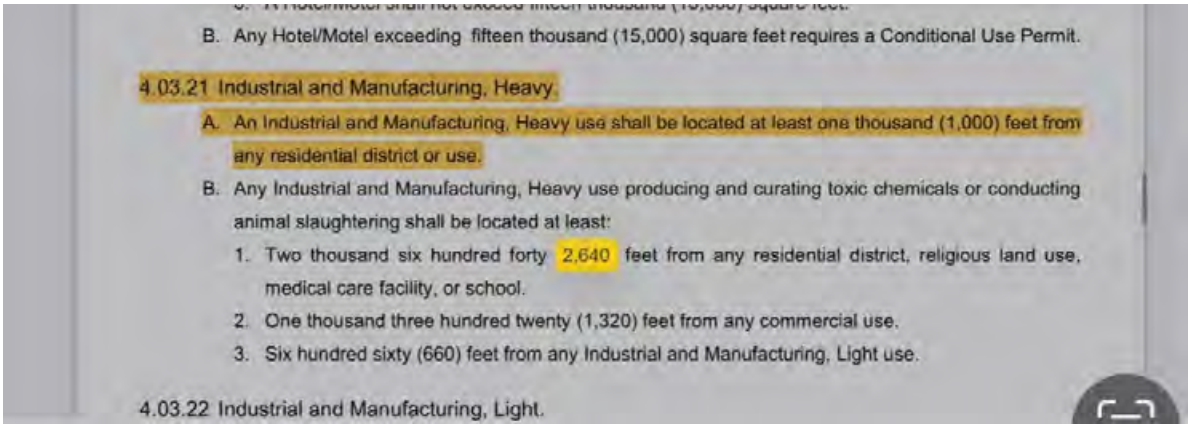
According to the Toxicology and Environmental Epidemiology Department of the Colorado Department of Public Health and Environment, current regulations for this type of asphalt plant only assess particulate matter emissions. There is no information about the levels of HAPs and PAHs that would surround this plant and or changes that would happen with distance. Additionally, this plant will be producing hot asphalt, which is a toxic chemical product, it is only nontoxic when it is fully hardened and not releasing toxic fumes. OSHA has a section on asphalt (Bitumen) fumes and explains that when exposed to this petroleum product, health effects from exposure include headache, skin rash, sensitization, fatigue, reduced appetite, throat and eye irritation, cough, and cancer.

Pregnant women and children are the most susceptible to breathing these known HAPs and PAHs. The American Journal of Obstetrics studies revealed that PAHs, can be found in the placenta and exposure is associated with adverse pregnancy outcomes. The CDC has found an association between Benzene and spina bifida during maternal exposure. Formaldehyde is a known carcinogen, and according to the National Library of Medicine is linked to spontaneous abortions, congenital malformations, and premature birth. Children face more risks from toxic chemical pollution because they have a faster breathing rate which leads to absorbing more toxic chemicals than adults and are outside for longer periods of time.

This batch asphalt plant produces and curates' toxic chemicals. The planning board should not approve this plan due to the production and curating setback of 2,640 feet. There is no variance for this specific setback.

Thanks for your consideration,

Catherine Lytle



B. Any Hotel/Motel exceeding fifteen thousand (15,000) square feet requires a Conditional Use Permit.

4.03.21 Industrial and Manufacturing, Heavy.

A. An Industrial and Manufacturing, Heavy use shall be located at least one thousand (1,000) feet from any residential district or use.

B. Any Industrial and Manufacturing, Heavy use producing and curating toxic chemicals or conducting animal slaughtering shall be located at least:

1. Two thousand six hundred forty 2,640 feet from any residential district, religious land use, medical care facility, or school.
2. One thousand three hundred twenty (1,320) feet from any commercial use.
3. Six hundred sixty (660) feet from any Industrial and Manufacturing, Light use.

4.03.22 Industrial and Manufacturing, Light.

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March 6th Town Planning Meeting

Gary Rightsell <[redacted]>
Mon 3/6/2023 8:36 AM
To: Cody Bird <birdca@wellingtoncolorado.gov>

Hi Cody

My wife and I can NOT make the meeting tonight in person.

We are both AGAINST this proposal for
an ASPHALT PLANT so close to residents!

1) How are they bringing in their chemicals
via the train since they will be building next to the railroad?

2) Seems like the POTENTIAL for another
Ohio Train DERAILMENT NIGHTMARE

3) we will move from Wellington Co
(Buffalo Creek Neighborhood)
if the TOWN MAYOR and its TRUSTEES
approve this REVENUE GRAB called an ASPHALT PLANT !

Cody,
Please feel free to share this w/ meeting if called too!

Thanks for your time!
we would love to read the meeting "minutes" when available?

Gary & Kollette Rightsell
3289 Ambush Dr, Wellington, CO 80549
[redacted]

Public Comments
Received Prior to 2pm - 3-6-2023

Re: Town Planning Meeting for Hot Asphalt Plant

Cody Bird <birdca@wellingtoncolorado.gov>
Mon 3/6/2023 10:58 AM
To: Viss PK <[redacted]>

Kathy and Pete,

Thank you for the correspondence. I have received your email and will include it in the information provided to the Planning Commission.

I hope that you will consider attending the Planning Commission meeting tonight as well to share your comments.

Below are some brief responses to your questions (**in blue**):

Questions:

1. Is this a concluded deal already or is approval still being considered? **Site plans are being considered by the Planning Commission tonight (Monday March 6) at 6:30pm. The Planning Commission will hear the application and public comments at tonight's meeting. The Board of Adjustment has previously approved variances for structure height and setback on October 27, 2022.**
2. What can be done to express our fear for our health if this project goes forward? **The Town has asked for a representative from Larimer County Department of Health and Environment to attend the Planning Commission meeting tonight. County Health, as well as Colorado Department of Public Health and Environment (CDPHE) also require permits and compliance with regulations to operate an asphalt plant. Compliance with applicable County, State and Federal regulations are recommended as requirements of the site plan approval if the site plan is approved.**
3. Is this a permanent structure or just temporary for a specific project? **The applicant is proposing to locate their operations and office here as their primary business location.**

Kind regards,

TOWN OF WELLINGTON

Cody Bird, AICP
Planning Director

Town of Wellington
(970) 568-3554
birdca@wellingtoncolorado.gov
wellingtoncolorado.gov

From: Viss PK <[redacted]>
Sent: Monday, March 6, 2023 9:12 AM
To: Cody Bird <birdca@wellingtoncolorado.gov>
Subject: Town Planning Meeting for Hot Asphalt Plant

Public Comments
Received Prior to 2pm - 3-6-2023

Hello Cody,

We live mid block on the last north street (Iron Horse Way) in Buffalo Creek Our backyard faces north and is adjacent to the cornfield. The plant will be visible to us from our back porch, and our kitchen, living room, bathroom and bedroom windows will be exposed

Comments:

- We're very concerned about the toxic chemicals that the plant will be releasing into the air. Pollution this close to our home is alarming. We are in our 70s, and I have asthma. Any amount of poisonous chemicals in the air can be a deadly trigger for an asthma attack.

- We're worried that this plant will bring down our property values This is our greatest investment and seeing it diminish will be a hardship.

Questions:

1. Is this a concluded deal already or is approval still being considered?
2 What can be done to express our fear for our health if this project goes forward?
3. Is this a permanent structure or just temporary for a specific project?

Thank you for including these comments in the presentation packet for tonight's meeting

Kathy and Pete Visser
3266 Iron Horse Way
Wellington, CO 80549
[redacted]

Public Comments
Received Prior to 2pm - 3-6-2023

FW: Asphalt Plant

Patti Garcia <garciapa@wellingtoncolorado gov>
Mon 3/6/2023 10 00 AM
To: Cody Bird <birdca@wellingtoncolorado.gov>

From Patti Garc a
Sent Fr day March 3 2023 5 25 PM
To [redacted]
Subject FW Asphalt Plant

H Ayla

The Plann ng Comm ss on has the s te plan for the Connell Asphalt Plant on the r agenda on Monday n ght Appeals of dec s ons made by the Plann ng Comm ss on are made to the Board of Trustees so the Mayor and Trustees are not perm tted to comment on th s tem as t could be cons dered e parte commun cations f there s an appeal

I wanted to respond to you so that you understood why the Mayor d d not respond to your ema l

Patti

TOWN OF WELLINGTON

Patti Garcia
Town Administrator
Mobile (970) 473 6033
Email garc apa@wellingtoncolorado gov
Web www well ngtoncolorado gov
8225 3rd Street Well ngton CO 80549

From: Calar Chaussee <chausseec@wellingtoncolorado.gov>
Sent: Friday, March 3, 2023 5:15 PM
To: Patti Garcia <garciapa@wellingtoncolorado gov>
Subject: Fwd: Asphalt Plant

God Bless,
Mayor Chaussee
Ph:(970)652-3261

Begin forwarded message:

From: Ayla Leistikow <[redacted]>
Date: March 3, 2023 at 15:19:12 MST
To: Calar Chaussee <chausseec@wellingtoncolorado.gov>
Subject: Asphalt Plant

Hello!

I am reaching out with concerns regarding the Connell asphalt plant behind the Wellington community park. The planning committee is scheduled to make a decision during their March 6th meeting.

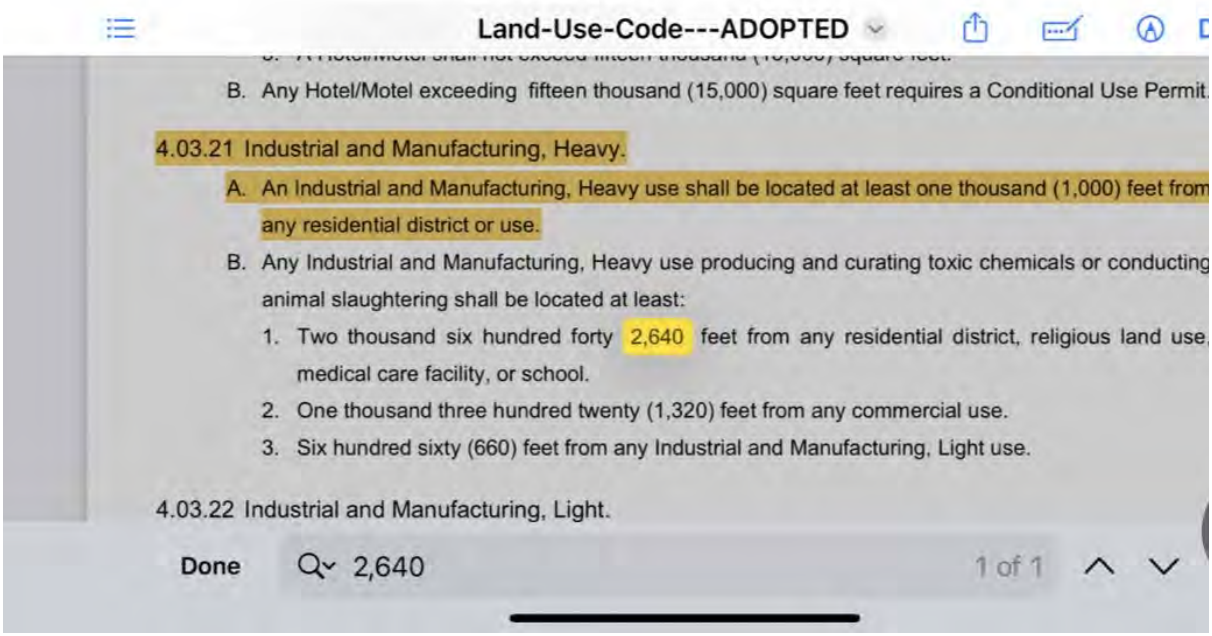
How did the town decide that this heavy industrial plant did not meet the criteria for the land use code for the heavy use, produce and curate setback? No one has been able to give a clear answer. These land use codes are there to protect us and should not be carelessly thrown to the side.

The expectation is that the town should be making these decisions based on research and data from unbiased sources like the Colorado Health Department. Due diligence will also allow the town to be transparent with residents about their decisions. The Colorado Health Department was able to answer my questions, and it conflicts with decisions made by the town.

This town has been burdened by past decisions and the residents have been very clear; we expect better.

Thanks,
Ayla Leistikow

Public Comments
Received Prior to 2pm - 3-6-2023



Public Comments
Received Prior to 2pm - 3-6-2023

FW: Asphalt Plant Land Use Code Violation

Patti Garcia <garciapa@wellingtoncolorado.gov>
Mon 3/6/2023 9:58 AM
To: [redacted] <[redacted]>
Cc: Cody Bird <birdca@wellingtoncolorado.gov>

Hi Maureen –

The Planning Commission has the site plan for the Connell Asphalt Plant on their agenda on Monday night. The email you sent was to the Board of Trustees; the Planning Commission is a separate advisory board and your email will be provided to them. Appeals of decisions made by the Planning Commission are made to the Board of Trustees so the Mayor and Trustees are not permitted to comment on this item as it could be considered ex-parte communications if there is an appeal.

I wanted to respond to you so that you understood why the Mayor and Trustees did not respond to your email.

Patti

TOWN OF WELLINGTON

Patti Garcia
Town Administrator
Mobile: (970) 473-6033
Email: garciapa@wellingtoncolorado.gov
Web: www.wellingtoncolorado.gov
8225 3rd Street, Wellington, CO 80549

From: Maureen Kudola [redacted]
Sent: Sunday, March 5, 2023 9:47 PM
To: Calar Chaussee chausseec@wellingtoncolorado gov
Subject: Fwd: Asphalt Plant Land Use Code Violation

---------- Forwarded message ----------
From **Maureen Kudola** [redacted]
Date: Sunday, March 5, 2023
Subject Asphalt Plant Land Use Code Violation
To: Birdca@wellingtoncolorado.gov
Cc Tietz@wellingtoncolorado gov, wiegandd@wellingtoncolorado gov, gaiterjm@wellingtoncolorado gov, daileyrm@wellingtoncolorado.gov, chausseec@wellingtoncolorado.gov

To the Planning Board,

I would use this letter to ask you to please review Land Use Code 4 03 21,B,1 In regards to the proposed Asphalt Plant site currently under review. For some reason this proposed Asphalt plant is being considered as an Industrial and Manufacturing Heavy Use site that only requires a 1,000' setback from residential areas, rather than an

Public Comments
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Industrial and Manufacturing Heavy use plant that produces and curated toxic chemicals, which A Heavy Industrial Hot Asphalt plant clearly is, and requires a 2,640' setback.

Asphalt plants, according to the Colorado Department of Health, produce toxic chemicals in the form of Hazardous Air Pollutants (HAPs) and PAHs Known contaminants produced include but are not limited to, Formaldehyde, Acetadelhyde, Bensene, Toluene, Ethylbenzene, andXylene. This clearly shows the 1,000' setback proposed by the current site is not sufficient according to the Land Use Code

The entire neighborhood of Buffalo Creek would be effected by this inadequate setback, as well as a much frequented community park, the library and two schools. The chemicals noted by the Colorado Department of Health as being produced by asphalt plants adversely effect all people, but especially children and pregnant women, which surely has to be of utmost concern to this board considering the close proximity of two schools.

OSHA has a section on asphalt fumes that noted health effects range from headache, skin rash, fatigue, throat and eye irritation, cough, and even cancer

And aside from the blatant disregard this proposed site has shown the Land Use Code, and the concern for the health of the Wellington community, home values across Buffalo Creek will be negatively effected.

Given all this information it would be highly irresponsible for the town and committee to move forward with the asphalt plant at the current proposed site

Thank you
Maureen Kudola

Public Comments
Received Prior to 2pm - 3-6-2023

FW: Asphalt Plant

Patti Garcia <garciapa@wellingtoncolorado.gov>
Mon 3/6/2023 10:00 AM
To: Cody Bird <birdca@wellingtoncolorado.gov>

From: Patti Garcia
Sent: Friday, March 3, 2023 5:24 PM
To: [redacted]
Subject: FW: Asphalt Plant

Hi Mary –

The Planning Commission has the site plan for the Connell Asphalt Plant on their agenda on Monday night. Appeals of decisions made by the Planning Commission are made to the Board of Trustees so the Mayor and Trustees are not permitted to comment on this item as it could be considered ex-parte communications if there is an appeal.

I wanted to respond to you so that you understood why the Mayor did not respond to your email.

Patti

TOWN OF WELLINGTON

Patti Garcia
Town Administrator
Mobile: (970) 473-6033
Email: garciapa@wellingtoncolorado.gov
Web: www.wellingtoncolorado.gov
8225 3rd Street, Wellington, CO 80549

From: Calar Chaussee <chausseec@wellingtoncolorado.gov>
Sent: Friday, March 3, 2023 5 14 PM
To: Patti Garcia <garciapa@wellingtoncolorado.gov>
Subject: Fwd Asphalt Plant

God Bless,
Mayor Chaussee
Ph:(970)652 3261

Begin forwarded message

From: Mary Kerin <[redacted]>
Date: March 3, 2023 at 14 31 19 MST

Public Comments
Received Prior to 2pm - 3-6-2023

To: Calar Chaussee chausseec@wellingtoncolorado gov
Subject: Asphalt Plant

Dear Calar,

I am hoping that you and the other Trustees will say no to the asphalt plant. It is too much of a health risk to the park, the town and the nearby residents. Thank you for your consideration.

James Kerin

Public Comments
Received Prior to 2pm - 3-6-2023

Asphalt Plant in Wellington

Chris Wiedeman <[redacted]>
Sun 3/5/2023 12:35 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Hi, this is Chris Wiedeman at 8734 Indian Village Dr. and I wanted to express my thoughts on the asphalt plant. As a homeowner in this community, I felt compelled to point out the dangers of having said plant near our neighborhood. I used to work in the industrial combustion industry in the mid 1990's and asphalt plants were often sites that I had to visit and support to make air/fuel ratio adjustments for proper EPA tuning and emissions. Asphalt plants are typically in very rural areas, where they are not within sight of a neighborhood for many reasons.

"Cons" that will directly have an impact: 1) Constant dust from crushing rocks and conveying materials to the point of **brown-out** conditions that will waft through the neighborhood at all hours of the day, 2) Constant noise from the equipment such as, crushers, conveyors, rotary dryers, oil heaters, material movers, haulers (trucks), alarms (buzzers at 130+ dB), etc. 3) Truck traffic bringing in materials and carrying out completed product for road construction, while spilling material on our roads with each truckload. 4) Various noxious smells and fumes from pollutants and toxic chemicals, causing breathing issues to those with lung problems or health issues. 5) This will be an eyesore that will greatly reduce our home values immediately upon construction.

On the "Pros" side: Absolutely nothing. Nothing beneficial will come to this community by putting this plant in this location. Except, the asphalt company will benefit, I guess.

Please take this into consideration. Thank you.
Chris & Danielle Wiedeman
[redacted]

Public Comments
Received Prior to 2pm - 3-6-2023

Fw: Town Meeting on Asphalt Plant

Paul White <[redacted]>
Sun 3/5/2023 6:36 AM
To: Cody Bird <birdca@wellingtoncolorado.gov>

Thank you for the flyer letting us know about the meeting on this very important subject. I have two comments on the flyer though

1 Although the flyer says when this meeting is, it does not say where it is taking place

2 At the bottom of the flyer it states "or **don't want** to speak at the meeting " Shouldn't it say "or **wants** to speak at the meeting..."?

Paul White (18-year Wellington Buffalo Creek resident)

Public Comments
Received Prior to 2pm - 3-6-2023

Re: Asphalt Plant

Cody Bird <birdca@wellingtoncolorado.gov>
Mon 3/6/2023 10:17 AM
To: Karie Madigan <[redacted]>

Hello Karie and Nick,

Thank you for the correspondence. I have received your email and will include it in the information provided to the Planning Commission. The Commission will receive an email and hard copies of correspondence received prior to the meeting.

While I won't be able to address every one of your questions in great detail, I can respond to a few:

Why does the Town of Wellington feel this proposed location near Buffalo Creek is the best option? **The Town was not involved in identifying or soliciting the proposed applicant or use for this site. The property has been zoned for industrial uses since annexed into the Town in 2000. The owner of the property desires to sell the site, and the applicant, Connell Resources, submitted their application for land use approvals to the Town. The Town is processing the applications following the Town's procedures and standards.**

Why are our concerns (residents) being dismissed? **The Town and Planning Commission desire to hear all resident comments. Land use decisions often include conditions of approval to mitigate potential impacts development of a site may create on adjacent properties. If the Planning Commission approves a site plan, conditions of approval are recommended to address concerns that have been voiced. In addition, there are other County, State and Federal requirements and permits that must be obtained for an asphalt plant to operate. The Town does not have standards or regulations for matters that are regulated by other governmental jurisdictions, and instead relies on those agencies to regulate and enforce those matters.**

Why is there an employee of said asphalt plant on our town board being allowed to vote this in? (I have not done my own research on that, I've heard from neighbors that there is) **I am not aware of any of the Town's Planning Commission that would be voting on this site plan that are employed by the applicant, Connell Resources. I believe there may be a former Board of Trustee member that is employed by the applicant; however, that former Board member is not involved in the vote on this site plan application.**

Why is this the type of revenue the Town of Wellington is looking for? **Similar to the above, the Town is not soliciting this applicant or land use. The application submitted by the applicant is being processed in accordance with the Town's procedures and development standards.**

While the above may not address all of your concerns, I hope that it provides some context to the Town's application procedures and the current application.

I appreciate you sending your comments to staff to include in the Planning Commission's information

Thank you.

Public Comments
Received Prior to 2pm - 3-6-2023

TOWN OF WELLINGTON

Cody Bird, AICP
Planning Director

Town of Wellington
(970) 568-3554
birdca@wellingtoncolorado.gov
wellingtoncolorado.gov

From: Karie Madigan <[redacted]>
Sent: Sunday, March 5, 2023 7:29 PM
To: Cody Bird <birdca@wellingtoncolorado.gov>
Subject: Asphalt Plant

Hello Cody,

Thank you for taking emails regarding the proposed asphalt plant located in Wellington. My husband and I will not be able to attend the Town Planning Meeting tomorrow (3/6/2023 at 6:30pm) and I would like to express our concern for the proposed asphalt plant.

My husband and I own our home located at 8818 Crossfire Drive Wellington. We have resided here since 2014 and enjoy our community and neighborhood. When we learned there was a proposed asphalt plant within our neighborhood it definitely raised concern for our health, well-being and of course our home value. Upon research I've have seen numerous documents stating that one should live approximately 2.5 miles away from an asphalt plant to avoid common pollutants to a human. The pollutants of concern are listed in several articles, research documents and EPA guidelines. A simple google search of heath concerns with an asphalt plant near neighborhoods is as follows: Health effects from exposure to asphalt fumes include headache, skin rash, sensitization, fatigue, reduced appetite, throat and eye irritation, cough, and skin cancer.

My questions are WHY?
Why does the Town of Wellington feel this proposed location near Buffalo Creek is the best option?
Why are our concerns (residents) being dismissed?
Why is there an employee of said asphalt plant on our town board being allowed to vote this in? (I have not done my own research on that, I've heard from neighbors that there is)
Why is this the type of revenue the Town of Wellington is looking for?

If there was an asphalt plant being built not even a mile from a park and neighborhood, would you want to live next to that? With the daily operations, wear and tear on our roads (that already have issues) noise, pollution, and projected congestion of traffic flow. I'm sure many of the people in this meeting would agree this is not the area to put this plant. If the Town of Wellington is that concerned about revenue and making our town money, there should be a different location proposed not near a community park and neighborhood. I also think about the businesses that are already established near the projected site. How many of those hard working people want to breathe in the chemicals from the asphalt plant? How many of those businesses will look for other locations to operate from? Then revenue can be lost for the Town of Wellington if business move out because of this.

Public Comments
Received Prior to 2pm - 3-6-2023

I hope this was the correct platform to express my concerns, if not, I apologize. Long story short, we are not in favor of this plant being proposed at this location or frankly any location near homes, parks and schools. I really hope the board takes what is being expresses seriously and vote to not allow this. Our town has so much potential and to pollute it with this plant just seems irresponsible and greedy.

Thank you for all you do and I appreciate you taking the time to read this.

Karie Madigan-Lewis and Nick Lewis
Homeowners

Public Comments
Received Prior to 2pm - 3-6-2023

Asphalt Plant

Gilda Gallagher <[redacted]>
Sun 3/5/2023 8:42 PM
To: Cody Bird <birdca@wellingtoncolorado.gov>

Hi Cody,
Please add my name to the list of residents opposed to the asphalt plant. My husband should be able to attend the meeting, but I cannot.
Thank you,
Gilda Gallagher

Sent from my iPhone

Public Comments
Received Prior to 2pm - 3-6-2023

Town Meeting for Hot Asphalt Plant

Troy Richmond <[redacted]>
Sat 3/4/2023 8:49 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Hi Cody, I would like to request details on the town meeting. I am unsure if I will be able to attend on Monday. Do you have a map of the proposed location?

Thank you,
Troy Richmond
3351 Crazy Horse Drive

Public Comments
Received Prior to 2pm - 3-6-2023

FW: Asphalt Plant Land Use Code 4.03.21,B,1

Patti Garcia <garciapa@wellingtoncolorado.gov>
Mon 3/6/2023 9:57 AM
To: [redacted] <[redacted]>
Cc: Cody Bird <birdca@wellingtoncolorado.gov>

Hi Katie –

The Planning Commission has the site plan for the Connell Asphalt Plant on their agenda on Monday night. The email you sent was to the Board of Trustees; the Planning Commission is a separate advisory board and your email will be provided to them. Appeals of decisions made by the Planning Commission are made to the Board of Trustees so the Mayor and Trustees are not permitted to comment on this item as it could be considered ex-parte communications if there is an appeal.

I wanted to respond to you so that you understood why the Mayor and Trustees did not respond to your email.

Patti

TOWN OF WELLINGTON

Patti Garcia
Town Administrator
Mobile: (970) 473-6033
Email: garciapa@wellingtoncolorado.gov
Web: www.wellingtoncolorado.gov
8225 3rd Street, Wellington, CO 80549

From: Katie Meyer <[redacted]>
Sent: Monday, March 6, 2023 7 28 AM
To: Cody Bird <birdca@wellingtoncolorado.gov>; Shirrell Tietz <tietzs@wellingtoncolorado.gov>; David Wiegand wiegandd@wellingtoncolorado gov ; Brian Mason masonb@wellingtoncolorado gov ; Jon Gaiter <gaiterjm@wellingtoncolorado.gov>; Rebekka Dailey <daileyrm@wellingtoncolorado.gov>; Calar Chaussee chausseec@wellingtoncolorado gov
Cc: patferrier@coloradoan.com; Jeff Meyer <[redacted]>; [redacted]
Subject: Asphalt Plant Land Use Code 4 03 21,B,1
Importance: High

Dear Planning Board,

The intent of this letter is to bring attention to the land use code 4.03.21,B, 1. It states that any Industrial or Manufacturing, Heavy use producing and curating toxic chemicals or conducting animal slaughtering shall be located at least 2,640 feet from any residential district, religious land use, medical care facility, or school. The town has due diligence to find the correct unbiased research and data to make sure the land use code is properly followed. What research and data were used to make the decision that this Heavy Industrial Batch (hot) Asphalt Plant does not meet the criteria for producing and curating toxic chemicals?

Public Comments
Received Prior to 2pm - 3-6-2023

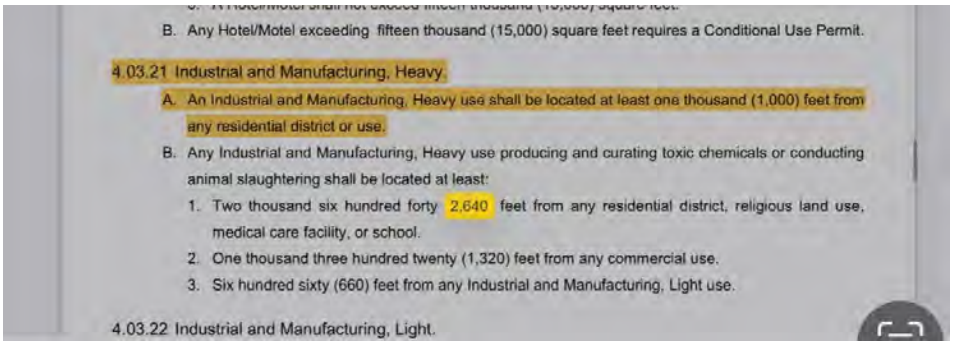
I contacted the Colorado Health Department to answer my questions and those answers conflict with decisions made by the town. Batch Asphalt plants do produce, discharge, and curate toxic chemicals in the forms of HAPs and PAHs The Colorado Health Department describes these toxic chemicals as Hazardous Air Pollutants (HAPs) The main HAPs are Formaldehyde, Acetaldehyde, Benzene, Toluene, Ethylbenzene, and Xylene. I also found that Hydrogen Sulfide, Chromium, Cadmium, and Arsenic can also be found as toxic pollutants at various levels in asphalt plant emissions. The town can even calculate how many pounds of formaldehyde this plant will produce and discharge in an area that has a Community Park, neighborhoods, Library, and 2 Schools If this plant uses recycled asphalt, it can emit higher levels of HAPs and PAHs due to the recycled asphalt composition.

According to the Toxicology and Environmental Epidemiology Department of the Colorado Department of Public Health and Environment, current regulations for this type of asphalt plant only assess particulate matter emissions. There is no information about the levels of HAPs and PAHs that would surround this plant and or changes that would happen with distance Additionally, this plant will be producing hot asphalt, which is a toxic chemical product, it is only nontoxic when it is fully hardened and not releasing toxic fumes. OSHA has a section on asphalt (Bitumen) fumes and explains that when exposed to this petroleum product, health effects from exposure include headache, skin rash, sensitization, fatigue, reduced appetite, throat and eye irritation, cough, and cancer

Pregnant women and children are the most susceptible to breathing these known HAPs and PAHs The American Journal of Obstetrics studies revealed that PAHs, can be found in the placenta and exposure is associated with adverse pregnancy outcomes The CDC has found an association between Benzene and spina bifida during maternal exposure. Formaldehyde is a known carcinogen, and according to the National Library of Medicine is linked to spontaneous abortions, congenital malformations, and premature birth Children face more risks from toxic chemical pollution because they have a faster breathing rate which leads to absorbing more toxic chemicals than adults and are outside for longer periods of time

This batch asphalt plant produces and curates' toxic chemicals The planning board should not approve this plan due to the production and curating setback of 2,640 feet. There is no variance for this specific setback.

Thanks for your consideration,
Katie Meyer



B. Any Hotel/Motel exceeding fifteen thousand (15,000) square feet requires a Conditional Use Permit.

4.03.21 Industrial and Manufacturing, Heavy.

A. An Industrial and Manufacturing, Heavy use shall be located at least one thousand (1,000) feet from any residential district or use.

B. Any Industrial and Manufacturing, Heavy use producing and curating toxic chemicals or conducting animal slaughtering shall be located at least:

1. Two thousand six hundred forty 2,640 feet from any residential district, religious land use, medical care facility, or school.
2. One thousand three hundred twenty (1,320) feet from any commercial use.
3. Six hundred sixty (660) feet from any Industrial and Manufacturing, Light use.

4.03.22 Industrial and Manufacturing, Light.

Public Comments
Received Prior to 2pm - 3-6-2023

to be added to the packet re: Connell Asphalt plant.

Susanne B. <[redacted]>
Thu 3/2/2023 9:52 PM

To: Paul Whalen <whalenp@wellingtoncolorado.gov>;Cody Bird <birdca@wellingtoncolorado.gov>

I am writing to express my concern regarding the Asphalt plant that Connell Industires has proposed to build close to my development which is Buffalo Creek. I was not made aware of the Asphalt plant and the Town of Wellington deciding to approve this plant until a Newsletter in November of 2022 mentioned this was going to be done. Many of my neighbors as well as myself were never notified of this plant and the approval by the Town of Wellington. I feel this was done in a very underhanded way and with people who will bear the impact of the noise pollution and the health issues that residents in Timnith have developed due to the Asphalt plant that was built near them. This plant is close to a children's playground and the Buffalo Creek community as well as the new school that was just opened this past year.The wind that constantly blows here in Wellington will have an impact on residents and I feel that the Town of Wellington has sold out the people who live close to the proposed plant. Noise pollution and chemicals and also chances of fires are not something I am looking forward to should this plant be allowed to be built. The stress that this has caused is intolerable. It seems to me the Town of Wellington is not concerned about turning Wellington in Commerce City. I would like this email added to the packet.

Susanne Burtis
3234 Wild West Lane
Wellington CO 80549

Print

Planning Commission May 1, 2023 Public Comment - Submission #3019

Date Submitted: 4/24/2023

First and Last Name*

Elana Hurwitz

Email Address*

e_kerson@yahoo.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

PO Box 1374 Wellington CO

Public Comment for the Planning Commission May 1, 2023 Meeting

April 24, 2023 Dear Planning Commission Members, As you know, the EPA has designated the Northern Colorado Front Range region as a "nonattainment" area for ozone, and the construction and operation of an asphalt plant in this area would only worsen the air quality problems we already face. To protect and preserve Colorado's public health and valuable resources such as our water, hot asphalt plants must adhere to strict air, water and waste requirements administered by the CO Department. of Health and Environment. (CDPHE) Asphalt plants emit a wide range of pollutants, including volatile organic compounds, particulate matter, and greenhouse gases, all of which contribute to the formation of ground-level ozone. This could have serious health consequences for the residents of Wellington and the surrounding communities. In addition, the transportation of asphalt also poses a risk of water and soil contamination. The potential for spills or leaks during transportation could have serious consequences for local water sources and soil quality. This is particularly concerning given the importance of agriculture in this region. The proposed location of the asphalt plant is in close proximity to two schools, the library, and a community park. The potential impact on the health and well-being of our children and families cannot be ignored. The noise and air pollution generated by the plant and increased truck traffic would have serious consequences for the surrounding homes, schools, and park, affecting the quality of life for the entire community. Furthermore, the impact of the proposed asphalt plant will not be limited to the immediate area surrounding it. Due to the prevailing winds in the region, the emissions and pollution from the plant would likely spread throughout the town, affecting the health and well-being of all residents. This is unacceptable, particularly for a community that values its natural environment and the health of its citizens. To mitigate these impacts, the plant's operators would need to implement robust pollution control measures, including state-of-the-art emissions control technologies and best practices for managing truck traffic. However, it is unclear whether these measures would be sufficient to protect the health and well-being of the surrounding community and environment. While the proponents of the asphalt plant may argue that it will bring economic benefits to the community, we cannot ignore the potential environmental and health costs. The long-term impacts of the pollution generated by the plant and its transportation far outweigh any short-term economic gains. I have questions related to the process of the plant approval: 1. Has there been an Environmental Impact Study done by and independent service? 2. Have the air quality records (New Source Performance Standards, and APEN report/forms) and storage regulation reports of onsite chemicals from the Connell plant in Timnath been reviewed for comparisons? 3. How were the numbers generated for truck trips that they determined for this facility? 4. When the town of Wellington has more road maintenance required to do due to the widening of roads and additional turn lanes and on/off ramp lanes for the plant that are added to the existing roads around the plant, how much will that raise the taxes for the residents in town to pay for this increased road care? 5. Has the plant construction project been approved by the Flood Review board; passed a Geotechnical report recommendations, and have a storm water permit? 6. what are their dust control plans to comply with state requirements for them? 7. How would the storage of materials so that they are not impacting stormwater in runoff planned to be safe, and what would happen if they aren't, how would the plans be enforced? 8. Is there going to be a community revue committee - separate from the planning board, made up of concerned citizens- to oversee the plant's compliance to the regulations for state, Larimer county and town of Wellington regulations? 9. If the final approval air permit from the state Air Pollution Control Division (APCD) is valid for the life of the equipment, what happens if there is an equipment failure? 10. Are there any records from the Timnath plant about inspections routinely done by APCD? And have we see the existing permit to see the emissions information that exists there? 11. What are the Timnath plant's existing documents from the "New Source performance Standards" requirements CO Reg. No. 6 Part A Subpart I? Thank you for your consideration of these questions and concerns. Most Sincerely, Elana Hurwitz Wellington Old Town Resident PO Box 1374 Wellington, CO 80549

Written Public Comments
3:00pm 4/25/2023

Optional File Attachment

EHurwitz_Letter_4_24_23_to.pdf

Optional File Attachment

Construction_CleanAir.pdf

Optional File Attachment

Choose File No file selected

Written Public Comments
3:00pm 4/25/2023

April 24, 2023

Dear Planning Commission members

As you know, the EPA has designated the Northern Colorado Front Range region as a "nonattainment" area for ozone, and the construction and operation of an asphalt plant in this area would only worsen the air quality problems we already face.

To protect and preserve Colorado's public health and valuable resources such as our water, hot asphalt plants must adhere to strict air, water and waste requirements administered by the CO Department. of Health and Environment. (CDPHE)

Asphalt plants emit a wide range of pollutants, including volatile organic compounds, particulate matter, and greenhouse gases, all of which contribute to the formation of ground-level ozone. This could have serious health consequences for the residents of Wellington and the surrounding communities.

In addition, the transportation of asphalt also poses a risk of water and soil contamination. The potential for spills or leaks during transportation could have serious consequences for local water sources and soil quality. This is particularly concerning given the importance of agriculture in this region.

The proposed location of the asphalt plant is in close proximity to two schools, the library, and a community park. The potential impact on the health and well-being of our children and families cannot be ignored. The noise and air pollution generated by the plant and increased truck traffic would have serious consequences for the surrounding homes, schools, and park, affecting the quality of life for the entire community.

Furthermore, the impact of the proposed asphalt plant will not be limited to the immediate area surrounding it. Due to the prevailing winds in the region, the emissions and pollution from the plant would likely spread throughout the town, affecting the health and well-being of all residents. This is unacceptable, particularly for a community that values its natural environment and the health of its citizens.

To mitigate these impacts, the plant's operators would need to implement robust pollution control measures, including state-of-the-art emissions control technologies and best practices for managing truck traffic. However, it is unclear whether these measures would be sufficient to protect the health and well-being of the surrounding community and environment.

While the proponents of the asphalt plant may argue that it will bring economic benefits to the community, we cannot ignore the potential environmental and health costs. The long-term impacts of the pollution generated by the plant and its transportation far outweigh any short-term economic gains.

I have questions related to the process of the plant approval:

1. Has there been an Environmental Impact Study done by and independent service?

2. Have the air quality records (New Source Performance Standards, and APEN report/forms) and storage regulation reports of onsite chemicals from the Connell plant in Timnath been reviewed for comparisons?

3. How were the numbers generated for truck trips that they determined for this facility?

4. When the town of Wellington has more road maintenance required to do due to the widening of roads and additional turn lanes and on/off ramp lanes for the plant that are added to the existing roads around the plant, how much will that raise the taxes for the residents in town to pay for this increased road care?

5. Has the plant construction project been approved by the Flood Review board; passed a Geotechnical report recommendations, and have a storm water permit?

6. what are their dust control plans to comply with state requirements for them?

7. How would the storage of materials so that they are not impacting stormwater in runoff planned to be safe, and what would happen if they aren't, how would the plans be enforced?

8. Is there going to be a community revue committee - separate from the planning board, made up of concerned citizens- to oversee the plant's compliance to the regulations for state, Larimer county and town of Wellington regulations?

Written Public Comments
3:00pm 4/25/2023

9. If the final approval air permit from the state Air Pollution Control Division (APCD) is valid for the life of the equipment, what happens if there is an equipment failure?

10. Are there any records from the Timnath plant about inspections routinely done by APCD? And have we see the existing permit to see the emissions information that exists there?

11. What are the Timnath plant's existing documents from the "New Source performance Standards" requirements CO Reg. No. 6 Part A Subpart I?

Thank you for your consideration of these questions and concerns.

Most Sincerely,

Elana Hurwitz

Wellington Old Town Resident

PO Box 1374 Wellington, CO 80549

Written Public Comments
3:00pm 4/25/2023

§7475. Preconstruction requirements Clean Air Act

(a) Major emitting facilities on which construction is commenced

https://www.govinfo.gov/content/pkg/USCODE-2013-title42/html/USCODE-2013-title42-chap85-subchapI-partC-subparti-sec7475.htm

42 U.S.C.

United States Code, 2013 Edition

Title 42 - THE PUBLIC HEALTH AND WELFARE

CHAPTER 85 - AIR POLLUTION PREVENTION AND CONTROL

SUBCHAPTER I - PROGRAMS AND ACTIVITIES

Part C - Prevention of Significant Deterioration of Air Quality

subpart i - clean air

Sec. 7475 - Preconstruction requirements

From the U.S. Government Publishing Office, www.gpo.gov

§7475. Preconstruction requirements

(a) Major emitting facilities on which construction is commenced

No major emitting facility on which construction is commenced after August 7, 1977, may be constructed in any area to which this part applies unless—

(1) a permit has been issued for such proposed facility in accordance with this part setting forth emission limitations for such facility which conform to the requirements of this part;

(2) the proposed permit has been subject to a review in accordance with this section, the required analysis has been conducted in accordance with regulations promulgated by the Administrator, and a public hearing has been held with opportunity for interested persons including representatives of the Administrator to appear and submit written or oral presentations on the air quality impact of such source, alternatives thereto, control technology requirements, and other appropriate considerations;

(3) the owner or operator of such facility demonstrates, as required pursuant to section 7410(j) of this title, that emissions from construction or operation of such facility will not cause, or contribute to, air pollution in excess of any (A) maximum allowable increase or maximum allowable concentration for any pollutant in any area to which this part applies more than one time per year, (B) national ambient air quality standard in any air quality control region, or (C) any other applicable emission standard or standard of performance under this chapter;

(4) the proposed facility is subject to the best available control technology for each pollutant subject to regulation under this chapter emitted from, or which results from, such facility;

(5) the provisions of subsection (d) of this section with respect to protection of class I areas have been complied with for such facility;

(6) there has been an analysis of any air quality impacts projected for the area as a result of growth associated with such facility;

(7) the person who owns or operates, or proposes to own or operate, a major emitting facility for which a permit is required under this part agrees to conduct such monitoring as may be necessary to determine the effect which emissions from any such facility may have, or is having, on air quality in any area which may be affected by emissions from such source; and

(8) in the case of a source which proposes to construct in a class III area, emissions from which would cause or contribute to exceeding the maximum allowable increments applicable in a class II area and where no standard under section 7411 of this title has been promulgated subsequent to August 7, 1977, for such source category, the Administrator has approved the determination of best available technology as set forth in the permit.

(b) Exception

The demonstration pertaining to maximum allowable increases required under subsection (a)(3) of this section shall not apply to maximum allowable increases for class II areas in the case of an expansion or modification of a major emitting facility which is in existence on August 7, 1977, whose allowable emissions of air pollutants, after compliance with subsection (a)(4) of this section, will be less than fifty

tons per year and for which the owner or operator of such facility demonstrates that emissions of particulate matter and sulfur oxides will not cause or contribute to ambient air quality levels in excess of the national secondary ambient air quality standard for either of such pollutants.

(c) Permit applications

Any completed permit application under section 7410 of this title for a major emitting facility in any area to which this part applies shall be granted or denied not later than one year after the date of filing of such completed application.

(d) Action taken on permit applications; notice; adverse impact on air quality related values; variance; emission limitations

(1) Each State shall transmit to the Administrator a copy of each permit application relating to a major emitting facility received by such State and provide notice to the Administrator of every action related to the consideration of such permit.

(2)(A) The Administrator shall provide notice of the permit application to the Federal Land Manager and the Federal official charged with direct responsibility for management of any lands within a class I area which may be affected by emissions from the proposed facility.

(B) The Federal Land Manager and the Federal official charged with direct responsibility for management of such lands shall have an affirmative responsibility to protect the air quality related values (including visibility) of any such lands within a class I area and to consider, in consultation with the Administrator, whether a proposed major emitting facility will have an adverse impact on such values.

(C)(i) In any case where the Federal official charged with direct responsibility for management of any lands within a class I area or the Federal Land Manager of such lands, or the Administrator, or the Governor of an adjacent State containing such a class I area files a notice alleging that emissions from a proposed major emitting facility may cause or contribute to a change in the air quality in such area and identifying the potential adverse impact of such change, a permit shall not be issued unless the owner or operator of such facility demonstrates that emissions of particulate matter and sulfur dioxide will not cause or contribute to concentrations which exceed the maximum allowable increases for a class I area.

Written Public Comments
3:00pm 4/25/2023

(ii) In any case where the Federal Land Manager demonstrates to the satisfaction of the State that the emissions from such facility will have an adverse impact on the air quality-related values (including visibility) of such lands, notwithstanding the fact that the change in air quality resulting from emissions from such facility will not cause or contribute to concentrations which exceed the maximum allowable increases for a class I area, a permit shall not be issued.

(iii) In any case where the owner or operator of such facility demonstrates to the satisfaction of the Federal Land Manager, and the Federal Land Manager so certifies, that the emissions from such facility will have no adverse impact on the air quality-related values of such lands (including visibility), notwithstanding the fact that the change in air quality resulting from emissions from such facility will cause or contribute to concentrations which exceed the maximum allowable increases for class I areas, the State may issue a permit.

(iv) In the case of a permit issued pursuant to clause (iii), such facility shall comply with such emission limitations under such permit as may be necessary to assure that emissions of sulfur oxides and particulates from such facility will not cause or contribute to concentrations of such pollutant which exceed the following maximum allowable increases over the baseline concentration for such pollutants:

Maximum allowable increase (in

micrograms per cubic meter)

Particulate matter:

Annual geometric mean

19

Twenty-four-hour maximum

37

Sulfur dioxide:

Annual arithmetic mean

20

Twenty-four-hour maximum

91

Three-hour maximum

325

(D)(i) In any case where the owner or operator of a proposed major emitting facility who has been denied a certification under subparagraph (C)(iii) demonstrates to the satisfaction of the Governor, after notice and public hearing, and the Governor finds, that the facility cannot be constructed by reason of any maximum allowable increase for sulfur dioxide for periods of twenty-four hours or less applicable to any class I area and, in the case of Federal mandatory class I areas, that a variance under this clause will not adversely affect the air quality related values of the area (including visibility), the Governor, after consideration of the Federal Land Manager's recommendation (if any) and subject to his concurrence, may grant a variance from such maximum allowable increase. If such variance is granted, a permit may be issued to such source pursuant to the requirements of this subparagraph.

(ii) In any case in which the Governor recommends a variance under this subparagraph in which the Federal Land Manager does not concur, the recommendations of the Governor and the Federal Land Manager shall be transmitted to the President. The President may approve the Governor's recommendation if he finds that such variance is in the national interest. No Presidential finding shall be reviewable in any court. The variance shall take effect if the President approves the Governor's recommendations. The President shall approve or disapprove such recommendation within ninety days after his receipt of the recommendations of the Governor and the Federal Land Manager.

(iii) In the case of a permit issued pursuant to this subparagraph, such facility shall comply with such emission limitations under such permit as may be necessary to assure that emissions of sulfur oxides from such facility will not (during any day on which the otherwise applicable maximum allowable increases are exceeded) cause or contribute to concentrations which exceed the following maximum allowable increases for such areas over the baseline concentration for such pollutant and to assure that such emissions will not cause or contribute to concentrations which exceed the otherwise applicable maximum allowable increases for periods of exposure of 24 hours or less on more than 18 days during any annual period:

MAXIMUM ALLOWABLE INCREASE

(In micrograms per cubic meter) Period of exposure	Low	
terrain areas		
High		
terrain areas		
24-hr maximum	36	62
3-hr maximum	130	221

(iv) For purposes of clause (iii), the term "high terrain area" means with respect to any facility, any area having an elevation of 900 feet or more above the base of the stack of such facility, and the term "low terrain area" means any area other than a high terrain area.

(e) Analysis; continuous air quality monitoring data; regulations; model adjustments

(1) The review provided for in subsection (a) of this section shall be preceded by an analysis in accordance with regulations of the Administrator, promulgated under this subsection, which may be conducted by the State (or any general purpose unit of local government) or by the major emitting facility applying for such permit, of the ambient air quality at the proposed site and in areas which may be affected by emissions from such facility for each pollutant subject to regulation under this chapter which will be emitted from such facility.

(2) Effective one year after August 7, 1977, the analysis required by this subsection shall include continuous air quality monitoring data gathered for purposes of determining whether emissions from such facility will exceed the maximum allowable increases or the maximum allowable concentration permitted under this part. Such data shall be gathered over a period of one calendar year preceding the date of application for a permit under this part unless the State, in accordance with regulations promulgated by the Administrator, determines that a complete and adequate analysis for such purposes may be accomplished in a shorter period. The results of such analysis shall be available at the time of the public hearing on the application for such permit.

(3) The Administrator shall within six months after August 7, 1977, promulgate regulations respecting the analysis required under this subsection which regulations—

(A) shall not require the use of any automatic or uniform buffer zone or zones,

(B) shall require an analysis of the ambient air quality, climate and meteorology, terrain, soils and vegetation, and visibility at the site of the proposed major emitting facility and in the area potentially affected by the emissions from such facility for each pollutant regulated under this chapter which will be emitted from, or which results from the construction or operation of, such facility, the size and nature of the proposed facility, the degree of continuous emission reduction which could be achieved by such facility, and such other factors as may be relevant in determining the effect of emissions from a proposed facility on any air quality control region,

(C) shall require the results of such analysis shall be available at the time of the public hearing on the application for such permit, and

(D) shall specify with reasonable particularity each air quality model or models to be used under specified sets of conditions for purposes of this part.

Any model or models designated under such regulations may be adjusted upon a determination, after notice and opportunity for public hearing, by the Administrator that such adjustment is necessary to take into account unique terrain or meteorological characteristics of an area potentially affected by emissions from a source applying for a permit required under this part.

(July 14, 1955, ch. 360, title I, §165, as added Pub. L. 95–95, title I, §127(a), Aug. 7, 1977, 91 Stat. 735; amended Pub. L. 95–190, §14(a)(44)–(51), Nov. 16, 1977, 91 Stat. 1402.)

Amendments

1977—Subsec. (a)(1). Pub. L. 95–190, §14(a)(44), substituted "part;" for "part:".

Subsec. (a)(3). Pub. L. 95–190, §14(a)(45), inserted provision making applicable requirement of section 7410(j) of this title.

Subsec. (b). Pub. L. 95–190, §14(a)(46), inserted "cause or" before "contribute" and struck out "actual" before "allowable emissions".

Subsec. (d)(2)(C). Pub. L. 95–190, §14(a)(47)–(49), in cl. (ii) substituted "contribute" for "contrbute", in cl. (iii) substituted "quality-related" for "quality related" and "concentrations which" for "concentrations, which", and in cl. (iv) substituted "such facility" for "such sources" and "will not cause or contribute to concentrations of such pollutant which exceed" for "together with all other sources, will not exceed".

Subsec. (d)(2)(D). Pub. L. 95–190, §14(a)(50), (51), in cl. (iii) substituted provisions relating to determinations of amounts of emissions of sulfur oxides from facilities, for provisions relating to determinations of amounts of emissions of sulfur oxides from sources operating under permits issued pursuant to this subpar., together with all other sources, and added cl. (iv).

Print

Planning Commission May 1, 2023 Public Comment - Submission #3031

Date Submitted: 4/25/2023

First and Last Name*

Hailey Ellis

Email Address*

hailey.ellis623@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

Public Comment for the Planning Commission May 1, 2023 Meeting

My family and I do NOT condone the building of a Hot Mix Asphalt Plant in the Northeast section of the Business Park, 3/4 of a mile from the Buffalo Creek residential area. As a Buffalo Creek resident and first-time mom-to-be, the proximity to this plant is very concerning due to a decrease in home equity values and heightened risk to human health. The economic benefits of building such a plant do not outweigh the costs to residents' livelihoods and health. If the Wellington government is trying to build a community that has the potential for growth and development, with residents' best interests at heart, then the building of this asphalt plant would be decommissioned. I do not see many residents willing to stay and put up with the corruption of the town's government if this plant were to be built.

Optional File Attachment

Health issues with an asphalt plant nearby.pdf

Optional File Attachment

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Health Issues with an Asphalt Plant Nearby

Here are some short quotes and abstracts from articles referencing the health problems that occur with working, and/or living near an Asphalt Plant.

Asphalt and Diesel Exhaust Fumes

> " Over a half-million workers are exposed to fumes from asphalt, a petroleum product used extensively in road paving, roofing, siding, and concrete work. Health effects from exposure to asphalt fumes include headache, skin rash, sensitization, fatigue, reduced appetite, throat and eye irritation, cough, and skin cancer. "

Reference: Asphalt Fumes - United States Department of Labor, Occupational Safety and Health Administration

Reference: Hot Mix Asphalt Plants - Truck Loading and Unloading

> " The primary emission sources associated with Hot Mix Asphalt(HMA) production are the dryers, hot bins, and mixers, which emit particulate matter (PM) and a variety of gaseous pollutants. Other emission sources found at HMA plants include storage silos, which temporarily hold the HMA; truck load-out operations, in which the HMA is loaded into trucks for hauling to the job site; liquid asphalt storage tanks; hot oil heaters, which are used to heat the asphalt storage tanks; and yard emissions, which consist of fugitive emissions from the HMA in truck beds. Emissions also result from vehicular traffic on paved and unpaved roads, aggregate storage and handling operations, and vehicle exhaust. "

> " The PM emissions associated with HMA production include the criteria pollutants PM-10 (PM less than 10 micrometers in aerodynamic diameter) and PM-2.5, hazardous air pollutant (HAP) metals, and HAP organic compounds. The gaseous emissions associated with HMA production include the criteria pollutants sulfur dioxide (SO 2), nitrogen oxides (NO x), carbon monoxide (CO), and volatile organic compounds (VOC), as well as volatile HAP organic compounds. "

Reference: EPA - Hot Mix Asphalt Plant Emission Assessment

Summary of Research on Diesel and Asphalt Hazards

Toxic Smell

> "It smells."

Written Public Comments
3:00pm 4/25/2023

> "While a state study indicates the air quality in a neighborhood next to a controversial paving plant meets safety standards, neighbors say their problems with the plant are as much about quality of life as quality of air.
>
> The odor of asphalt coming from the R.C. & Sons paving plant has been a prime complaint of several residents of the nearby Grandview neighborhood."

Bangor Daily News - It smells, but Maine Asphalt Plant meets standards

> " Dr. Mitchell said that tiny particles in asphalt production plant emissions can cause lung damage, exacerbate breathing conditions and ultimately cause more severe problems. "

New York Times Article - Who Wants to Live Near an Asphalt Plant

Noise

Here are typical noise emissions from a Hot-Mix Asphalt Plant.

Noise Level	Distance from Center of Plant
85 dBA	50 feet (measured reference level)
78 dBA	100 feet
70 dBA	200 feet
63 dBA	400 feet
55 dBA	800 feet
46 dBA	1,600 feet
36 dBA	3,200 feet
24 dBA	6,400 feet

We do not know the assumptions that went into the measurements in this noise summary table.

Looking at the California study, we do not know the age or size/capacity of the plant(s) measured.

Remember that newer plants are quieter, and older plants make more noise.

Reference: Full Document - Caltrans - State of California

Overall Health Effects

> " The complex chemical composition of asphalt makes it difficult to identify the specific component(s) responsible for adverse health effects observed in exposed workers. Known carcinogens have been found in asphalt fumes generated at worksites. Observations of acute irritation in workers from airborne and dermal exposures to asphalt fumes and aerosols and the potential for chronic health effects, including cancer, warrant continued diligence in the control of exposures. "

Reference: CDC - Hazard Review - Health Effects of Occupational Exposure to Asphalt

What the Federal Government Regulates on Asphalt Plants and Air Quality

What federal rules apply to asphalt plants?

Written Public Comments
3:00pm 4/25/2023

- Asphalt plant emissions of particulate matter (PM2.5 and PM10, carbon monoxide, sulfur dioxide nitrogen dioxide, and lead must not exceed National Ambient Air Quality Standards (NAAQS) at the property boundary.
- Asphalt plants manufactured after June 11, 1973, are subject to 40 CFR 60 Subpart I-New Source Performance Standards for Hot Mix Asphalt Plants. NSPS, Subpart I limits only the emissions of particulate matter from material handling systems.
- On November 8, 2002 , USEPA removed Asphalt Hot Mix Production from the Source Category List for which development of National Emission Standards for Hazardous Air Pollutants Standar is required.

Reference: North Carolina Division of Air Quality - Air Toxics and Asphalt Plants

Web Sites With More Information

Here are addition web sites that have information on Asphalt Plants and health effects.

- Hot Mix Asphalt Plants - Stakeholders Opinions Report - US EPA
- Fact Sheet - Hot Mix Asphalt Plants - Oregon Department of Environmental Quality
- Preventing Pollution at Hot Mix Plants - A Guide to Environmental Compliance and Pollution Prevention for Asphalt Plants in Missouri - State of Missouri
- Asphalt Plant Pollution - Blue Ridge Environmental Report
- Road Paving Asphalt - State of New Hampshire - Fact Sheet
- Asphalt - Hazardous Fact Sheet - State of New Jersey
- North Carolina Division of Air Quality - Air Toxics and Asphalt Plants

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We are PARC - Protectors of the Ammonoosuc River Corridor in Lisbon, New Hampshire.

You can contact PARC at

PARC
P.O. Box 515
Sugar Hill, New Hampshire.
03586

Fiscal Agent: Peter Nightingale
Phone #: (603) 616-9292

Written Public Comments
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ASPHALT PLANT POLLUTION

Asphalt plants mix gravel and sand with crude oil derivatives to make the asphalt used to pave roads, highways, and parking lots across the U.S. These plants release millions of pounds of chemicals to the air during production each year, including many cancer-causing toxic air pollutants such as arsenic, benzene, formaldehyde, and cadmium. Other toxic chemicals are released into the air as the asphalt is loaded into trucks and hauled from the plant site, including volatile organic compounds, polycyclic aromatic hydrocarbons (PAHs), and very fine condensed particulates.[EPA]

Asphalt Fumes are Known Toxins. The federal Environmental Protection Agency (EPA) states "Asphalt processing and asphalt roofing manufacturing facilities are major sources of hazardous air pollutants such as formaldehyde, hexane, phenol, polycyclic organic matter, and toluene. Exposure to these air toxics may cause cancer, central nervous system problems, liver damage, respiratory problems and skin irritation." [EPA]. According to one health agency, asphalt fumes contain substances known to cause cancer, can cause coughing, wheezing or shortness of breath, severe irritation of the skin, headaches, dizziness, and nausea. [NJDHSS] Animal studies show PAHs affect reproduction, cause birth defects and are harmful to the immune system. [NJDHSS] The US Department of Health and Human Services has determined that PAHs may be carcinogenic to humans. [DHHS]

Health Impacts & Loss of Property Value. The Blue Ridge Environmental Defense League (BREDL), a regional environmental organization, has done two studies on the adverse impacts on property values and health for residents living near asphalt plants. A property value study documented losses of up to 56% because of the presence of a nearby asphalt plant. In another study, nearly half of the residents reported negative impacts on their health from a new asphalt plant. The door-to-door health survey found 45% of residents living within a half mile of the plant reported a deterioration of their health, which began after the plant opened. The most frequent health problems cited were high blood pressure (18% of people surveyed), sinus problems (18%), headaches (14%), and shortness of breath (9%). [BREDL]

Flawed Tests Underestimate Health Risks. In addition to smokestack emissions, large amounts of harmful "fugitive emissions" are released as the asphalt is moved around in trucks and conveyor belts, and is stored in stockpiles. A small asphalt plant producing 100 thousand tons of asphalt a year may release up to 50 tons of toxic fugitive emissions into the air. [Dr. R. Nadkarni] Stagnant air and local weather patterns often increase the level of exposure to local communities. In fact, most asphalt plants are not even tested for toxic emissions. The amounts of these pollutants that are released from a facility are estimated by computers and mathematical formulas rather than by actual stack testing, estimates that experts agree do not accurately predict the amount of toxic fugitive emissions released and the risks they pose. According to Dr. Luanne Williams, a North Carolina state toxicologist, 40% of the toxins from asphalt plant smokestacks even meet air quality standards—and for the other 60% of these emissions, the state lacks sufficient data to determine safe levels.

BE SAFE: Take Precautionary Action to Protect Our Communities from Asphalt Plant Air Pollution

OSHA ARCHIVE

NOTICE: This is an OSHA Archive Document, and no longer represents OSHA Policy. It is presented here as historical content, for research and review purposes only.

Asphalt Fumes

Over a half-million workers are exposed to fumes from asphalt, a petroleum product used extensively in road paving, roofing, siding, and concrete work. When hot asphalt is applied in a molten state, it generates toxic fumes. Workers exposed to asphalt fumes are at risk of developing headaches, rashes, cough, and possibly cancer. There is no OSHA standard for asphalt fumes. OSHA is developing an action plan to reduce worker exposures to this hazard but is not initiating rulemaking at this time.

Hazard Description

NIOSH estimated that over 500,000 workers were potentially exposed to asphalt fumes (1). OSHA estimated in 1992 that over 300,000 construction workers were exposed primarily in road-paving and roofing operations (2). Exposures vary considerably between different types of asphalt work (i.e. roofing vs. paving) and the different worker jobs (i.e. kettle operator vs. paver operator.) More research needs to be performed to determine and control important factors which cause increased worker exposures (i.e. application temperatures, type of equipment used, environmental conditions, workplace practices, and asphalt constituents.)

The acute effects of exposure to asphalt fumes include headache, skin rash, fatigue, reduced appetite, throat and eye irritation, and cough. Asphalt paving workers, for example, have reported breathing problems, asthma, bronchitis, and skin irritation (6). A recent study has shown that some of these effects occur at exposures of 0.5 to 1.3 mg/m3 (3).

Human studies have reported lung, stomach, and skin cancers following chronic exposures to asphalt fumes. However, these studies have been inconclusive, and the possible chronic effects to workers following exposures to asphalt fumes are areas of continuing investigations. One recent summary analysis of the available human studies found a nearly twofold increase in risk of lung and stomach cancer among roofers. Increased risks were also noted for other asphalt workers for lung, stomach, and bladder cancer, and for leukemia (4).

Laboratory studies have shown chemical extracts of asphalt fumes to have cancer-causing and mutagenic properties. For example, painting of asphalt extracts on mouse skin produces tumors that increase with dose (7). Other laboratory studies show DNA changes in mouse lung and skin cells (8) and in human fetal cells exposed to asphalt fume extracts (9). Urinalysis of exposed workers shows mutations in laboratory tests (10).

Current Status

OSHA does not have a standard for asphalt fumes although it proposed a 5 mg/m3 permissible exposure limit (PEL) in 1992 (5). OSHA's quantitative risk assessment estimated a significant risk of lung cancer among exposed workers at levels as low as 0.2 mg/m3.

The American Conference of Governmental Industrial Hygienists (ACGIH) currently recommends a Threshold Limit Value (TLV) of 5 mg/m3 as an 8-hour time weighted average. In 1977, the National Institute for Occupational Safety and Health (NIOSH) recommended a 5 mg/m3 15 minute short-term exposure limit. NIOSH is developing a new Criteria Document for asphalt fumes and expects to make new recommendations for exposure limits within six months.

The International Agency for Research on Cancer (IARC) found:

- "There is sufficient evidence for the carcinogenicity of extracts of steam-refined bitumens, air-refined bitumens and pooled mixtures of steam- and air-refined bitumens in experimental animals."
- There is limited evidence for the carcinogenicity of undiluted steam-refined bitumens and for cracking-residue bitumens in experimental animals.
- There is inadequate evidence for the carcinogenicity of undiluted air-refined bitumens in experimental animals.
- There is inadequate evidence that bitumens alone are carcinogenic to humans."

Rationale

Asphalt fume exposure meets several of the criteria for designation as an OSHA priority. In particular, the known and potential health effects are serious and a large number of workers are potentially exposed, especially considering high industry turnover rates. although the human studies of workplace cancer have limitations, there is considerable experimental evidence of cancer risk. There is also evidence of acute health effects among workers exposed to asphalt fumes.

References

1. NIOSH; National Occupational Exposure Survey; 1981-1983.
2. Federal Register, vol. 57, no. 114, June 12, 1992. Air Contaminants; Proposed Rule. pp. 26001-26602.
3. Chase, R.M., Liss, G.M., Cole, D.C., and Heath, B. 1994. Toxic health effects including reversible macrothrombocytosis in workers exposed to asphalt fumes. Am. J. Indus. Med. 25:279-289.
4. Partanen, T. and Boffetta, P. 1994. Cancer risk in asphalt workers and roofers: review and meta-analysis of epidemiologic studies. Am. J. Indus. Med. 26:721-740.
5. Federal Register vol. 57, June 12, 1992. Air Contaminants; Proposed Rule. p. 26182-26190 deals specifically with asphalt fume.
6. Norseth T, Waage J, and Dale I. Acute Effects and Exposure to Organic Compounds in Road Maintenance Workers Exposed to Asphalt. Am J Ind Med; 1991; 20:737-44.
7. "Assessment of the Cocarcinogenic/Promoting Activity of Asphalt Fumes;" U.S. Department of Health and Human Services, National Institute for Occupational Safety and Health; Contract 200-83-2612; December 1989.

New Jersey Department of Health and Senior Services

HAZARDOUS SUBSTANCE FACT SHEET

Common Name: **ASPHALT**

CAS Number: 8052-42-4
DOT Number: NA 1999 (Asphalt)
UN 1999 (Tars, Liquid)
DOT Hazard Class: 3 (Flammable)

RTK Substance number: 0170
Date: January 2001 Revision: April 2007

HAZARD SUMMARY

* **Asphalt** can affect you when breathed in.
* Extracts of certain *Asphalts* have been shown to cause cancer in animals.
* **Asphalt** *fumes* can irritate the eyes on contact.
* Breathing **Asphalt** *fumes* can irritate the nose, throat and lungs causing coughing, wheezing and/or shortness of breath.
* Contact can irritate and cause severe burns of the skin and may cause dermatitis and acne-like lesions.
* Exposure to **Asphalt** *fumes* can cause headache, dizziness, nausea and vomiting.
* Long-term contact can cause skin pigment change which is made worse by sunlight exposure.
* *Cutback* and *Rapid Curing* **Asphalt** are FLAMMABLE and FIRE HAZARDS.
* **Asphalt** is derived from *Petroleum*. **Asphalt** and *Coal Tar Pitch* are different. If you are actually working with *Coal Tar* chemicals, *CONSULT THE NEW JERSEY DEPARTMENT OF HEALTH AND SENIOR SERVICES HAZARDOUS SUBSTANCE FACT SHEETS ON COAL TAR PITCH AND COAL TARS.*
* *Asphalt, Oxidized* (CAS # 64762-93-4) is a carcinogen. *CONSULT THE NEW JERSEY DEPARTMENT OF HEALTH AND SENIOR SERVICES HAZARDOUS SUBSTANCE FACT SHEET ON ASPHALT, OXIDIZED.*

IDENTIFICATION

Asphalt is a blackish-brown solid, semi-solid or liquid, depending on the formulation or mixture of **Asphalt** used. **Asphalt** *fumes* are produced during the manufacture and heating of **Asphalt**, which is used for road building and roofing, and in rubber and adhesives.

REASON FOR CITATION

* **Asphalt** is on the Hazardous Substance List because it is cited by ACGIH, DOT, NIOSH, IARC and NFPA.
* Definitions are provided on page 5.

HOW TO DETERMINE IF YOU ARE BEING EXPOSED

The New Jersey Right to Know Act requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information and training concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard (29 CFR 1910.1200) requires private employers to provide similar training and information to their employees.

* Exposure to hazardous substances should be routinely evaluated. This may include collecting personal and area air samples. You can obtain copies of sampling results from your employer. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).
* If you think you are experiencing any work-related health problems, see a doctor trained to recognize occupational diseases. Take this Fact Sheet with you.

WORKPLACE EXPOSURE LIMITS

NIOSH: The recommended airborne exposure limit is **5 mg/m^3**, which should not be exceeded during any 15-minute period.

ACGIH: The recommended airborne exposure limit is **0.5 mg/m^3** (for the *inhalable fraction* of the *Benzene*-soluble aerosol), averaged over an 8-hour workshift.

WAYS OF REDUCING EXPOSURE

* Where possible, enclose operations and use local exhaust ventilation at the site of chemical release. If local exhaust ventilation or enclosure is not used, respirators should be worn.
* Wear protective work clothing.
* Wash thoroughly immediately after exposure to **Asphalt** and at the end of the workshift.
* Post hazard and warning information in the work area. In addition, as part of an ongoing education and training effort, communicate all information on the health and safety hazards of **Asphalt** to potentially exposed workers.

ASPHALT

This Fact Sheet is a summary source of information of all potential and most severe health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

HEALTH HAZARD INFORMATION

Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to **Asphalt**:

* **Asphalt** *fumes* can irritate the eyes on contact.
* Breathing **Asphalt** *fumes* can irritate the nose, throat and lungs causing coughing, wheezing and/or shortness of breath.
* Contact can irritate and cause severe burns of the skin and may cause dermatitis and acne-like lesions.
* Exposure to **Asphalt** *fumes* can cause headache, dizziness, nausea and vomiting.

Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to **Asphalt** and can last for months or years:

Cancer Hazard

* While **Asphalt** has not been identified as a carcinogen, it should be HANDLED WITH CAUTION since extracts of certain **Asphalts** have been shown to cause cancer in animals.

Reproductive Hazard

* According to the information presently available to the New Jersey Department of Health and Senior Services, **Asphalt** has not been tested for its ability to affect reproduction.

Other Long-Term Effects

* Long-term contact can cause skin pigment change which is made worse by sunlight exposure.
* **Asphalt** *fumes* can irritate the lungs. Repeated exposure may cause bronchitis to develop with cough, phlegm, and/or shortness of breath.

MEDICAL

Medical Testing

Before beginning employment and at regular times after that, for those with frequent or potentially high exposures, the following are recommended:

* Lung function tests

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).

Mixed Exposures

* Because smoking can cause heart disease, as well as lung cancer, emphysema, and other respiratory problems, it may worsen respiratory conditions caused by chemical exposure. Even if you have smoked for a long time, stopping now will reduce your risk of developing health problems.

Conditions Made Worse By Exposure

* Exposure to sunlight may make skin effects of **Asphalt** worse.

WORKPLACE CONTROLS AND PRACTICES

Unless a less toxic chemical can be substituted for a hazardous substance, **ENGINEERING CONTROLS** are the most effective way of reducing exposure. The best protection is to enclose operations and/or provide local exhaust ventilation at the site of chemical release. Isolating operations can also reduce exposure. Using respirators or protective equipment is less effective than the controls mentioned above, but is sometimes necessary.

In evaluating the controls present in your workplace, consider: (1) how hazardous the substance is, (2) how much of the substance is released into the workplace and (3) whether harmful skin or eye contact could occur. Special controls should be in place for highly toxic chemicals or when significant skin, eye, or breathing exposures are possible.

In addition, the following controls are recommended:

* Where possible, automatically pump liquid **Asphalt** from drums or other storage containers to process containers.
* Before entering a confined space where **Asphalt** may be present, check to make sure that an explosive concentration does not exist.

Good **WORK PRACTICES** can help to reduce hazardous exposures. The following work practices are recommended:

* Workers whose clothing has been contaminated by **Asphalt** should change into clean clothing promptly.
* Contaminated work clothes should be laundered by individuals who have been informed of the hazards of exposure to **Asphalt**.
* Eye wash fountains should be provided in the immediate work area for emergency use.
* If there is the possibility of skin exposure, emergency shower facilities should be provided.
* On skin contact with **Asphalt**, immediately wash or shower to remove the chemical. At the end of the workshift, wash any areas of the body that may have contacted **Asphalt**, whether or not known skin contact has occurred.

ASPHALT

* Do not eat, smoke, or drink where **Asphalt** is handled, processed, or stored, since the chemical can be swallowed. Wash hands carefully before eating, drinking, applying cosmetics, smoking, or using the toilet.

PERSONAL PROTECTIVE EQUIPMENT

WORKPLACE CONTROLS ARE BETTER THAN PERSONAL PROTECTIVE EQUIPMENT. However, for some jobs (such as outside work, confined space entry, jobs done only once in a while, or jobs done while workplace controls are being installed), personal protective equipment may be appropriate.

The OSHA Personal Protective Equipment Standard (29 CFR 1910.132) requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

Clothing

* Avoid skin contact with **Asphalt**. Wear protective gloves and clothing. Safety equipment suppliers/manufacturers can provide recommendations on the most protective glove/clothing material for your operation.
* All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Eye Protection

* Wear indirect-vent, impact and splash resistant goggles when working with liquids.
* Wear a face shield along with goggles when working with corrosive, highly irritating or toxic substances.
* Contact lenses should not be worn when working with this substance.

Respiratory Protection

IMPROPER USE OF RESPIRATORS IS DANGEROUS. Such equipment should only be used if the employer has a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing, and medical exams, as described in the OSHA Respiratory Protection Standard (29 CFR 1910.134).

* Where the potential exists for exposure over **0.5 mg/m^3**, use a NIOSH approved full facepiece respirator with an organic vapor cartridge and particulate prefilters. Increased protection is obtained from full facepiece powered-air purifying respirators.
* If while wearing a filter or cartridge respirator you can smell, taste, or otherwise detect **Asphalt**, or if while wearing particulate filters abnormal resistance to breathing is experienced, or eye irritation occurs while wearing a full facepiece respirator, leave the area immediately. Check to make sure the respirator-to-face seal is still good. If it is, replace the filter or cartridge. If the seal is no longer good, you may need a new respirator.
* Be sure to consider all potential exposures in your workplace. You may need a combination of filters, prefilters or cartridges to protect against different forms of a chemical (such as vapor and mist) or against a mixture of chemicals.
* Where the potential exists for exposure over **5 mg/m^3**, use a NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode.

HANDLING AND STORAGE

* Prior to working with **Asphalt** you should be trained on its proper handling and storage.
* **Asphalt**, when HEATED, can give off toxic *Hydrogen Sulfide gases*.
* **Asphalt** may ignite or explode when mixed with NAPHTHA, other VOLATILE SOLVENTS, and LIQUID OXYGEN.
* **Asphalt** is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE).
* Store in tightly closed containers in a cool, well-ventilated area.
* Sources of ignition, such as smoking and open flames, are prohibited where *Cutback* and *Rapid Curing* **Asphalt** are used, handled, or stored.
* Metal containers involving the transfer of *Cutback* and *Rapid Curing* **Asphalt** should be grounded and bonded.
* Use only non-sparking tools and equipment, especially when opening and closing containers of *Cutback* and *Rapid Curing* **Asphalt**.

QUESTIONS AND ANSWERS

Q: If I have acute health effects, will I later get chronic health effects?
A: Not always. Most chronic (long-term) effects result from repeated exposures to a chemical.

Q: Can I get long-term effects without ever having short-term effects?
A: Yes, because long-term effects can occur from repeated exposures to a chemical at levels not high enough to make you immediately sick.

Q: What are my chances of getting sick when I have been exposed to chemicals?
A: The likelihood of becoming sick from chemicals is increased as the amount of exposure increases. This is determined by the length of time and the amount of material to which someone is exposed.

Q: When are higher exposures more likely?
A: Conditions which increase risk of exposure include physical and mechanical processes (heating, pouring, spraying, spills and evaporation from large surface areas such as open containers), and "confined space" exposures (working inside vats, reactors, boilers, small rooms, etc.).

Q: Is the risk of getting sick higher for workers than for community residents?
A: Yes. Exposures in the community, except possibly in cases of fires or spills, are usually much lower than those found in the workplace. However, people in the community may be exposed to contaminated water as well as to chemicals in the air over long periods. This may be a problem for children or people who are already ill.

Q: Don't all chemicals cause cancer?
A: No. Most chemicals tested by scientists are not cancer-causing.

Q: Should I be concerned if a chemical causes cancer in animals?
A: Yes. Most scientists agree that a chemical that causes cancer in animals should be treated as a suspected human carcinogen unless proven otherwise.

Q: But don't they test animals using much higher levels of a chemical than people usually are exposed to?
A: Yes. That's so effects can be seen more clearly using fewer animals. But high doses alone don't cause cancer unless it's a cancer agent. In fact, a chemical that causes cancer in animals at high doses could cause cancer in humans exposed to low doses.

The following information is available from:

New Jersey Department of Health and Senior Services
Occupational Health Service
PO Box 360
Trenton, NJ 08625-0360
(609) 984-1863
(609) 984-7407 (fax)

Web address: http://www.state.nj.us/health/eoh/odisweb/

Industrial Hygiene Information
Industrial hygienists are available to answer your questions regarding the control of chemical exposures using exhaust ventilation, special work practices, good housekeeping, good hygiene practices, and personal protective equipment including respirators. In addition, they can help to interpret the results of industrial hygiene survey data.

Medical Evaluation
If you think you are becoming sick because of exposure to chemicals at your workplace, you may call personnel at the Department of Health and Senior Services, Occupational Health Service, who can help you find the information you need.

Public Presentations
Presentations and educational programs on occupational health or the Right to Know Act can be organized for labor unions, trade associations and other groups.

Right to Know Information Resources
The Right to Know Infoline (609) 984-2202 can answer questions about the identity and potential health effects of chemicals, list of educational materials in occupational health, references used to prepare the Fact Sheets, preparation of the Right to Know Survey, education and training programs, labeling requirements, and general information regarding the Right to Know Act. Violations of the law should be reported to (609) 984-2202.

>>>>>>>>>>>>>>>>>> EMERGENCY INFORMATION <<<<<<<<<<<<<<<<<<

Common Name: **ASPHALT**
DOT Number: **NA 1999 (Asphalt)**
UN 1999 (Tars, Liquid)
DOT Hazard Class: **3 (Flammable)**
NAERG Code: **130**
CAS Number: **8052-42-4**

Hazard rating	NJDHSS	NFPA
FLAMMABILITY	-	1, 2 or 3
REACTIVITY	-	0
FLAMMABLE OR COMBUSTIBLE DEPENDING ON FORMULATION POISONOUS GASES ARE PRODUCED IN FIRE CONTAINERS MAY EXPLODE IN FIRE		

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

FIRE HAZARDS

* *Cutback* and *Rapid Curing* **Asphalt** are FLAMMABLE.
* *Typical* or *Medium* to *Slow Curing* **Asphalt** is COMBUSTIBLE.
* Use dry chemical, CO_2, water spray, or a foaming agent.
* Water may cause frothing so do not apply solid streams of water directly on **Asphalt**.
* POISONOUS GASES ARE PRODUCED IN FIRE including *Sulfer Oxides* and *Hydrogen Sulfide*.
* CONTAINERS MAY EXPLODE IN FIRE.
* Use water spray to keep fire-exposed containers cool.
* Vapors may travel to a source of ignition and flash back.
* Vapor is heavier than air and may travel a distance to cause a fire or explosion far from the source.
* If employees are expected to fight fires, they must be trained and equipped as stated in the OSHA Fire Brigades Standard (29 CFR 1910.156).

SPILLS AND EMERGENCIES

If **Asphalt** is spilled or leaked, take the following steps:

* Evacuate personnel and secure and control entrance to the area.
* Eliminate all ignition sources.
* Absorb liquids in vermiculite, dry sand, earth, or a similar material and deposit in sealed containers.
* Ventilate and wash area after clean-up is complete.
* Keep **Asphalt** out of a confined space, such as a sewer, because of the possibility of an explosion.
* It may be necessary to contain and dispose of **Asphalt** as a HAZARDOUS WASTE. Contact your state Department of Environmental Protection (DEP) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.
* If employees are required to clean-up spills, they must be properly trained and equipped. The OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) may apply.

FOR LARGE SPILLS AND FIRES immediately call your fire department. You can request emergency information from the following:

CHEMTREC: (800) 424-9300
NJDEP HOTLINE: 1-877-WARN-DEP

HANDLING AND STORAGE (See page 3)

FIRST AID

For POISON INFORMATION call 1-800-222-1222

Eye Contact
* Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting upper and lower lids.

Skin Contact
* Quickly remove contaminated clothing. Immediately wash contaminated skin with large amounts of soap and water.

Breathing
* Remove the person from exposure.
* Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
* Transfer promptly to a medical facility.

PHYSICAL DATA

Flash Point:
Cutback Asphalt: less than 50°F (10°C)
Slow to *Rapid Curing Asphalt*: 80°F (27°C) to 225°F (107°C)
Typical Asphalt: greater than 400°F (204°C)
Water Solubility: Insoluble

OTHER COMMONLY USED NAMES
This Fact Sheet can also be used for:
Alphalt (Cutback) RTK # 3172
Chemical Name:
Asphalt
Other Names:
Road Tar; Mineral Pitch; Petroleum Pitch; Bitumen

Not intended to be copied and sold for commercial purposes.

NEW JERSEY DEPARTMENT OF HEALTH AND SENIOR SERVICES
Right to Know Program
PO Box 368, Trenton, NJ 08625-0368
(609) 984-2202

Written Public Comments
3:00pm 4/25/2023

Amador County News

Study Reveals Dangers of Asphalt Plants

NEW STUDY REVEALS ASPHALT PLANT DANGERS
http://www.bredl.org/press/2007/Young-McQueenasphaltplant.htm

Today at a press conference in Spruce Pine, the Mitchell County Citizens for Clean Air and the Blue Ridge Environmental Defense League released an air pollution study of the proposed Young & McQueen asphalt plant which shows that air toxins would be deposited far from the plant site. The League's report shows dangerous levels offsite of formaldehyde, benzene and arsenic.

The study concludes that formaldehyde would exceed the state's health-based air pollution limit at 200 meters beyond the plant property line. Even worse, the study concludes that benzene would be deposited at dangerous levels 1.8 miles away and that arsenic would be deposited at dangerous levels 2.17 miles away.

Janet Marsh, the League's Executive Director, said, "The state has long maintained that their computer modeling is conservative and health protective, while we have long maintained what we now can demonstrate—that the state's approach cannot protect human health while ignoring huge amounts of asphalt plant pollution." The new study points out that the state permit fails to include the asphalt tank heater and a 10,000 gallon liquid asphalt storage tank. Marsh continued, "The state can't have it both ways: they can't claim that their hands are tied by these

Written Public Comments
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exemptions and that their permit means that area residents are safe from pollution."

Louis Zeller, who authored the report, used the US Environmental Protection Agency's worst-case computer model for air pollution from the proposed asphalt plant. This EPA model calculates ground-level air poisons as well as smokestack sources. Having accessed this worst-case model only two weeks ago, the League chose the Young & McQueen plant for its first study.

Dr. James Carroll, a local resident, said, "The Mitchell County Citizens for Clean Air was formed to protect our health, our homes and our community. We know that if this plant is built, it will create bad smells, increased dust and poisonous chemicals like formaldehyde and arsenic. We want our local officials to protect us from polluting industries like this asphalt plant by keeping them away from populated areas, and we want the state to protect us by denying this air pollution permit."

Sue Dayton, who coordinates the League's NC Health Communities Project, said, "We are particularly concerned about the emissions of arsenic, benzene and formaldehyde. Both arsenic and benzene are known to cause cancer, and, in addition to being a suspected human carcinogen, formaldehyde is an acute irritant, causing coughing, wheezing, nausea, headaches and asthma."

Both organizations recognize that the state's air pollution permit does not consider plant location. The Mitchell County Board of Commissioners has the power under state statute to adopt an asphalt plant moratorium and implement a protective polluting industries ordinance.

Return to Front-page

E-mail a comment for posting here...
Remember to include the title of the article for

Print

Planning Commission May 1, 2023 Public Comment - Submission #3002

Date Submitted: 4/23/2023

First and Last Name*

Brittany Cowan

Email Address*

brittany.a.cowan@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

Public Comment for the Planning Commission May 1, 2023 Meeting

Please see the attachment with my family's comments.

Optional File Attachment

Information reguarding the proposed Asphalt Plant.pdf

Optional File Attachment

Choose File No file selected

Optional File Attachment

Choose File No file selected

Dear Planning Committee,

It is with great importance and emphasis that I write to you today. I am asking you to please take into account the town of Wellington's Land Use Code and enforce the necessary setback for the planned asphalt plant in Wellington.

While I know the argument that state agencies regulate asphalt plants, it DOES NOT NEGATE the fact that this proposed asphalt plant **DOES** in fact curate toxic chemicals and violate the Land Use Code. As long as toxic chemicals are curated (whether regulated or not) a setback must be implied per the town of Wellington's Land Use Code. This will be discussed in more depth further down in my statement.

While the proposed site is permitted as "Right to Use", it is ONLY right to use as long as it complies with the Land Use Code that was adopted on March 22, 2022.

Below you will find significant evidence as to why this does NOT meet the current Land Use Code as well as why the Heavy Industrial and Manufacturing setback of 2,640 ft from any residential district must be applied in this case.

Per the Land Use Code:

1.01.1 Purpose. The purpose of this Land Use Code is to create a vital, cohesive, well-designed community in order to enhance the Town's small-town character and further the residents' goals as identified in the Comprehensive Plan. These zoning regulations are designed to:

A. Promote the health, safety, values, and general welfare of Town residents.

The first point made in the Land Use Code is to "promote the health, safety… and general welfare of Town residents." Allowing an asphalt plant to be built less than 1,000 feet from the nearest home and proposed homes in the Sundance development goes against the Land Use Code.

"Asphalt plants mix gravel and sand with crude oil derivatives to make the asphalt used to pave roads, highways, and parking lots across the U.S. These plants release millions of pounds of chemicals to the air during production each year, including many cancer-causing toxic air pollutants such as arsenic, benzene, formaldehyde, and cadmium. Other toxic chemicals are released into the air as the asphalt is loaded into trucks and hauled from the plant site, including volatile organic compounds, polycyclic aromatic hydrocarbons (PAHs), and very fine condensed particulates.[EPA]"

Two other points of the Land Use Code are:

B. Establish a variety of zoning district classifications according to the use of land and buildings with varying intensities of uses and standards whose interrelationships of boundary zones form a compatible pattern of land uses and buffer areas which enhance the value of each zone.

F. Promote good design and arrangement of buildings or clusters of buildings and uses in residential, business, and industrial development.

By allowing this asphalt plant to be built so close to residential homes, it will negatively impact the home values near the proposed site.

"Health Impacts & Loss of Property Value. The Blue Ridge Environmental Defense League (BREDL), a regional environmental organization, has done two studies on the adverse impacts on property values and health for residents living near asphalt plants. A property value study documented losses of up to 56% because of the presence of a nearby asphalt plant. In another study, nearly half of the residents reported negative impacts on their health from a new asphalt plant. The door-to-door health survey found 45% of residents living within a half mile of the plant reported a deterioration of their health, which began after the plant opened. The most frequent health problems cited were high blood pressure (18% of people surveyed), sinus problems (18%), headaches (14%), and shortness of breath (9%). [BREDL]."

Noise pollution is also a concern from the plant. According to David Wang, "Noise generated by loader loading, induced draft fan operation, drying cylinder rotation, aggregate hoist lifting, and vibrating screen screening," is a source of noise pollution. This goes against the Land Use Code as well:

K. Establish regulations that promotes adequate light and air, maintains acceptable noise levels, and conserves energy and natural resources.

Another major concern is this plant's location within the Boxelder Watershed.

"Asphalt plants have the potential to contaminate ground water and surface waters through spills and leaks of chemicals. Contaminated groundwater can migrate towards nearby streams and lakes. Possible sources of groundwater pollution are: • Fuel tanks, pipework and fueling stations, • Solvents, • Other chemical agents used and stored onsite. Asphalt plants should not be sited in flood plains."

According to the Land Use Code, industrial areas should be located interior to the large block of industrial/light industrial. The proposed asphalt plant DOES NOT follow this.

"3.04.2 I – Industrial District. A. Intent. The Industrial District is intended to provide a location for large-format buildings for manufacturing, warehousing and distributing, indoor and outdoor storage. Locations for this zone require good access to major arterial streets and adequate water, sewer and power. Industrial areas should generally be located interior to the large block of industrial/light industrial areas."

Also, per the Land Use Code:

C. Limitations. Any use in this District shall conform to the following requirements:

Written Public Comments
3:00pm 4/25/2023

1. Dust, fumes, odors, smoke, vapor and noise shall be confined to the site and be controlled in accordance with the state air pollution laws.

While the proposed plant may be regulated by state agencies, they cannot guarantee that these toxins will be confined to the site. In fact, pollution has been known to be carried over two and a half miles from asphalt sites.

Per the proof listed below on articles published by the EPA, US Department of Health and Human Services, scientists and others, the proposed asphalt plant in our town MUST be labeled as heavy industrial and the 2,640 feet setback from any residential district must be imposed:

B. Any Industrial and Manufacturing, Heavy use producing and curating toxic chemicals or conducting animal slaughtering shall be located at least:

1. Two thousand six hundred forty (2,640) feet from any residential district, religious land use, medical care facility, or school.

“Asphalt Fumes are Known Toxins. The federal Environmental Protection Agency (EPA) states "Asphalt processing and asphalt roofing manufacturing facilities are major sources of hazardous air pollutants such as formaldehyde, hexane, phenol, polycyclic organic matter, and toluene. Exposure to these air toxins may cause cancer, central nervous system problems, liver damage, respiratory problems and skin irritation." [EPA]. According to one health agency, asphalt fumes contain substances known to cause cancer, can cause coughing, wheezing or shortness of breath, severe irritation of the skin, headaches, dizziness, and nausea. [NJDHSS] Animal studies show PAHs affect reproduction, cause birth defects and are harmful to the immune system. [NJDHSS] The US Department of Health and Human Services has determined that PAHs may be carcinogenic to humans. [DHHS].”

I appreciate your time to correct this error in planning and ensure that the proposed asphalt site is enforced CORRECTLY. Again, while I know the argument that state agencies regulate asphalt plants, it DOES NOT NEGATE the fact that this proposed asphalt plant **DOES** in fact curate toxic chemicals and violate the Land Use Code. As long as toxic chemicals are curated (whether regulated or not) a setback must be implied per the town of Wellington’s Land Use Code.

Please see the additional evidence below which outlines the toxic chemicals curated from asphalt plants as well as other concerning issues.

Sincerely,

Jade and Brittany Cowan and family

Written Public Comments
3:00pm 4/25/2023

Additional Information:

About Asphalt Plant Pollution

Asphalt plants mix gravel and sand with crude oil derivatives to make the asphalt used to pave roads, highways, and parking lots across the country. These plants release millions of pounds of chemicals to the air during production each year, including many cancer-causing toxic air pollutants such as arsenic, benzene, formaldehyde, and cadmium. Other toxic chemicals are released into the air as the asphalt is loaded into trucks and hauled from the plant site, including volatile organic compounds, polycyclic aromatic hydrocarbons (PAHs), and very fine condensed particulates.[EPA]

Asphalt Fumes are Known Toxins. The federal Environmental Protection Agency (EPA) states "Asphalt processing and asphalt roofing manufacturing facilities are major sources of hazardous air pollutants such as formaldehyde, hexane, phenol, polycyclic organic matter, and toluene. Exposure to these air toxics may cause cancer, central nervous system problems, liver damage, respiratory problems and skin irritation." [EPA]. According to one health agency, asphalt fumes contain substances known to cause cancer, can cause coughing, wheezing or shortness of breath, severe irritation of the skin, headaches, dizziness, and nausea. [NJDHSS] Animal studies show PAHs affect reproduction, cause birth defects and are harmful to the immune system. [NJDHSS] The US Department of Health and Human Services has determined that PAHs may be carcinogenic to humans. [DHHS]

Flawed Tests Underestimate Health Risks. In addition to smokestack emissions, large amounts of harmful "fugitive emissions" are released as the asphalt is moved around in trucks and conveyor belts, and is stored in stockpiles. A small asphalt plant producing 100 thousand tons of asphalt a year may release up to 50 tons of toxic fugitive emissions into the air. [Dr. R. Nadkarni] Stagnant air and local weather patterns often increase the level of exposure to local communities. In fact, most asphalt plants are not even tested for toxic emissions. The amounts of these pollutants that are released from a facility are estimated by computers and mathematical formulas rather than by actual stack testing, estimates that experts agree do not accurately predict the amount of toxic fugitive emissions released and the risks they pose. According to Dr. Luanne Williams, a North Carolina state toxicologist, 40% of the toxins from asphalt plant smokestacks even meet air quality standards and for the other 60% of these emissions, the state lacks sufficient data to determine safe levels.

There is documented evidence from health experts and federal and state regulators of the serious health effects of asphalt plant emissions. We must heed these early warning signs and take action to prevent communities from further exposure to cancer-causing substances released by asphalt plants. The following actions are needed:

Moratoriums on asphalt plant construction and operation in communities where people live and go to school;
Stricter testing and enforcement of air quality standards at asphalt plants; and
Improved air standards that address all toxic contaminants including fugitive emissions.

Even if an asphalt plant meets all air pollution standards, people living nearby are still exposed to cancer-causing substances that can cause long-term damage. These standards are based on the principle of "acceptable risk", and assume each state will enforce the standards, the plants will operate perfectly, and the owners can be trusted to operate on an honor system where they are expected to follow all the laws and regulations that apply to their facility without any government oversight. In the majority of cases, it is unknown whether the `theoretical' air emissions predicted by computer models and used by plant owners accurately reflect air emissions from a plant's daily operations. We must put safety first and shut down or overhaul the current system that fails to protect communities from the daily health hazards of asphalt plant pollution.
Reference:
https://cms2.revize.com/revize/cityofcovington/covington/docs/downtownplan/Asphalt%20Facilities%20Analysis%20for%20Downtown%20Covington%20AHBL%20Final%20Revised_06_03_2010%20Clean%20Copy.pdf

II. Impacts of Asphalt Plants Asphalt plants have the potential for a variety of impacts due to the volume and type of materials handled, the heat requirements of the manufacturing process and associated emissions from burning of fuels, and the equipment used.

While required Best Available Control Technologies and other regulatory requirements work to minimize impacts of asphalt plants, there may still be potential for impacts, particularly due to equipment failure or human error. Below is a discussion of potential environmental impacts followed by a discussion on how these impacts may affect development in Covington’s Downtown.

Air quality Asphalt plants have the potential to emit particulate matter, polycyclic aromatic hydrocarbons (PAHs), and gaseous volatile organic compounds (VOCs). These pollutants are considered detrimental to human health (some are suspected carcinogens). The degree to which emissions are hazardous also depends on the fuel used in the production process. Natural gas or propane produce the least hazardous emissions, whereas oil or diesel may create more harmful emissions.

The mixer portion of an asphalt plant is the most significant source of gaseous emissions, however fugitive emissions may be released from other sources such as bitumen tanks, skip hoists, and loading stations. The main sources of particulates include stack emissions, as well as fugitive emissions from storage piles and transport of materials.

The amount of “stack dust” emitted depends on a number of production factors, including: • The nature and the moisture content of the used mineral materials, • The treatment of the mineral materials in the drum, • The amount and temperature of the waste gas, • The waste gas velocity in the drum, • The shape of the extraction hood, • The total output of the plant.

While technology, proper emission control systems, and periodic inspection and reporting may all help to minimize pollutants, asphalt plants are allowed to emit pollutants up to a certain level

under state and federal law. These emissions could have an impact on immediate ambient air quality that can be noticeable to the general public in the vicinity of the facility.

While EPA air quality standards (incorporated in WAC 173-400) would not allow an asphalt plant that causes or contributes to a violation of ambient air quality standards to be permitted, there is always some potential for the release of harmful pollutants above allowed levels.

Where pollution control technologies fail, or human operators make errors, plumes of gases may be released. Emissions from asphalt plants and associated activities also have potential for creating odor impacts.

The main source of odor for asphalt plants is typically bitumen. "Among the compounds identified in bitumen and its emissions, some have been listed as carcinogenic by the International Agency for Research on Cancer (IARC) and/or listed as carcinogenic, mutagenic, toxic to reproduction (CMR) and/or hazardous by the European Union."

Odor may be generated from the loading of bitumen tanks, and emptying of the mixer onto conveyors, or into trucks. While controls such as vapor condensers and baghouses are effective at reducing the everyday adverse impact of odors, the potential for offsite odors still exists. Routine site inspection to ensure good housekeeping practices are being used for storage and on-site movement of materials, and equipment is operating as specified, may be among the steps taken to minimize air quality impacts.

Siting asphalt plants downwind from residential areas and/or tightly regulating hours of operation may help to minimize odor and impacts to ambient air quality. The predominant wind patterns in the Covington TO: Richard Hart, City of Covington 04/05/10 FROM: AHBL, Inc 4 Regulatory Options for Asphalt Batch Plants area are generally from the southwest. The majority of Covington's downtown is to the east/northeast of the proposed asphalt plant site. This means that existing and new development would at least partially be downwind from the proposed asphalt plant site.

D. Water quality Asphalt plants have the potential to contaminate ground water and surface waters through spills and leaks of chemicals. Contaminated groundwater can migrate towards nearby streams and lakes. Possible sources of groundwater pollution are: • Fuel tanks, pipework and fueling stations, • Solvents, • Other chemical agents used and stored onsite. Asphalt plants should not be sited in flood plains.1 In addition to good housekeeping and best management practices to minimize spills and leaks associated with the manufacturing and delivery process, facilities often channel stormwater to avoid contamination or remove

"An asphalt plant is regarded everywhere as a quintessential heavy industrial use. It is associated with noise, with smells, with dust, with heavy truck traffic."

The pollution asphalt plants have

David Wang

David Wang

Overseas Manager at Santai Machinery CO.,LTD
Published Oct 10, 2018

What pollution do asphalt plants have in production?

1 Pollutants

The pollutants generated during the operation of the asphalt mixing plant mainly include the following aspects, as shown in chart 1.

(1) Harmful gases. The flue gas generated by the drum burner, the asphalt discharge produced by the finished product discharge port, the asphalt tank, the heavy oil tank heating and insulation, and the SOx, NOx, CO, CO2 discharged from the chimney.

(2) Dust. The loading process and the mixing of soot and dust generated in the main building and the gathering site.

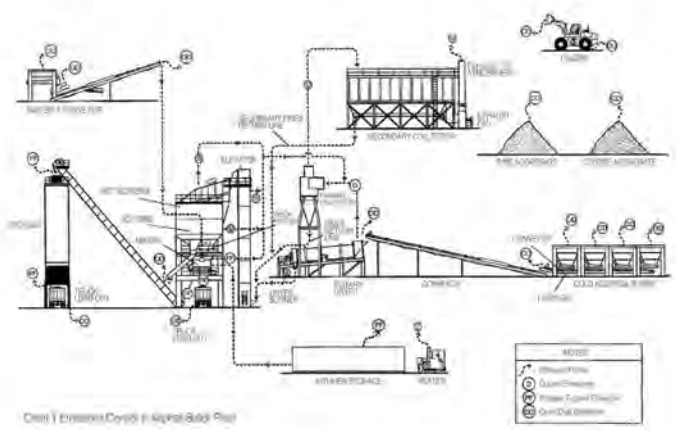
(3) smell. The odor generated by the storage, unloading, and heating of the asphalt, as well as the odor of the burner during operation and the odor generated by the asphalt mixture on the truck.

(4) Noise. Noise generated by loader loading, induced draft fan operation, drying cylinder rotation, aggregate hoist lifting, and vibrating screen screening.

(5) Waste water and waste liquid. Waste water and waste liquid are mainly derived from cold aggregate storage (infiltration or mixing with natural soil), fuel oil tanks, heat transfer oil, oil and gas storage tanks, pipelines and gas stations, solvents, additives, etc.

(6) Waste. The waste is derived from the secondary recovery powder of the bag filter, laboratory analysis solvent, and the like.

(7) Visual aspects. Mainly the visual impact of the main building or chimney of the mixing station, and also the color of the paint in the mixing station; the other includes the steam in the wet aggregate discharged from the chimney, the storage area of the cold material and the lighting of the factory.



2 Harm of pollutants

These pollutants can cause the following hazards to the environment and the human body.

(1) Asphalt smoke. Asphalt smoke contains thousands of substances, and the main harmful substances are acridine, phenols, pyridines, anthraquinones and benzopyrenes. Benzopyrene in asphaltic fumes is highly carcinogenic and toxic, causing headaches, dizziness, nausea and vomiting, pharyngitis, rhinitis, and enlarged liver.

(2) Dust. Dust mainly damages the body's respiratory system. After the inhalable particles in the air are inhaled into the human body, they enter the lungs through the nose, pharynx and bronchus. Some stimulating gas particles can be adsorbed on the nasopharynx to cause rhinitis and pharyngitis. The fine particles entering the lungs are blocked by the local tissues of the lungs. The role is easy to cause bronchitis, pulmonary fibrosis and emphysema.

(3) Sulfur dioxide. After entering the respiratory tract, sulfur dioxide is mostly soluble in water, so most of it is blocked in the upper respiratory tract, causing corrosive sulfite, sulfuric acid and sulfate on the moist mucous membrane to enhance the stimulation. The combined action of sulfur dioxide and fly ash can promote the proliferation of alveolar fibers, damage the lung tissue, and develop emphysema.

(4) Carbon monoxide. The degree of damage of carbon monoxide to the body depends mainly on the concentration and the length of time the body absorbs. Carbon monoxide poisoning can cause hypoxia in the body tissues, and the most significant impact on the heart and brain, often leading to softening and necrosis of brain tissue.

(5) Nitrogen oxides. Nitrogen oxides are less irritating to the mucous membranes of the eyes and upper respiratory tract, mainly invading the bronchioles and alveoli in the deep respiratory tract, causing pulmonary edema.

(6) Noise. Noise can not only seriously affect the auditory organs, but also cause people to lose hearing, but also affect sleep and nervous system, making people feel impatient and easy to get angry. Since noise can irritate the nervous system and cause it to be suppressed, people who work in a noisy environment for a long time are prone to neurasthenia.

(7) Odor. The odor generated by asphaltic cigarettes seriously affects the growth and development of humans, animals, and plants. If people are exposed to such odors for a long time, they may cause respiratory diseases and skin diseases, and may induce cancer.

Chart 2 Emissions Sources KG/T

Process		Particle Qty	PM10	PM2.5
Batch mix plant	Open dust emission	16	2.35	0.135
	Water filter	0.07	0.045	0.014
	Bag filter	0.021	0.014	0.004
Continuous type plant	Open dust emission	14	3.25	0.15
	Water filter	0.023	0.015	0.002
	Bag filter	0.017	0.012	0.001

Print

Planning Commission May 1, 2023 Public Comment - Submission #2965

Date Submitted: 4/18/2023

First and Last Name*

Test

Email Address*

Test

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

Public Comment for the Planning Commission May 1, 2023 Meeting

Print

Planning Commission May 1, 2023 Public Comment - Submission #2967

Date Submitted: 4/18/2023

First and Last Name*

Test

Email Address*

Test

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

Public Comment for the Planning Commission May 1, 2023 Meeting

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Planning Commission May 1, 2023 Public Comment - Submission #2980

Date Submitted: 4/20/2023

First and Last Name*

Kara Walker

Email Address*

K82walker@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3375 Firewater Ln

Public Comment for the Planning Commission May 1, 2023 Meeting

Why is an Asphalt plant going in near a residential area when it has been proven to cause SEVERE health issues?! Will precautions be made so that the toxic fumes wonâ€™t be released? Why is it ok to build near the park? My main concern is this causing health issues for my family and myself. Will this plant depreciate home value as well?

Print

Planning Commission May 1, 2023 Public Comment - Submission #2981

Date Submitted: 4/20/2023

First and Last Name*

Katie Meyer

Email Address*

katums926@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3255 Iron Horse Way, Wellington, CO 80549

Public Comment for the Planning Commission May 1, 2023 Meeting

Dear Town of Wellington Planning Commission: The Connell site plan doesnâ€™t meet the more stringent requirements that apply to toxic chemicals and so cannot be located at the proposed location. Land use code 4.03.21, B, regarding the production and curating of toxic chemicals, requires these sites to be located at least 2,640 feet from any residential district, religious land use, medical care facility, or school. According to section B of Land Use Code 4.03.21, the size of the property is too small to allow a setback of 2,640 feet. The Toxic Chemicals released are Hazardous air pollutants (HAPs) and Polycyclic aromatic hydrocarbons (PAHs). Toxic chemicals from these processes are; Formaldehyde, Acetaldehyde, Benzene, Hydrogen Sulfide, Chromium, Cadmium, Arsenic, Toluene, Ethylbenzene, and Xylene, along with smaller amounts of toxic chemicals. Current regulations for asphalt plants only assess particulate matter emissions, not toxic chemicals in the forms of HAPs and PAHs. From the last planning commission meeting, Connell Resources showed a holding pond of the runoff water closest to the community park. Wright, Minnesota has had health issues in neighborhoods from nearby asphalt plants. In reading their research, according to the New Jersey Department of Health and Senior Services Occupational Health Service, "Exposures in the community, except possibly in cases of fires or spills, are usually much lower than those found in the workplace. However, people in the community may be exposed to contaminated water as well as to chemicals in the air over long periods. This may be a problem for children or people who are already ill." https://www.co.wright.mn.us/AgendaCenter/ViewFile/Item/6844?fileID=14104 This batch asphalt plant produces and curates toxic chemicals. The planning board should not approve this plan due to the production and curating setback of 2,640 feet. No variance for this speciï¬c setback has been sought. Sincerely, Katie Meyer

Print

Planning Commission May 1, 2023 Public Comment - Submission #2983

Date Submitted: 4/20/2023

First and Last Name*

Chad Canfield

Email Address*

chad@sweetheartbowling.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3340 Grizzly Way

Public Comment for the Planning Commission May 1, 2023 Meeting

Thank you for the opportunity to comment on the proposed Hot Mix Asphalt plant in the Business Park. The primary concerns I want to address are the health and environmental impacts and the nuisance the plant will be for the Buffalo Creek neighborhood and surrounding residential and public areas within 1.5 â€“ 3 miles of the plant. Health concerns: 1. Air pollution: Hot mix asphalt plants emit various air pollutants such as formaldehyde, hexane, phenol, polycyclic organic Matter, toluene, other volatile organic compounds, carbon monoxide, sulfur dioxide, and nitrogen oxides, which can cause problems such as cancer, central nervous system problems, liver damage, asthma, coughing, wheezing, shortness of breath, headaches, dizziness, and nausea. 2. Noise pollution: The noise generated from the plant's machinery and trucks can lead to hearing loss, sleep disturbances, and stress-related health issues. 3. Chemical exposure: Handling and storing hot asphalt mix can expose workers and residents to harmful chemicals. Examples are as follows: Environmental concerns: 1. Water pollution: Runoff from hot-mix asphalt plants can contaminate nearby water sources (e.g., Boxelder Creek) with pollutants such as oil, grease, and heavy metals, which can harm aquatic life and affect water quality. 2. Soil contamination: Spills or leaks from the plant's machinery or storage tanks can contaminate the soil with hazardous substances. 3. Energy consumption: Asphalt production requires significant energy and resources, contributing to greenhouse gas emissions and climate change. Nuisance concerns: 1. Odors: The production process can generate unpleasant odors that can be a nuisance to nearby residents. 2. Traffic congestion: The constant flow of trucks in and out of the plant can lead to traffic congestion and safety hazards. 3. Aesthetics: The presence of an industrial facility in a residential area can impact the neighborhood's aesthetics, lowering property values. Specific Chemical Concerns: 1. Volatile Organic Compounds (VOCs): VOCs are a group of chemicals that can vaporize and form harmful gases when exposed to air. They can cause respiratory problems, eye irritation, headaches, and other health effects. Hot mix asphalt plants can emit VOCs from the asphalt binder, fuel combustion, and storage tanks. 2. Particulate Matter: refers to tiny particles of solid or liquid Matter that can be inhaled into the lungs and cause respiratory problems. Hot mix asphalt plants can emit PM from the aggregate material, the asphalt binder, and the combustion of fuels. 3. Carbon Monoxide: is a colorless, odorless gas that can be harmful in high concentrations. It can cause headaches, dizziness, nausea, and even death. Hot-mix asphalt plants can emit CO from fuel combustion and asphalt binder production. 4. Sulfur Dioxide: is a gas that can irritate the eyes, nose, and throat and cause respiratory problems. It can also contribute to acid rain and damage plants and crops. Hot-mix asphalt plants can emit SO2 from fuel combustion and asphalt binder production. 5. Nitrogen Oxides: refers to a group of gases that can contribute to smog formation and acid rain. They can also cause respiratory problems and aggravate existing health conditions. In addition, hot-mix asphalt plants can emit NOx from fuel combustion and asphalt binder production. 6. Polycyclic Aromatic Hydrocarbons: are a group of chemicals that can form during the combustion of organic material, such as asphalt. They can cause cancer, birth defects, and other health effects. Hot-mix asphalt plants can emit PAHs from fuel combustion and asphalt binder production. 7. Heavy Metals: Heavy metals such as lead, cadmium, and mercury can be present in asphalt binder and emitted from the plant during production. These metals can accumulate in the environment and risk human and ecological health. Because of the above concerns, I oppose the proposal for the plant. Thank you, Chad Canfield

Print

Planning Commission May 1, 2023 Public Comment - Submission #2982

Date Submitted: 4/20/2023

First and Last Name*

Miranda Zuvich

Email Address*

mirandazuvich@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3292 Iron Horse Way

Public Comment for the Planning Commission May 1, 2023 Meeting

I moved to Colorado to go to school at CSU. After living in Fort Collins for 2 years, I wanted to get out of the busy city and move somewhere quieter. I love the small-town vibe of Wellington. I love the open space. I love this town! I purchased a house on the north end of Buffalo Creek and I was so excited about where I lived! The community spaces near my house, a park, a dog park, and tennis courts! This is where I envision living for the rest of my life, where I hope to raise my kids. I was so excited to see the Middle High School open up, knowing that my future kids would have a great school near their house. Wellington has done so many great things to bring attention to them and invite hopeful residents. There are so many great restaurants, breweries, parks, and new housing developments. While I understand that an asphalt plant would bring new jobs, it will also push so many people out of this town. People will not want to move here, let alone spend time here. I will be one of the many leaving Wellington if this asphalt plant is approved. The plant would be less than a mile away from my home. With the known carcinogenic effects of this plant, I cannot justify living here. The plant would be less than a mile away from a beautifully developed community center. An asphalt plant does not belong that close to any town, it does not belong that close to Wellington. This plant should not just be moved to another small town with the prospect of new jobs, this plant should be moved to a rural area where the effects of its emissions will not smog a town of 12,000 people. The way to bring new jobs is to encourage new non-factory businesses to come to Wellington! Pitch a case to technology companies, restaurants, amazon warehouses, or literally anything that is not a factory. This town has done so much to make itself better and more habitable, please don't ruin that with an asphalt plant. Please. While I plead my case, consider that you also live here. Think of your kids. Think of the town you obviously care about so much that you are working for the government of this town. Money can cloud our judgment. Please put the health and safety of the people of Wellington over money. Please.

Print

Planning Commission May 1, 2023 Public Comment - Submission #2985

Date Submitted: 4/20/2023

First and Last Name*

Timothy Strohl

Email Address*

strohlts@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3280 Iron Horse Way

Public Comment for the Planning Commission May 1, 2023 Meeting

To whom it may concern, When I first heard about Connell Resources wanting to build an asphalt plant, I was under the impression that it was going to be on the North side of County Road 66, not the South side. I grew very concerned with this information. There are many, many studies that conclude the air in and around an asphalt plant can produce many types of respiratory issues. Many studies also conclude that breathing the air around a Hot Mix Asphalt (HMA) plant can cause wheezing, coughing, and shortness of breath as well as nausea, headaches, dizziness, and vomiting. The chemicals in asphalt can vary depending on the source of the crude oil, the type of asphalt being made, and the process used. In general, the fumes are a mixture of several different types of chemicals including volatile organic chemicals (VOCs), carbon monoxide, sulfur, nitrogen oxides, and polycyclic aromatic hydrocarbons (PAHs) There was also a study done in Bangor, Maine at an asphalt plant there where one Doctor, a Doctor Mitchell, commented that tiny particles in the production of asphalt produced lung damage, exacerbated breathing conditions and could ultimately cause more serious health issues. This report was published by the U.S. Department of Labor. It was further noted in that report that asphalt fumes has known carcinogens that are generated at the worksite. It was further stated that exposure to asphalt fumes has the potential for chronic health effects, including cancer. That in and of itself should tell the elected officials of this beautiful town, NO we do not want this in our community. As elected government officials, you have been tasked with doing what is best for this community and pave the way for future generations that will follow. Only looking at the revenue, ie; the taxes collected from this site is short sided and irresponsible. The future of our town is in your hands. If this plant is allowed to be built, you face many hurdles, such as lawsuits both of the personal and professional level due to FORSEEABLE health risks from this plant. Connell Resources has a gravel pit on the Carr Road, why are they not wanting to build there? That plant has everything they need to build and sustain an asphalt plant..water, aggregate, etc, and they are no where near a residential area. One can only speculate as to why they do not want to build there. Did Weld County tell them no? Did the residents of Carr tell them no? The proposed plant would be very close to the park where families gather to enjoy the fresh air, and the many opportunities that are within that park. Building a HMA plant might just cause a snowball effect for this town, such as decreased home values, people selling and moving to other cities such as Timnath, or Windsor. This will cause Wellington to become a ghost town in the end. In closing, do not allow greed to make this decision. The residents of this community do not need nor want a HMA plant in our town. Sincerely, Timothy Strohl

Print

Planning Commission May 1, 2023 Public Comment - Submission #2988

Date Submitted: 4/20/2023

First and Last Name*

Carolyn L. Goodwin

Email Address*

info@thecolonialshop.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

305 West Magnolia St PMB 357

Public Comment for the Planning Commission May 1, 2023 Meeting

I am opposed to the Hot Mix Asphalt Plant in the NE section of the Business Park which is 3/4 of a mile from the Buffalo Creek residential area where I live.

Print

Planning Commission May 1, 2023 Public Comment - Submission #2989

Date Submitted: 4/20/2023

First and Last Name*

James Perry

Email Address*

SAgent76@yahoo.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3363 CRAZY HORSE DR

Public Comment for the Planning Commission May 1, 2023 Meeting

I would like the planning commission to provide at least one benefit the Asphalt plant would have to the home owners in the Buffalo Creek development, since we are the ones to suffer the most from the air pollution and increased truck traffic. I bet the commission can' t provide one benefit. The planning commissions first priority should be looking out for the home owners in Wellington and not increasing the coffers of the town at their expense. No way should this asphalt plant be built near any residential area period.

Written Public Comments
3:00pm 4/25/2023

Print

Planning Commission May 1, 2023 Public Comment - Submission #2995

Date Submitted: 4/21/2023

First and Last Name*

JEFFREY A Shaw

Email Address*

shawdog2@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3382 Iron Horse Way Wellington Co. 80549

Public Comment for the Planning Commission May 1, 2023 Meeting

Inserting an asphalt plant in the town of Wellington is the most ridiculous idea I have ever heard of. Not only will it omit dangerous chemicals into the air close to 3 schools and a daycare center where kids play outside and will be subjected to those chemicals but it will definitely reduce our property values that we work so hard to maintain. This is just crazy, crazy, crazy. I honestly was thinking about not wasting my time by voicing my opinion on this subject because ya'll are going to do what you want anyway. It's not about us. It's about you people. Mark my word, you watch how life in Wellington will decline if this project goes through. Just saying.

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Planning Commission May 1, 2023 Public Comment - Submission #2990

Date Submitted: 4/20/2023

First and Last Name*

Susanne Burtis

Email Address*

Susanneburtis@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3234 Wild West Lane

Public Comment for the Planning Commission May 1, 2023 Meeting

I cannot understand why a Hot Asphalt Plant can be allowed to be built so close to a community and children's park when it has been proven that noise and smell and chemicals will impact my community. In looking at the Asphalt Plant in Timnath there are no houses as close as Buffalo Creek will be to this Plant. This will turn Wellington into a place residents will want to move away from. There are other places this Asphalt Plant can be built that do not effect communities like Buffalo Creek. This should not be allowed. CONNELL INDUSTRIES should not be allowed to proceed with this Plant.

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Planning Commission May 1, 2023 Public Comment - Submission #2996

Date Submitted: 4/21/2023

First and Last Name*

Dan Matlock

Email Address*

damatlock@tdsmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3371 White Buffalo Drive

Public Comment for the Planning Commission May 1, 2023 Meeting

Way too much truck and heavy equipment traffic (6-9 double tankers hauling liquid asphalt, roughly 9,000 gallons per truck daily, set to stay about 3 months). Oil fumes and diesel exhaust fumes will cause respiratory as well as environmental hazards. Not to mention the piles of gravel and sand other trucks will bring in. Noise pollution will be extremely noisy. Totally NOT ACCEPTABLE!

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Planning Commission May 1, 2023 Public Comment - Submission #2998

Date Submitted: 4/22/2023

First and Last Name*

Monte medina

Email Address*

montecmedina@hotmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3364 iron horse way

Public Comment for the Planning Commission May 1, 2023 Meeting

To whom it may concern, When I first heard about Connell Resources wanting to build an asphalt plant, I was under the impression that it was going to be on the North side of County Road 66, not the South side. I grew very concerned with this information. There are many, many studies that conclude the air in and around an asphalt plant can produce many types of respiratory issues. Many studies also conclude that breathing the air around a Hot Mix Asphalt (HMA) plant can cause wheezing, coughing, and shortness of breath as well as nausea, headaches, dizziness, and vomiting. The chemicals in asphalt can vary depending on the source of the crude oil, the type of asphalt being made, and the process used. In general, the fumes are a mixture of several different types of chemicals including volatile organic chemicals (VOCs), carbon monoxide, sulfur, nitrogen oxides, and polycyclic aromatic hydrocarbons (PAHs) There was also a study done in Bangor, Maine at an asphalt plant there where one Doctor, a Doctor Mitchell, commented that tiny particles in the production of asphalt produced lung damage, exacerbated breathing conditions and could ultimately cause more serious health issues. This report was published by the U.S. Department of Labor. It was further noted in that report that asphalt fumes has known carcinogens that are generated at the worksite. It was further stated that exposure to asphalt fumes has the potential for chronic health effects, including cancer. That in and of itself should tell the elected officials of this beautiful town, NO we do not want this in our community. As elected government officials, you have been tasked with doing what is best for this community and pave the way for future generations that will follow. Only looking at the revenue, ie; the taxes collected from this site is short sided and irresponsible. The future of our town is in your hands. If this plant is allowed to be built, you face many hurdles, such as lawsuits both of the personal and professional level due to FORSEEABLE health risks from this plant. Connell Resources has a gravel pit on the Carr Road, why are they not wanting to build there? That plant has everything they need to build and sustain an asphalt plant..water, aggregate, etc, and they are no where near a residential area. One can only speculate as to why they do not want to build there. Did Weld County tell them no? Did the residents of Carr tell them no? The proposed plant would be very close to the park where families gather to enjoy the fresh air, and the many opportunities that are within that park. Building a HMA plant might just cause a snowball effect for this town, such as decreased home values, people selling and moving to other cities such as Timnath, or Windsor. This will cause Wellington to become a ghost town in the end. In closing, do not allow greed to make this decision. The residents of this community do not need nor want a HMA plant in our town. Sincerely, Monte C Medina

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Planning Commission May 1, 2023 Public Comment - Submission #2999

Date Submitted: 4/22/2023

First and Last Name*

Christopher Kerin

Email Address*

chrisjkerin1@yahoo.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

8818 Indian Village Dr

Public Comment for the Planning Commission May 1, 2023 Meeting

This proposal to put an asphalt plant in close proximity to residential houses and a park puts the health and safety of all Wellington citizens at risk. This is in clear violation of EPA health and safety guidelines. This will expose anyone at the community park, nearby schools, and surrounding homes to harmful chemicals emitted from the asphalt plant. This sends a clear message to the citizens of Wellington, that money is more important than our health and safety. This is unacceptable and everyone involved should be ashamed of themselves. Please put a stop to this now before this goes any further. It is not too late to do the right thing and show the people of Wellington that our health and safety does matter.

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Planning Commission May 1, 2023 Public Comment - Submission #3000

Date Submitted: 4/22/2023

First and Last Name*

Paul Bodnar

Email Address*

bodnarp60@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

9089 Raging Bull Ln. Wellington, CO

Public Comment for the Planning Commission May 1, 2023 Meeting

RE: PROPOSED ASPHALT PLANT Dear Planning Commission, I wish to register my revulsion to the proposed asphalt plant. I am hopeful that wisdom will prevail and that this abhorrent plan, which will certainly destroy the quality of life in Wellington, can be withdrawn. The close proximity of the asphalt plant to residential areas will undoubtedly propagate an awful, dangerous stench that will make life in Wellington unbearable. From the perspective of health hazards, some of the toxic chemicals found in asphalt plant emissions include Polycyclic aromatic hydrocarbons (PAH), benzene, toluene, nitric and carbonic acid, benz(a)pyrene, formaldehyde, carbon monoxide, nitrogen dioxide, sulphur dioxide and hydrogen sulphide. Many of these chemicals are known carcinogens, as well as skin, eye and respiratory irritants. Secondary to the emissions will be and unsightly industrial plant, the incessant noise and heavy truck traffic. The end result, if the plant becomes a reality, will be a significant reduction in the quality of life, a significant drop in property values and relegate Wellington to be known as nothing more than the Commerce City of Northern Colorado. A town where people live out of necessity rather than by choice. I recommend the Planning Commission take a field trip to a location down-wind of an existing plant to experience and therefore understand the awful, potent and hazardous fumes that the residents of Wellington will no doubt be subject to endure if this plant becomes operational. Best regards, Paul Bodnar 9089 Raging Bull Ln, Wellington

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Planning Commission May 1, 2023 Public Comment - Submission #3001

Date Submitted: 4/22/2023

First and Last Name*

Huston Hoffman

Email Address*

morse.huston@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3313 Thundering Herd Way

Public Comment for the Planning Commission May 1, 2023 Meeting

My comment on this issue is - are you seriously considering approving a HEAVY industrial use to be placed next to the largest, most popular, and exceptionally featured community park (let alone the residential neighbors to this park). Town events going to be held right next to the asphalt plant? REALLY? Hop Skip and a jump away from the new high school and middle school? Come on. The addition of this plant to Wellington while I am sure would be beneficial from a creating jobs, etc. stand point - we HAVE GOT to be smarter than this. I am vehemently opposed to this location being approved for this kind of use. Be smarter about this.

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Planning Commission May 1, 2023 Public Comment - Submission #3004

Date Submitted: 4/23/2023

First and Last Name*

Kenneth M Ferrier

Email Address*

kmfkona@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3393 White Buffalo Dr

Public Comment for the Planning Commission May 1, 2023 Meeting

The proposed asphalt plant would be in direct contradiction to the stated PURPOSE (Article 1.01.1) of the Wellington Land Use Code (WLUC). Specifically, the asphalt plant would NOT "enhance the Town's small-town character" nor would it "further the residents' goals as identified in the Comprehensive Plan". If you disagree, please show us what goals would be furthered by the plant. Furthermore, an Asphalt Plant in the proposed location would stand in opposition to several of the specific stated purposes for which the WLUC was adopted. The WLUC states that the zoning regulations contained therein are designed to: 1.01.1, A - Promote the health, safety, values, and general welfare of Town residents. How would the asphalt plant with its emissions, truck traffic, noise, and negative asthetics achieve any of those foundational goals? Rather, it would seem designed to do just the opposite. 1.01.1, C - Ensure adequate provision of transportation, water supply, sewage disposal, schools, parks, and other public improvements. We are painfully aware of the water supply issues facing our community. How can an asphalt plant do anything but add to the burden of an already over-taxed (and over-priced) system? 1.01.1, H - Prevent...danger and congestion in travel and transportation, and any other use or development that might be detrimental to the stability and livability of the Town. Wellington residents are all too familiar with the traffic congestion that occurs at the I-25 on-ramps and off-ramps, as well as the traffic signal at the East Frontage Rd. At certain times of day the intersection at N. County Rd. 7 and Cleveland Ave. gets really backed up. I have had to wait through multiple cycles of the traffic light, especially when turning left. There is also a concern for the present school zone near Eyestone Elementary School and Wellington Middle School. Those roads are often clogged with school busses and other vehicles belonging to parents who are dropping off or picking up students. Adding a steady flow of asphalt trucks to the situation can only heighten the level of congestion and the likelihood of danger to vehicles and pedestrian students alike. Wouldn't that be "detrimental to the stability and livability of the Town"? I respectfully urge you to act in the best interests of our community and keep the asphalt plant out. Thank you!

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Planning Commission May 1, 2023 Public Comment - Submission #3007

Date Submitted: 4/23/2023

First and Last Name*

Susanne Burtis

Email Address*

Susanneburtis@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3234 Wild West Lane

Public Comment for the Planning Commission May 1, 2023 Meeting

I have passed the Asphalt Plant in Timnath many times and the proximity to any housing developments is negligible in comparison to the proximity of the proposed Asphalt Plant in Wellington. Buffalo Creek sits closer. Putting this plant next to the communities and children's playground will show what the elected officials and appointed members of Wellington truly think of the quality of life here for the residents here. Noise, toxic chemicals blowing from the very strong winds that we get here will cause not only physical health issues , but also mental health issues. This is a very bad idea.

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Planning Commission May 1, 2023 Public Comment - Submission #3006

Date Submitted: 4/23/2023

First and Last Name*

Virginia Jensen

Email Address*

ginjens@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3316 Thundering Herd Way)

Public Comment for the Planning Commission May 1, 2023 Meeting

To the Planning Commission and City Trustees of Wellington. Re: Connell Asphalt Recycling Plant First, I would like to thank and commend you for listening to the citizens of Wellington at the March meeting and postponing the decision to approve the proposed asphalt recycling plant. Second, I have yet to hear any benefit to the citizens and community if this plant is built. I would like to hear why this plant is good for the community. Third, the literature I have seen is both negative and positive regarding health hazards. Some say there are no significant hazards. Others note multiple hazards and that the EPA does not adequately regulate these facilities. Since we cannot be sure we need to be cautious. Fourth, the perception of the vast majority of people here in my neighborhood is that this is not a good idea for multiple reasons, and they do not want it built. My family agrees that this plant should not be given permission. It needs to go away from a population center. Please consider the PEOPLE YOU SERVE and do what is right. Thank you.

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Planning Commission May 1, 2023 Public Comment - Submission #3008

Date Submitted: 4/23/2023

First and Last Name*

Brendan Gallagher

Email Address*

bjfgallagher@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3443 Firewater lane

Public Comment for the Planning Commission May 1, 2023 Meeting

Letter to the Planning Commision RE: the proposed Connell Hot Mix Asphalt Plant To the members of the planning commission: My name is Brendan Gallagher. I live at 3443 Firewater Lane in Wellington. I am very concerned about the effects that the proposed hot mix asphalt plant would have on the health, property values, and culture of our community. Like many people in Wellington, I moved here because it gave me an opportunity to purchase a house and raise a family in a small town. I value both the new and old communities that exist here, and it is important that we prioritize the health of our residents, especially our children. One of the many cancer-causing chemicals that hot mix asphalt plants generate is benzene. In addition to causing cancer, this chemical damages the human nervous system in adults and affects the development of children. A representative from Connell stated that hot mix asphalt plants create less benzene than a fast food restaurant like the Burger King down the road, but that information is from a study paid for by the National Asphalt Pavement Association (https://www.sanbornhead.com/wp-content/uploads/2021/08/Emissions-Comparison-Report.pdf). There are, in fact, many known negative health effects from exposure to asphalt and other hydrocarbons. â€œAvailable epidemiological studies have shown statistically significant links between exposure to hydrocarbons and/or metal fume and childhood leukemia2 and between exposure to asphalt fume and a variety of cancers.â€ (https://www.epa.gov/sites/default/files/2020-10/documents/stkhld-opn.pdf). And there are even more unknown negative health effects. â€œSince EPAâ€™s current approach is based on considering each chemical by itself, knowledge about the health effects of each individual chemical will not be available for many decades. Further, even after this data has been compiled, the synergistic interactions between these chemicals in a complex mixture will not be available and would require further study.â€ (https://www.epa.gov/sites/default/files/2020-10/documents/stkhld-opn.pdf) I donâ€™t understand why a variance for setbacks and silo height were ever granted in the first place. We donâ€™t need an asphalt plant in Wellington, and we definitely donâ€™t need it to be built so close to existing and already-approved residential sites. I moved here to raise a family, not to put my familyâ€™s health at risk. I urge you to find the legal means to protect the residents in Wellington and stop the approval of this plant. Sincerely, Brendan Gallagher 3443 Firewater Lane Wellington, CO

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Planning Commission May 1, 2023 Public Comment - Submission #3009

Date Submitted: 4/24/2023

First and Last Name*

Jeanette Baysingar

Email Address*

drjmag04@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

6781 Mount Nimbus St

Public Comment for the Planning Commission May 1, 2023 Meeting

Dear Committee. I am writing to you to stop the asphalt company from building in our community. The negative impact on our town should not be minimized. The plant will affect the air quality of everyone but especially our children. The proximity to the NEW school and our large beautiful COMMUNITY Park is an outrage. My family loves being outdoors and this will deter any healthy habits of outdoor exercise. This will harm our animals in the community. It will devalue our homes and increase people leaving this community. The houses will be harder to sale and sale for less. The plant will not grow this community in a positive manner. Please reconsider allowing this plant to be built in our town. It needs to be further away from our town and especially our children. Our children are our future and we need to invest in them and their health

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Planning Commission May 1, 2023 Public Comment - Submission #3011

Date Submitted: 4/24/2023

First and Last Name*

Rachael Johnson

Email Address*

rcjohnson313@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3243 Firewater Ln

Public Comment for the Planning Commission May 1, 2023 Meeting

I strongly oppose the proposed asphalt plant. I live close to the plant in the Buffalo Creek neighborhood. I have asthma and have struggled with respiratory problems especially the last 3 years. I am concerned about the impacts of the plant on my health, as we already have poor air quality in this area and this would make the problem worse. I enjoy walking in the community park that will be very close to the plant. It seems very shortsighted to place as asphalt plant so close to the community park where the community, especially families with children, are playing and spending time. I worry about my property values and how they would be negatively impacted by this plant. I'm concerned about increased traffic and the school that will be so close to the plant. I care about Wellington and am very concerned about how this plant being in this specific spot is going to impact our town. Please consider the health and well being of our community do not approve the asphalt plant in this location.

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Planning Commission May 1, 2023 Public Comment - Submission #3020

Date Submitted: 4/24/2023

First and Last Name*

Carol Feebeck

Email Address*

clf010114@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3136 White Buffalo Dr

Public Comment for the Planning Commission May 1, 2023 Meeting

I am totally against the building of a hot mix asphalt plant in Wellington. . I take daily walks through my neighborhood, Buffalo Creek, and Wellington Community Park. Building the plant puts my well-being and health in jeopardy. I have COPD and am very concerned that my condition will be exacerbated due to the fumes and particles it will generate. Building the asphalt plant compromises my home-life as I like to sit in my backyard, have my doors and windows open. The fumes, particles and smells plus noise is going to be a negative affect on my life. I also believe having an asphalt plant close to my residence is going to detour potential buyers and also decrease the value of my home.

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Planning Commission May 1, 2023 Public Comment - Submission #3021

Date Submitted: 4/24/2023

First and Last Name*

Reesa Conrey

Email Address*

reesa.conrey@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

9009 Spirit St.

Public Comment for the Planning Commission May 1, 2023 Meeting

24 April 2023 Dear Town of Wellington Planning Commission: I am writing to request that you vote â€œnoâ€ on the hot mix asphalt plant proposed by Connell Resources to be built northeast of the Buffalo Creek residential area and north of Wellington Community Park. If the proposal remains under consideration by the Wellington Town Planning Commission, despite the objections of Wellington residents, I request that you publicly provide the results of your consultations with appropriate agencies, such as the Larimer County Department of Health and Environment and Colorado Parks and Wildlife. I also request that you make available any data gathered from Connellâ€™s existing operations elsewhere, comparable operations by other companies, and the results of surveys contracted by Connell or the Town of Wellington on water resources, biological resources, or cultural resources on or near the proposed build site and areas downwind and/or downstream from the proposed facility. I attended the Commission meeting on March 6th, where many residents voiced their concerns over air quality, odor, noise, traffic, and groundwater impacts. There were multiple questions about why this site was chosen, given that there are closer locations to their aggregate source in Carr that are still near the train tracks and I-25. This location is adjacent to current and planned residences and just north (and upwind) of Wellington Community Park. I have observed asphalt mix operations on Taft Hill Rd. in Fort Collins and in the proposed Ladera development in Timnath, and I donâ€™t believe that these operations are appropriate or desirable for this site in Wellington. Although I appreciate that Connell has worked with the Board of Adjustment on their proposal, I continue to feel that this is not the right site for this project. I donâ€™t believe they should have granted the variances for smaller setbacks and taller structure heights that otherwise would prevent this project from being built here. There are potential threats to the health of nearby residents, likely loss of home values, and impacts on our park and ballfields downwind of this site, should this asphalt plant be built. Please consider voting â€œnoâ€ on this project, or at least making publicly available all data and results of appropriate consultations. Thank you, Reesa Yale Conrey, Homeowner, Buffalo Creek 9009 Spirit St. Wellington

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Planning Commission May 1, 2023 Public Comment - Submission #3024

Date Submitted: 4/24/2023

First and Last Name*

Travis Paul

Email Address*

Tpaul7712@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3348 Firewater Ln

Public Comment for the Planning Commission May 1, 2023 Meeting

I am writing this letter to express my deep concern over the proposed installation of an asphalt plant near our neighborhood. As a resident of a surrounding neighborhood, I strongly oppose this proposed installation for various reasons. Firstly, the asphalt plant produces a lot of harmful emissions that can have adverse effects on the health of the residents in the surrounding area. Studies have shown that these emissions can cause respiratory problems and other health problems in children, the elderly, and those with pre-existing conditions. Secondly, the installation of such a plant will likely result in an increase in traffic in our community, leading to more traffic accidents and reduced livability for residents. Lastly, the presence of an asphalt plant near our community could lead to a significant decrease in property values, which could have a negative impact on the local economy. I urge local officials to reconsider the installation of this asphalt plant in our neighborhood. Thank you for your time and attention.

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Written Public Comments
3:00pm 4/25/2023

Print

Planning Commission May 1, 2023 Public Comment - Submission #3022

Date Submitted: 4/24/2023

First and Last Name*

David Motichka

Email Address*

dmotichka@hotmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

8960 Raging Bull Lane

Public Comment for the Planning Commission May 1, 2023 Meeting

To the Town Planning Commission - My name is David Motichka and I have lived in Wellington for 22 years. I am writing due to concerns with the Asphalt plant. I am not going to get into the health concerns because I don't feel I am knowledgeable enough, other than reading articles pro and con, to have an intelligent conversation about that. I am writing because I don't understand how we even got to this point regarding the variance of setback and building height. I have built homes in Wellington and on one occasion had to apply for a variance because a buyer decided they wanted a fireplace added. We asked for a 6 inch variance on a side setback and honestly it was a difficult process because the town said "Setbacks are designed for a reason" and "If we change it for one person, we have to change it potentially for others" So if it was so hard to get a 6 inch variance on a side setback for a house, how in the world is the planning commission giving the massive change in setback and building height requested by Connell? It is extremely hard for a resident that is not savvy to the inner dealings of the Town and Connell to not wonder what the incentives or motives are for this move. I think that the town is owed a real explanation of why the variances were given so easily. I would hope that this decision is not being made because this is a golden ticket for Wellington to get out of the many planning and financial mistakes this town has made over the years. Sincerely David Motichka

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Planning Commission May 1, 2023 Public Comment - Submission #3025

Date Submitted: 4/24/2023

First and Last Name*

Meghan Paul

Email Address*

meghanroloson@yahoo.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3348 Firewater Ln

Public Comment for the Planning Commission May 1, 2023 Meeting

I am writing this letter to strongly disagree with the proposed construction of an asphalt plant near our neighborhood. As a long-time resident of this area, I am concerned about the potential impacts that such a plant would have on our quality of life. As you may be aware, asphalt plants produce a great deal of pollution and noise. This could have serious consequences for the health and safety of our community. Studies have shown that the emissions from these plants can contribute to respiratory problems, especially in vulnerable populations such as children and the elderly. Additionally, the construction of an asphalt plant would increase traffic in our already-busy neighborhood, leading to more accidents and increased noise pollution. Moreover, the presence of an asphalt plant in our area could have severe economic consequences. Properties near industrial establishments often decrease in value, which could result in a negative impact on our local economy. For these reasons, I strongly urge you to reconsider the building of an asphalt plant near our neighborhood. We value our community and the wellbeing of our friends and families, and we do not want to expose them to the negative effects of an industrial facility. Thank you for your attention to this matter.

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Planning Commission May 1, 2023 Public Comment - Submission #3026

Date Submitted: 4/24/2023

First and Last Name*

Heather Burton

Email Address*

hburtonart@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

7535 Horsechestnut Street

Public Comment for the Planning Commission May 1, 2023 Meeting

We feel that the entire town of Wellington should have been notified about this and not just the neighborhood next to the proposed site. We found out about the proposal today which is unacceptable. The amount of road traffic alone from this site will be significant and there needs to be many more studies done about the impact on our air quality as well as noise and traffic issues. In addition, I don't believe this is the type of business that our community needs right in town. Something this industrial belongs a bit further out. There are much better ways to build our community. We have to ask, what kind of town do we want Wellington to become, and is this the type of business that takes us in that direction or away from it. I believe it will negatively impact everyone's home values and bring real questions as to the quality of our air and water. At the very least a lot more due diligence should be done before altering our community forever.

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Planning Commission May 1, 2023 Public Comment - Submission #3027

Date Submitted: 4/24/2023

First and Last Name*

Brooke Musial

Email Address*

Brookemmusial@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3255 Crazy Horse drive Wellington, CO 80549

Public Comment for the Planning Commission May 1, 2023 Meeting

I strongly oppose the asphalt plant. I live in the Buffalo Creek neighborhood and will be the closest neighborhood to the plant. I have children and animals and our air here is already toxic enough. I do not want to not spend time outside because of the terrible air pollution that will be right outside my home. My children okay at the playground and splash pad. My dogs play at the dog park. My family and I have an extremely rare cancer gene that increases our chances of getting cancer by a lot. We try to do everything we can to avoid toxins and I want to be able to breath in as clean of air as I can when I walk outdoors. Living close at an asphalt plant increases your risk for cancer. Why would anyone want this in our small community, right across from a neighborhood!? I donâ€™t care if they are known as â€œgoodâ€ neighbors. That doesnâ€™t take the toxins away. I also care about the value of my home and that will drop drastically for this entire area? The only people that I have heard that want this have financial gain. Put it far away from houses! There is plenty of empty land close by that they could move their plant to without being on top of a neighborhood. Itâ€™s sickening and the fact that the board let it get this far is even worse. What are they turning Wellington into?

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Planning Commission May 1, 2023 Public Comment - Submission #3032

Date Submitted: 4/25/2023

First and Last Name*

Ben Freese

Email Address*

benjamin.freese

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

8436 Nashua Circle

Public Comment for the Planning Commission May 1, 2023 Meeting

I understand that the Connell Asphalt Plant is up for debate again. I implore the town to not move forward in allowing the construction of this plant within the limits of our town. We're already known as the northern Colorado town with the worst water quality-- do we want to also be known as the town with the worst air quality? Let's change our story. Wellington: the town that put profits second to the health of its residents. Thank you.

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Planning Commission May 1, 2023 Public Comment - Submission #3033

Date Submitted: 4/25/2023

First and Last Name*

Austin Jackson

Email Address*

austin.jackson@live.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

Public Comment for the Planning Commission May 1, 2023 Meeting

With how much this town struggles dealing with health, safety, and infrastructure already, I worry that certain members of our community put dollars ahead of human beings. Weâ€™re already on the hook for poor water quality, halted developments, snow plowing, limited high-speed internet access, destroyed pavement (ironically, this is something I doubt the proposed facility will help with), and the community is routinely asked to foot the bill for repairs and expansion after the fact. Do we want to be known as a family-friendly farm community or as a poorly-planned and unregulated industrial park with a train line and interstate running through it?

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Connell Resources Asphalt Plant - Wellington, CO

Alden Gaw <agawster@gmail.com>

Mon 4/3/2023 2:00 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>
Cc: janice.marchman.senate@coleg.gov <janice.marchman.senate@coleg.gov>;JKefalas@larimer.org <JKefalas@larimer.org>;takeactionwellington@gmail.com <takeactionwellington@gmail.com>

Dear Cody Bird et al,

My wife and I have resided in the Buffalo Creek HOA in Wellington Colorado since May of 2013. Our primary reason for choosing Wellington was because of its rural and very minor light industry nature and presence.

We watched as the Wellington Community Park was created and appreciated the value-add it's creation brought to Wellington as a whole. We have used and enjoyed it daily throughout these years.

That there is now consideration for an asphalt production plant to become a part of Wellington Colorado east of this community park and adjoining residential neighborhood is beyond and against common sense, good judgement and goodwill to those of us that live here. Industrial additions of this nature without doubt stem from personal greed and the lack of respect and consideration for all that live in and around the town of Wellington.

I've found no one that lives in my neighborhood, or have encountered a Wellington citizen who is in favor of such an offensive addition to our lives, our community, our environment, our health and our well being.

I urge you all to refuse approval of this and any other type of industrial business that is known to produce and release the broad spectrum of toxic chemicals, whether or not regulated at the State and/or Federal levels, immediately and forthwith, and insure that now and for the future the town of Wellington will never have to endure such proposals again, by zoning at the most any parts and parcels of the town of Wellington Colorado as light industrial, especially east of the Wellington Community Park and areas zoned near and around now or in the future as residential.

Respectfully,

Alden Gaw

Everything Depends on Everything Else

Against asphalt company

Brycen Ballinger <ballingerb71@gmail.com>

Wed 4/5/2023 8:54 AM

To: Cody Bird <birdca@wellingtoncolorado.gov>

I'm sure you are getting loads of emails against this potential Connell asphalt company going in next to the park. Down below I listed some asphalt known toxins. I'm personally against this for not only my future wellbeing but my kids who play at this very park and live just a stones throw away. Please If you care for the not only the future of the wellington but its populous tell these guys to take a hike! Share this with whomever you want. Thanks

Asphalt Fumes are Known Toxins. The federal Environmental Protection Agency (EPA) states "Asphalt processing and asphalt roofing manufacturing facilities are major sources of hazardous air pollutants such as formaldehyde, hexane, phenol, polycyclic organic matter, and toluene. Exposure to these air toxics may cause cancer, central nervous system problems, liver damage, respiratory problems and skin irritation." [EPA]. According to one health agency, asphalt fumes contain substances known to cause cancer, can cause coughing, wheezing or shortness of breath, severe irritation of the skin, headaches, dizziness, and nausea. [NJDHSS] Animal studies show PAHs affect reproduction, cause birth defects and are harmful to the immune system. [NJDHSS] The US Department of Health and Human Services has determined that PAHs may be carcinogenic to humans. [DHHS]

NO ASPHALT IN WELLINGTON

Mike Locke <lockem2011@yahoo.com>
Wed 4/5/2023 6:21 AM
To: Cody Bird <birdca@wellingtoncolorado.gov>

NO ASPHALT PLANT: IN WELLINGTON!!

Connell Resources Inc. = the applicant

Next to Wellington Community Park, Buffalo Creek subdivision & the undeveloped Sundance subdivision.

WHY WE DON'T WANT IT HERE?
1. Toxic air emmisions/carcinogens/dust/foul odors, adverse air quality.
2. Liklihood of negative impact on groundwater supply. Strain on already insufficient storm water/ drainage infrastructure in Wellington.
3. Increased residential / business water bills.
3. Plant operations = noise pollution / increased, unpleasant noise in area.
4. Semi Traffic noise / congestion & yes "jake breaks". (always happens, always). Ask Weld county rural residents.
5. LOSS OF PROPERTY / HOME VALUES. Ie; Northern Wellington & rural properties along CR's. 66, 7, 9, & owl canyon.
6. Wellington does NOT require an Environmental Impact Statement. (Lack of Transparency).
7. Increased taxes for All. For road maintenance, Fire Dept. expansion & increased police presence for traffic enforcement, ect, ect..
8. Increased electricity & natural gas costs on Wellington residents. (infrastructure again).
9. More increased TAXES, annexation. Potential for Wellington to expand north. Thus, to attract more, big, heavy industry w/ tax credits /abatements & an increase in taxation on existing residents/business's to accommodate necessary infrustructure expansion. DOES YOUR TOWN GOVERNMENT HAVE YOUR BEST INTEREREST AT HEART? VOTERS!!??

Sincerely, Mike
Wellington pointe community

Asphalt plant

Rachel Hayes <rhayes7686@icloud.com>

Mon 4/10/2023 6:08 AM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Please include in May 1st meeting packet for the board.

We / our family of five does not want an asphalt plant near our park where we go to play, ride bikes, walk our dogs, have a bbq and bath air .

There was little information presented to us and false information provided about it being an asphalt recycling plant. This hot batch asphalt plant should require a huge set back due to curating and producing toxic chemicals. Should not be allowed to be so close to house that are not even built yet.

Not enough information was presented by Connell only a lot of nice words and skating over most questions and stating
“Only steam comes out, we will put trees and shrubberies so to block smell and site of the 70’ addition.” Not acceptable.
No information provided about the affect it will have on the resale of our homes.

Please listen to our communities concerns. Even our middle and high school kiddos (12 & 17 year old) don’t want this here. This isn’t why we moved here.
Thanks
Rachel Hayes
3328 Wild West lane wellington

Sent from my iPhone

Fw: Asphalt Plant Proposal

TOW Building <Building@wellingtoncolorado.gov>
Thu 4/13/2023 8:25 AM
To: Cody Bird <birdca@wellingtoncolorado.gov>
This was in the building email account.

Town of Wellington
Planning and Building Department
Phone: (970) 568- 3554
Email: building@wellingtoncolorado.gov
Web: www.wellingtoncolorado.gov
8225 Third Street, Wellington, CO 80549

From: Chad Mickschl <chad.guides@gmail.com>
Sent: Wednesday, April 12, 2023 10:23 AM
To: TOW Building <Building@wellingtoncolorado.gov>
Subject: Asphalt Plant Proposal

Hi Planning Dept,

I want to inquire and provide comments regarding the proposed Asphalt Plant. I live on the south end of Wellington in the Sage Meadows subdivision. I have some questions about the process of evaluating the impacts of the Asphalt Plant and how this gets approved or denied.

I was able to listen to the video recording of the meeting that is posted online, thanks for making this available.

What I heard was that the land in which the proposed Asphalt Plant is on is zoned industrial. Zoning maps recently changed in Wellington and in the new zoning regulations there are setbacks of 1,000ft linearly and 45ft vertically for land uses in industrial zoned areas. Given these new definitions, the Asphalt Plant needed to be granted variance to the requirements in order to have the proposal considered. From the meeting, I heard that these variances were granted because prior to the new zoning maps and regulations, there were no setback requirements. My concern is that new setback requirements were determined, obviously considering potential uses that could be permitted in industrial areas. To then grant variances to the Asphalt Plant after it was determined that new setbacks are required and justified, I don't see why the variances were granted. Furthermore, to grant variances prior to thorough understanding and analysis of environmental and human impacts seems premature.

1. Are there public documents that the town produced assessing impacts to this proposed action?
2. Impacts that should be assessed and disclosed to the public

- Visual Impacts

- Noise Impacts
- Traffic Pattern Impacts
- Air Quality Impacts
- Water Resource Impacts
- Economic Impacts

Given the proposed location of the Asphalt Plant, next to an established housing neighborhood and next to land zoned for housing development, and next to a public park with a children playground, tennis courts and baseball field, it seems like there is a better location for the health, safety and viability of the town and its residents. The Town of Wellington should prioritize protecting its residents before a polluting industry moves into a neighborhood. If the Asphalt Plant is permitted, I would predict many residents moving out of town and others not moving here. The Town of Wellington already has health and safety issues to deal with for its residents, I don't believe they should add another. There is a lot of vacant land outside of city limits, there is certainly a better location and balance to achieve and the company should be exploring those options.

Thanks

Chad Mickschl

May 1st meeting/Asphalt Plant

Susanne B. <susanneburtis@gmail.com>

Thu 4/20/2023 4:27 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

I am writing again regarding the proposed Asphalt Plant. I oppose it. I live in Buffalo Creek and with the bad impact from noise, air quality(pollution)especially with the high wind in Wellington and toxic chemicals that this Plant will produce it is a very bad idea to force residents to try to live normal lives around this Plant. CONNELL INDUSTRIES can build this plant in Weld County without impacting the health of residents close by. This is a very bad thing to make the residents of Wellington have to suffer from. I was led to believe Colorado was an environmentally safe place to live. If this Asphalt Plant is approved for Wellington. Then protecting the environment here is not a priority. Wellington will not be a safe place to live in.

Written Public Comments
3:00pm 4/25/2023

Development

Joanne Carlson <vinmarkid5@msn.com>

Thu 4/20/2023 4:52 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

I had always thought that piece of property in the north east area of Wellington would be a perfect location for some good businesses like are on the south end of the street. Nice looking and bringing business to Wellington. The proposal of hot asphalt plant is neither of those things. Wellington city council can do better. I know there surely must be other businesses who would like to come to Wellington. Please search this out before acting so quickly.
Joanne Carlson
3255 Grizzly Way
Sent from my iPhone

Fwd: Asphalt plant

Chris Schott <cschott50@hotmail.com>
Thu 4/20/2023 9:09 AM
To: Cody Bird <birdca@wellingtoncolorado.gov>

Dear Mr Bird:
I sent the letter below to you quite a while ago and I am resending it now because I would like it to be included in the planning commission packet for the town council meeting on May 1. Please respond and confirm that it will be included. Thank you for your assistance in this matter,
Mary Chris Schott
8987 Smoke Signal Way
Wellington, Colorado
Sent from my iPad

Begin forwarded message:

From: Chris Schott <cschott50@hotmail.com>
Date: December 8, 2022 at 8:55:25 PM MST
To: Jodi Quass <jodiquass@gmail.com>
Cc: Chris Schott <cschott50@hotmail.com>
Subject: Asphalt plant

Dear Mr. Byrd and town council members:
I have recently become aware of the town's plans to erect an asphalt plant just to the north of town. I have done some research on the effect of asphalt plants in neighborhood areas and the results are not good. There is a dramatic increase in the incidence of cancer, nerve dysfunctions, and liver issues. In other places where asphalt plants have been built there are reports of headaches,rash, sensitivity, fatigue, reduced appetite, cough and various skin cancers. Small particulate matter is also released and that can get into the lungs and bloodstream causing cancers and heart problems.I have read that the newer technology mitigates these unfortunate effects but frankly I don't find them to be very credible. Once we have the plant here, if it's determined that it does create pollution or health issues it will be too late for us to do anything about it. I find this an unreasonable situation. Not only do I live in town but my daughter and her family also live in town with their small children. I can't imagine the effect of breathing in the kind of air pollution that comes with that sort of plant on their small bodies.

In addition to the numerous negative health effects, property values would likely decrease. Having a layer of soot on everything isn't a great selling point. Ask the people in Commerce City how they enjoy the environment that they have been told does no harm to them. I have not spoken to anyone in Wellington, who is in favor of the asphalt plant, so I'm wondering why the town is continuing to move forward with this. Surely how the

constituents feel about this matters to the council.

I'm not sure what the benefit of this asphalt plant would be to the town, but I doubt that it would make up for the harm that it will do. I hope that the council will reconsider this proposal for the good of us all.

Sent from my iPhone

Plant

Jeffrey Shaw <shawdog2@gmail.com>

Fri 4/21/2023 6:35 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Cody, Inserting an asphalt plant in the town of Wellington is the most ridiculous idea I have ever heard of. Not only will it omit dangerous chemicals into the air close to 3 schools and a daycare center where kids play outside and will be subjected to those chemicals but it will definitely reduce our property values that we work so hard to maintain. This is just crazy, crazy, crazy. I honestly was thinking about not wasting my time by voicing my opinion on this subject because ya'll are going to do what you want anyway. It's not about us. It's about you people. Mark my word, you watch how life in Wellington will decline if this project goes through. Just saying.

Written Public Comments
3:00pm 4/25/2023

Paul Whalen

From: josh kerson <jkoct28@hotmail.com>
Sent: Sunday, April 23, 2023 9:15 PM
To: Paul Whalen
Subject: Please do not allow the asphalt plant to be built in our community...

Ladies and gentlemen of the City Planning Board,
I'm here today to express our community's strong opposition to the proposed new asphalt plant. We are deeply concerned that this plant would have significant negative impacts on our community values, especially given the fact that our Front Range Colorado air is already compromised.
We have several concerns about the proposed plant, including the dangerous chemicals that are used in producing asphalt. These chemicals, such as benzene, toluene, and formaldehyde, can pose serious health risks to our community, especially to the children who will attend the new school that is located in close proximity to the plant.
In addition, the emissions from the plant could further compromise our air quality, exposing us to even more pollution and toxins. This is particularly concerning given that our community is already struggling with poor air quality, and we believe that the addition of an asphalt plant would only make things worse.
We are also concerned about the impact the plant would have on our quality of life. The noise, traffic, and pollution generated by the plant would make it more difficult for us to enjoy outdoor activities such as biking, running, and playing sports. We value the ability to spend time outside with our families and friends, but the construction of this plant would make that much more difficult.
Moreover, the Union of Concerned Scientists has reported that asphalt plants are among the top industrial sources of cancer-causing pollution. We cannot allow our community to be exposed to such risks, especially when we already have significant concerns about air quality in our area.
In conclusion, I urge you to take our concerns seriously as you consider the proposal for the new asphalt plant. The health and well-being of our community is at stake, and we believe that the construction of this plant would be a grave mistake. Thank you for your time and consideration.

Thank you kindly, Josh Kerson
3815 Garfield Ave
Wellington CO, 80549
po 1374

05/01/2023 Town Planning Meeting - Asphalt Plant

Daniel Otamendi <dan.otamendi@gmail.com>
Sun 4/23/2023 7:23 PM
To: Cody Bird <birdca@wellingtoncolorado.gov>

1 attachments (16 KB)
Outlook-unxwd02n.jpg;

Hello Cody,

My name is Daniel Otamendi and I live at 9076 Smoke Signal Way in the Buffalo Creek community. Our house backs up directly to the community park. We are strongly opposed to the asphalt plant due to: increased noise and industrial traffic in the area, poor air quality, and the high likelihood of a decrease in property value.

Thank you for your time and consideration with reading this email.

Regards,
Dan

On Mon, Mar 6, 2023, 1:25 PM Cody Bird <birdca@wellingtoncolorado.gov> wrote:

> Daniel and Family,
>
> Thank you for the correspondence. I have received your email and will include it in the information provided to the Planning Commission.
>
> Kind regards,
>
> ---
>
> **From:** Daniel Otamendi <dan.otamendi@gmail.com>
> **Sent:** Monday, March 6, 2023 12:49 PM
> **To:** Cody Bird <birdca@wellingtoncolorado.gov>
> **Subject:** 03/06/2023 Town Planning Meeting - Asphalt Plant
>
> Good Afternoon Cody,
>
> I am a resident of the Bufflao Creek Community and I am opposed to the Connel Asphalt Plant so near to the Wellington Community Park and our neighborhood. Attached is a document with a few more details.
>
> Thank you,
> Daniel Otamendi and Family

Written Public Comments
3:00pm 4/25/2023

Asphalt plant

Jeanette Baysingar <drjmag04@gmail.com>
Mon 4/24/2023 6:35 AM
To: Cody Bird <birdca@wellingtoncolorado.gov>

Dear Cody,

I am writing to you to stop the asphalt company from building in our community. The negative impact on our town should not be minimized. The plant will affect the air quality of everyone but especially our children. The proximity to the NEW school and our large beautiful COMMUNITY Park is an outrage. My family loves being outdoors and this will deter any healthy habits of outdoor exercise. This will harm our animals in the community. It will devalue our homes and increase people leaving this community. The houses will be harder to sale and sale for less. The plant will not grow this community in a positive manner. Please reconsider allowing this plant to be built in our town. It needs to be further away from our town and especially our children. Our children are our future and we need to invest in them and their health.

Sincerely
Jeanette Baysingar
6781

Asphalt plant

susan cooney <stcooney9701@gmail.com>

Mon 4/24/2023 10:23 AM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Dear Mr. Bird,
My family and I live at 7359 View Pointe Circle in Wellington. I was very alarmed when I learned that Wellington is considering allowing an asphalt plant to be built in Wellington. The health effects and smell associated with an asphalt plant are certainly an area of concern. I am also worried about the effect this will have on my property value. I urge you to support the will of the citizens and not allow this asphalt company to locate in Wellington.

Sincerely,
Susan Cooney
720-383-3948

Written Public Comments
3:00pm 4/25/2023

Public Comment

Gilda Gallagher <gilda.gallagher@gmail.com>
Mon 4/24/2023 8:31 PM
To: Cody Bird <birdca@wellingtoncolorado.gov>

Dear Cody Bird,

My name is Gilda Gallagher. I live at 3443 Firewater Lane in Wellington. I am very concerned about the effects that the proposed hot mix asphalt plant would have on the health, property values, and culture of our community.

It is important that we prioritize the health of our residents, especially our children. I expect Wellington leaders to be thoughtful about the impact of the choices they make. I expect our leaders to represent and look out for their residents. I don't understand why a variance for setbacks and silo height were ever granted. There is no reason for this plant to be built so close to our schools, park, & residential area when other locations are available.

I urge you to find the legal means to protect the residents in Wellington and stop the approval of this plant.

Sincerely,

Gilda Gallagher
3443 Firewater Lane
Wellington, CO

Sundance at Daubert Farm Holdings, LLC
308 Commerce Drive, Unit A
Fort Collins, CO 80524
Phone: 970-493-6262

March 6, 2023

Planning Department
Attention: Cody Bird
8225 Third Street
Wellington, CO 80549
birdca@wellingtoncolorado.gov

Re: Connell Resources

Dear Planning Department,

Sundance at Daubert Farm Holdings, LLC is the owner of the land immediately west of the proposed Connell site. We currently have a single-family home subdivision planned for this site and plan to construct it in the future. We have had several meetings and conversations with representatives from Connell, as well as several meetings and conversations with Cody Bird of the Wellington Planning Department. In every meeting we found all parties willing to work together to produce a plan that would work well for everyone. We have known from the very beginning that the land immediately east of our site would be developed into an industrial commercial facility. I am familiar with Connell's current plant located on I-25 just south of the Harmony exit. I have always been impressed with their efforts to make the plant as aesthetically pleasing as possible. We feel there are far worse potential users for this site than Connell. We also think Connell will be a good neighbor to our community. We fully support Connell's proposal for their plant and believe the effect it will have on our community will be minimal. We ask that you please approve this proposal.

Thank you for your time.

Sincerely,

John G. Giuliano
Managing Member

Written Public Comments
3:00pm 4/25/2023

Online Form Submittal: Contact the Planning and Building Department

noreply@civicplus.com <noreply@civicplus.com>
Mon 4/24/2023 8:07 PM
To: TOW Building <Building@wellingtoncolorado.gov>

Contact the Planning and Building Department

Acknowledgement	I agree
First Name	Carlos
Last Name	Gonzalez
Property Address Related to Question	3802 Mount Flora St
City	Wellington
State	CO
Zip Code	80549
Email Address	cmgonzalez454@aol.com
Phone Number	3617261815
Preferred contact method?	Email or phone
Are you the homeowner, contractor, business, or other related to this project?	Homeowner
What is the zoning district for the location you have questions about? If you are unsure please utilize the zoning district map to the right.	Unsure
Discover Your Zoning District	Zoning District Map
I have a question regarding...	New commercial building
What specific questions do you have? Please provide any relevant information.	Is the tax money received from the asphalt company really worth compromising the great quality of life we have in Wellington? Will the extra taxes pay for the community streets the large semi trucks will ultimately destroy. Will the the taxes mask the stench of asphalt in the air? Will the taxes take away all the noise and light pollution the plant will create? There is a reason the asphalt plant was pushed out of Fort Collins. It was not worth the trouble or the money. Let's not make it our

Written Public Comments
3:00pm 4/25/2023

	problem. Do any of the board members have a financial stake in the company coming to Wellington?
Helpful Documents	*Field not completed.*

Written Public Comments
3:00pm 4/25/2023

Online Form Submittal: Contact the Planning and Building Department

noreply@civicplus.com <noreply@civicplus.com>
Mon 4/24/2023 11:52 AM
To: TOW Building <Building@wellingtoncolorado.gov>

Contact the Planning and Building Department

Acknowledgement	I agree
First Name	Valerie
Last Name	Kramer
Property Address Related to Question	6813 sumner st
City	Wellington
State	Colorado
Zip Code	80549
Email Address	Valcraig99@gmail.com
Phone Number	*Field not completed.*
Preferred contact method?	Email
Are you the homeowner, contractor, business, or other related to this project?	Homeowner
What is the zoning district for the location you have questions about? If you are unsure please utilize the zoning district map to the right.	R-2 Residential Medium
Discover Your Zoning District	Zoning District Map
I have a question regarding...	Other
What specific questions do you have? Please provide any relevant information.	Hello, I am submitting a comment today I. The hopes that I am one of MANY doing so - I am absolutely opposed to an asphalt plant being built in wellington. I feel strongly about the health of my family and the health of my community. I mean this is the literal sense, but also health in the way of how our town grows and improves. I am proud to live here, but our town CANNOT go down this path. I will be one of many residents that then has to make the decision to move elsewhere. Please. Do not allow

	an asphalt plant to be built in wellington. Thank you - Valerie
Helpful Documents	*Field not completed.*

Email not displaying correctly? View it in your browser.

Asphalt Plant Protest

Leatherman, Scarlett - Student <73961@psdschools.org>

Mon 4/24/2023 1:35 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Hi. Please stop trying to build the asphalt plant near Wellington Middle High School. It will ruin the school, and possibly give people cancer from its hazardous fumes. Go build it in Greeley, CO.

-A concerned student

Asphalt Plant

Jess Leatherman <twigs1404@gmail.com>

Mon 4/24/2023 10:44 AM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Hello,
My concern is about the proposed asphalt plant. I've heard it will be close to the Middle/high school and that it will be near town. Why on earth is this being considered so close to town!?! Are we really trying to turn Wellington into the armpit/Commerce City of Northern Colorado? These plants have shown to be harmful to the health of humans. The smell is awful. Headaches would abound at the school and in the community! Why aren't we working on getting better community business in the area. A larger grocery store, better food chains, a rec center, a community pool. Making the intersection at I-25 and HWY 1 safer, re building that bridge. People are moving here because other areas have become too expensive. I appreciate that this is a quite rural/agricultural area not an industrial zone! Send this crap to Weld county, they don't seem to mind. The county doesn't allow this sort of thing on their lands why would you use a loop hole to put it so close to the town!?! Quit putting in Dollar stores and crap that takes away from the beauty of this community. I'm finishing my basement and putting money into making my house our permanent home. This plant would bring down property values in the area. Parents would pull children from the school if they start having health problems due to the asphalt plant. All the money put into the school would be a waste if enrollment drops significantly! I firmly disagree with this plant. Please don't allow this toxic plant in our beautiful town.
Thank you,
Jessica Leatherman
7517 Final Turn Drive
Wellington, Co. 80549

Opposition to Asphalt Plant

D Peel <d.peel2725@gmail.com>

Mon 4/24/2023 3:48 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

We have a home in the Buffalo Creek subdivision, and we are opposed to the Asphalt Plant. As you are aware, the chemicals, gasses and other byproducts from this operation are known carcinogens. Please do not approve this operation.
Thank you,
Dan Peel
9052 Painted Horse Lane
(970) 218-5238

Fw: Online Form Submittal: Contact Us Form

Verity Ketsdever <KetsdeverV@wellingtoncolorado.gov>
Mon 4/24/2023 11:23 AM
To: Cody Bird <birdca@wellingtoncolorado.gov>

Hi Cody,

This came through the online form submittal to Mahalia and myself regarding the asphalt plant. If I get more, would you like me to forward them to you?

Verity Ketsdever
Administrative Assistant II/ Court Clerk
Phone: 970.568.3381
Email: KetsdeverV@wellingtoncolorado.gov
Web: www.wellingtoncolorado.gov
8225 Third Street
Wellington, CO 80549

From: noreply@civicplus.com <noreply@civicplus.com>
Sent: Monday, April 24, 2023 11:08 AM
To: Mahalia Henschel <henschem@wellingtoncolorado.gov>; Verity Ketsdever <KetsdeverV@wellingtoncolorado.gov>
Subject: Online Form Submittal: Contact Us Form

Contact Us Form

First and Last Name	Jenifer Wilcher
Address	3940 Buckthorn St
City	Wellington
State	Colorado
Zip Code	80549
Phone Number	9702229740
Email Address	Jenifer.wilcher@gmail.com
Comment or Question	I will be unable to attend the meeting on May 1. But wanted to send a quick comment stating that my family and I are against the proposed asphalt plant.

How would you like to be contacted?	Email me

Email not displaying correctly? View it in your browser.

Written Public Comments
3:00pm 4/28/2023

Asphalt Facility

Brian Harrison <bah511@yahoo.com>
Wed 4/26/2023 12:36 PM
To: Cody Bird <birdca@wellingtoncolorado.gov>

To the members of the planning commission:

My name is Brian Harrison. I live at 9073 Painted Horse Lane in Wellington. I am very concerned about the effects that the proposed hot mix asphalt plant would have on the health, property values, and culture of our community.

Like many people in Wellington, I moved here because it gave me an opportunity to purchase a house and raise a family in a small town. I value both the new and old communities that exist here, and it is important that we prioritize the health of our residents, especially our children.

One of the many cancer-causing chemicals that hot mix asphalt plants generate is benzene. In addition to causing cancer, this chemical damages the human nervous system in adults and affects the development of children. A representative from Connell stated that hot mix asphalt plants create less benzene than a fast food restaurant like the Burger King down the road, but that information is from a study paid for by the National Asphalt Pavement Association (https://www.sanbornhead.com/wp-content/uploads/2021/08/Emissions-Comparison-Report.pdf).

There are, in fact, many known negative health effects from exposure to asphalt and other hydrocarbons. "Available epidemiological studies have shown statistically significant links between exposure to hydrocarbons and/or metal fume and childhood leukemia2 and between exposure to asphalt fume and a variety of cancers." (https://www.epa.gov/sites/default/files/2020-10/documents/stkhld-opn.pdf).

And there are even more *unknown* negative health effects. "Since EPA's current approach is based on considering each chemical by itself, knowledge about the health effects of each individual chemical will not be available for many decades. Further, even after this data has been compiled, the synergistic interactions between these chemicals in a complex mixture will not be available and would require further study." (https://www.epa.gov/sites/default/files/2020-10/documents/stkhld-opn.pdf)

I don't understand why a variance for setbacks and silo height were ever granted in the first place. We don't need an asphalt plant in Wellington, and we definitely don't need it to be built so close to existing and already-approved residential sites. I moved here to raise a family, not to put my family's health at risk. I urge you to find the legal means to protect the residents in Wellington and stop the approval of this plant.

Sincerely,

Brian Harrison 9073 Painted Horse Lane
Wellington, CO 80549

Opposition to Hot Asphalt Plant

Larry Rice <larryriceoc1@gmail.com>

Wed 4/26/2023 7:01 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Dear Mr. Bird,

Simply and to the point, I am a Wellington resident who resides and owns a home in Buffalo Creek subdivision, located to the west of the proposed Hot Asphalt Plant that is being considered for construction behind Wellington Community Park. I want to express in the strongest means possible that I oppose any such development in our community! Why? In plain terms that anyone can understand: IT STINKS! The smell, full of toxic gases and emissions. The eyesore (really, does anyone want to look out and see this ugly construction site?). The increase in heavy truck traffic within our town (as if we need any MORE traffic). The reduction in property values (who would like to have their home situated downwind of the asphalt fumes?). Noise pollution (yes, there are residents of Wellington who appreciate its small-town tranquility).

And why is this hot asphalt plan even being considered to be located in Wellington? Hmmm….let's think about that for a second. Money? Greed? Short-sighted, ill-informed thinking? All of the above? I think "all of the above."

I implore you, Mr. Bird, and the rest of the town trustees, including the mayor, to stop this ill-conceived idea from going any further. Do NOT allow this asphalt plan to be situated anywhere within Wellington. Not only for us current residents, but for those who might want to call Wellington their home in the future. It's just a plain bad idea that should have never have been considered in the first place. It's time to stop it now. Wellington does not need it. We do not need it!

Thanks you for your time and consideration. Please do the right thing.

Sincerely,

Larry Rice

Buffalo Creek Estates

Sent from my iPhone

Written Public Comments
3:00pm 4/28/2023

Notice of my Opposition

Sandra Hunnicutt <sandy.hunnisan@gmail.com>

Thu 4/27/2023 4:46 PM

To: Jon Gaiter <gaiterjm@wellingtoncolorado.gov>;tietz@wellingtoncolorado.gov <tietz@wellingtoncolorado.gov>;Brian Mason <masonb@wellingtoncolorado.gov>;Calar Chaussee <chausseec@wellingtoncolorado.gov>;David Wiegand <wiegandd@wellingtoncolorado.gov>;Patti Garcia <garciapa@wellingtoncolorado.gov>;Cody Bird <birdca@wellingtoncolorado.gov>;macdonar@wellingtoncolorado.gov <macdonar@wellingtoncolorado.gov>;dailyrm@wellingtoncolorado.gov <dailyrm@wellingtoncolorado.gov>

2 attachments (737 KB)

Asphalt Email BOT April212023.pdf; Hot Mix Asphalt Plants-EPA-Dec2000.pdf;

I'm writing to express my strong opposition to having a Hot Mix Asphalt plant within the borders of our town. Not only are the serious health implications most alarming, but it would not comply with the goals of our Comprehensive Plan and Land Use Codes. Please find attached my supportive research, and do not proceed with The Plant!

Sincerely,

Sandra Hunnicutt
3940 Ginkgo St
Wellington, CO

Written Public Comments
3:00pm 4/28/2023

April 20, 2023

Dear Town of Wellington Trustees and appointed officials,

I'm writing this letter for three primary purposes:

1. I'm frustrated and upset that the amount of public input has decreased by one week, per Mr. Bird, Planning Commissioner. He has changed the routine of having written comments submitted to the Planning Commission no later than 3 pm on the meeting day. Just today, I learned that the cutoff for the May 1 meeting is tomorrow, April 21, at 3 pm! This certainly does not comply with the Theme, Reliable & Resilient Public Services, of the Comprehensive Plan. It almost appears to be a sabotage of getting as much public input as possible to reflect the truly diverse desires of the community. **Please reverse this decision!**

2. **I do not want the asphalt plant built downtown!** It counters the community themes written in our town's Comprehensive Plan (2021). It is an irrefutable source of detriment to the environment and health of our residents. Although the owners of the plant deny any causes of toxicity, the attached sampling of researched articles strongly refutes their claims:

    - "EPA Hot Asphalt Plant Emission Assessment Report, EPA Document #EPA 454R.00.019, December 2000." Please pay special attention to the following pages sections:
        - Pg.1, Sect. 1.2 – "Overview of the HMA (Hot Mix Asphalt) Industry."
        - Pg.11, Sect. 2.1.4 – "Emissions and Controls," especially the first paragraph listing the emissions from the two significant emissions categories. *A little more than "just water in that steam!"*
        - Pg. 19, Table 5 - estimated annual emissions for a typical batch mix plant dryer, hot screens, and mixers
        - Pgs. 20-26, Tables 6-12 - refer to the toxic contributions of additional production sources: plant load-out operations; storage tank emissions; drum mix dryers; drum mix plant silos; estimated annual yard VOC (volatile organic compounds) emissions.
        - Pg. 15, Sect. 2.3 – "Emission Factors for Other Generic Sources Associated with HAP Facilities:" - **these are often overlooked in discussing the *cumulative* toxic output of HAPs!**
            - Receipt of new aggregate
            - Transfer of aggregate from storage to the conveyor belt
            - Unpaved road dust emissions
            - Paved road dust emissions
            - Diesel exhaust emissions (think 20 trucks a day just idling in the yard while waiting to load or unload)

    - Center for HMA, Environmental, and Justice (CHEJ): "A Bad Place for An Asphalt Plant: An African American Community Fights Back," March 3, 2022. (Please relate this to our community with a particular focus on the severe health problems suffered by those living in proximity to a HAP): Cancer, Nervous system dysfunction, Liver damage.

    - Extracts from other articles:
        - Living near an HMA plant exposes residents to toxic air pollutants of polycystic aromatic oxide, sulfur dioxide, and hydrogen sulfide; volatile organic compounds; and metals. (North Carolina Department of Environmental Quality).

Written Public Comments
3:00pm 4/28/2023

  - Exposure to asphalt (Study by North Carolina government) and detrimental health effects include **breathing fumes**; irritate nose, throat, and lungs causing coughing, wheezing, shortness of breath, headache, dizziness, nausea, and vomiting; **contact** with asphalt: severe skin burns, dermatitis, acne-like lesions.

- "Timnath group opposing TopGolf to submit petitions Wednesday," Loveland Reporter-Herald, Dallas Heltzell, 3/27/23: This article from our neighboring town of Timnath reflects the concerns of residents about heavy industry taking over and their need for development plans to be congruent with their 2020 Comprehensive Plan.
  - Petition signatures more than double the needed signatures gathered to trigger a special election to block Topgolf. The ballot measure would stipulate land use/development parameters for future commercial industries.
  - The opposition focuses on wildlife protection and the negative impacts on residential quality of life.
  - Topgolf also does not remotely coincide with the goals of the town's Comprehensive Plan for future development, and this significantly concerns the residents. *Sound familiar?*

3) I thank you for promoting the community themes in our Comprehensive Plan, with a focus on creating that "small town" feeling where tourists would be drawn to visit, thus boosting our economy. I doubt that 70 ft. smokestacks and an asphalt plant will contribute much to the atmosphere of a "charming" small town and be much of a tourist attraction. Nor would people using our projected parks and trails find it peaceful and placid to run/walk past a "delightfully" roiling, dusty, loud asphalt plant.

Please, do whatever it takes to revise zoning, land use codes, health codes, etc., **to halt the asphalt plant and any other heavy industries from ever being considered in our downtown in the future**. This request comes at a pivotal point in the design, vision, and desired characteristics of 'our little town.'

Thank you for your perseverance in reviewing this rather lengthy letter and for all of your hard work in developing our unique town of Wellington with the timely input of us, the residents.

Sincerely,

Sandra L Hunnicutt

Written Public Comments
3:00pm 4/28/2023

United States Environmental Protection Agency | Office Of Air Quality Planning And Standards Research Triangle Park, NC 27711 | EPA-454/R-00-019 December 2000

Air

HOT MIX ASPHALT PLANTS

EMISSION ASSESSMENT REPORT

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EPA 454/R-00-019

HOT MIX ASPHALT PLANTS

EMISSION ASSESSMENT REPORT

This document was prepared by:

Emissions Monitoring and Analysis Division
Office of Air Quality Planning and Standards
United States Environmental Protection Agency
Research Triangle Park, NC

and under contract, by:

Midwest Research Institute
Kansas City, MO and Cary, NC
EPA Contract Number 68D-98-027

and

Eastern Research Group, Inc.
1600 Perimeter Park
P.O. Box 2010
Moorisville, NC
EPA Contract Number 68-D7-0068

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air and Radiation
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

December 2000

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DISCLAIMER

The information in this document has been funded by the Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency (EPA) under contract 68-D-98-027 to Midwest Research Institute and under contract 68-D-70-068 to Eastern Research Group, Inc. The EPA has made additions and revisions to the information submitted by the contractors. This final report has been subjected to the Agency's review, and it has been approved for publication as an EPA document. Mention of trade names or commercial products is not intended to constitute endorsement or recommendation for use.

PREFACE

This report was produced by the Source Measurement Technology Group of EPA's Emissions Measurement Center located in Research Triangle Park, NC. It is one of a series of twelve reports prepared to document an EPA program to characterize emissions to the air from hot mix asphalt plants. These twelve reports and their associated EPA document numbers and publication dates are:

Document Title	EPA Document Number	Publication Date
Hot Mix Asphalt Plants Emission Assessment Report	EPA 454/R-00-019	December 2000
Hot Mix Asphalt Plants Kiln Dryer Stack Instrumental Methods Testing Asphalt Plant A, Cary, North Carolina	EPA 454/R-00-020	April 2000
Hot Mix Asphalt Plants Kiln Dryer Stack Manual Methods Testing Asphalt Plant A, Cary, North Carolina		
Volume 1 of 2	EPA 454/R-00-021a	April 2000
Volume 2 of 2	EPA 454/R-00-021b	April 2000
Hot Mix Asphalt Plants Kiln Dryer Stack Instrumental Methods Testing Asphalt Plant B, Clayton, North Carolina	EPA 454/R-00-022	April 2000
Hot Mix Asphalt Plants Kiln Dryer Stack Manual Methods Testing Asphalt Plant B, Clayton, North Carolina		
Volume 1 of 2	EPA 454/R-00-023a	April 2000
Volume 2 of 2	EPA 454/R-00-023b	April 2000
Hot Mix Asphalt Plants Truck Loading and Silo Filling Instrumental Methods Testing Asphalt Plant C, Los Angeles, California	EPA 454/R-00-024	May 2000
Hot Mix Asphalt Plants Truck Loading and Silo Filling Manual Methods Testing Asphalt Plant C, Los Angeles, California		
Volume 1 of 8	EPA 454/R-00-025a	May 2000
Volume 2 of 8	EPA 454/R-00-025b	May 2000
Volume 3 of 8	EPA 454/R-00-025c	May 2000
Volume 4 of 8	EPA 454/R-00-025d	May 2000
Volume 5 of 8	EPA 454/R-00-025e	May 2000
Volume 6 of 8	EPA 454/R-00-025f	May 2000
Volume 7 of 8	EPA 454/R-00-025g	May 2000
Volume 8 of 8	EPA 454/R-00-025h	May 2000
Hot Mix Asphalt Plants Technical Systems Audit of Testing at Asphalt Plant C Asphalt Plant C, Los Angeles, California	EPA 454/R-00-026	May 2000

Document Title	EPA Document Number	Publication Date
Hot Mix Asphalt Plants Truck Loading Instrumental Methods Testing Asphalt Plant D, Barre, Massachusetts	EPA 454/R-00-027	May 2000
Hot Mix Asphalt Plants Truck Loading Manual Methods Testing Asphalt Plant D, Barre, Massachusetts	EPA 454/R-00-028	May 2000
Hot Mix Asphalt Plants Response to Comments on Testing Program for Asphalt Plants C and D	EPA 454/R-00-029	May 2000
Hot Mix Asphalt Plants Stakeholders Opinions Report	EPA 454/R-00-030	

These documents, including this Emissions Assessment Report document, are available for downloading, on CD-ROM and in paper.

Downloads can be made from:

http//www.epa.gov/ttn/emc/asphalt.html

Copies of the CD ROM can be requested by mail at:

Emission Measurement Center, MD-19
US Environmental Protection Agency
Research Triangle Park, NC 27711

Paper copies of the reports can be obtained from:

National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
Phone orders 1-800-553-6847 or (703) 605-6000; FAX orders (703) 605-6900
http://www.ntis.gov/products/environment.htm

ACKNOWLEDGMENTS

Many individuals contributed to the development of this report. Ron Myers of the Emission Measurement Center's Source Measurement Technology Group (SMTG), Brian Shrager, Scott Klamm, Richard Marinshaw, and Amy Marshall of Midwest Research Institute (MRI), are the primary authors of the report. Bob McConnell of EPA's Region I office, David Mobley, Acting Director of EPA's Emissions Monitoring and Analysis Division, Bill Lamason, Mike Toney, Gary McAlister, and Candace Sorrell of EPA's Emission Measurement Center, Ron Ryan and Dennis Beauregard of EPA's Emission Factor and Inventory Group, Laura Autry of EPA's Air Quality Trends Analysis Group, participated in the review. We also acknowledge the contributions of numerous reviewers and advisors from PES, MRI and EPA.

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APPENDIX C Chapter 3: Preferred and Alternative Methods for Estimating Air Emissions from Hot Mix Asphalt Plants. Emission Inventory Improvement Program (EIIP), July 1996.

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LIST OF ACRONYMS

ASTM	American Society of Testing and Materials
Btu	British thermal unit
CH_4	methane
CO	carbon monoxide (as measured by EPA Method 10)
CO_2	carbon dioxide (as measured by EPA Method 3)
EPA	Environmental Protection Agency
HAP	hazardous air pollutant (listed in or pursuant to section 112(b) of the 1990 Clean Air Act Amendments)
HMA	hot mix asphalt
NO_x	nitrogen oxides (as measured by EPA Method 7)
PAH	polycyclic aromatic hydrocarbon (a class of HAPs)
PM	particulate matter (as measured by EPA Methods 5 or 17)
PM-10	particulate matter less than 10 microns in diameter
PM-2.5	particulate matter less than 2.5 microns in diameter
RAP	reclaimed asphalt pavement
RTFOT	rolling thin film oven test (ASTM Method D2872-88)
SCC	source classification code
SO_2	sulfur dioxide (as measured by EPA Methods 6 or 8)
SO_x	sulfur oxides
TOC	total organic compounds (as measured by EPA Method 25A)
VOC	volatile organic compound (refer to 40 CFR 51.100); VOC is TOC plus formaldehyde, less methane, ethane, acetone, and other chemicals listed as negligibly photochemically reactive.

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1. EXECUTIVE SUMMARY

1.1 INTRODUCTION

This report presents an assessment of emissions from hot mix asphalt (HMA) manufacturing facilities. Included in the report is a description of the manufacturing process and the emissions associated with HMA production; the procedures for developing emission factors and emission inventories for the HMA industry; and estimated annual emissions for typical HMA facilities.

1.2 OVERVIEW OF HMA INDUSTRY

Hot mix asphalt is used primarily as paving material and consists of a mixture of aggregate and liquid asphalt cement, which are heated and mixed in measured quantities. Hot mix asphalt facilities can be broadly classified as either drum mix plants or batch mix plants, according to the process by which the raw materials are mixed. In a batch mix plant, the aggregate is dried first, then transferred to a mixer where it is mixed with the liquid asphalt. In a drum mix plant, a rotary dryer serves to dry the aggregate and mix it with the liquid asphalt cement. After mixing, the HMA generally is transferred to a storage bin or silo, where it is stored temporarily. From the silo, the HMA is emptied into haul trucks, which transport the material to the job site. Figure 1 presents a diagram of a typical batch mix HMA plant; a typical drum mix HMA plant is depicted in Figure 2.

In 1996, approximately 500 million tons of HMA were produced at the 3,600 (estimated) active asphalt plants in the United States. Of these 3,600 plants, approximately 2,300 are batch plants, and 1,300 are drum mix plants. The total 1996 HMA production from batch and drum mix plants is estimated at about 240 million tons and 260 million tons, respectively. Based on these figures, an average batch mix plant produces approximately 100,000 tons of HMA annually, and an average drum mix plant produces about 200,000 tons of HMA per year. Natural gas fuel is used to produce 70 to 90 percent of the HMA. The remainder of the HMA is produced using oil, propane, waste oil, or other fuels.

The primary emission sources associated with HMA production are the dryers, hot bins, and mixers, which emit particulate matter (PM) and a variety of gaseous pollutants. Other emission sources found at HMA plants include storage silos, which temporarily hold the HMA; truck load-out operations, in which the HMA is loaded into trucks for hauling to the job site; liquid asphalt storage tanks; hot oil heaters, which are used to heat the asphalt storage tanks; and yard emissions, which consist of fugitive emissions from the HMA in truck beds. Emissions also result from vehicular traffic on paved and unpaved roads, aggregate storage and handling operations, and vehicle exhaust.

The PM emissions associated with HMA production include the criteria pollutants PM-10 (PM less than 10 micrometers in aerodynamic diameter) and PM-2.5, hazardous air pollutant (HAP) metals, and HAP organic compounds. The gaseous emissions associated with HMA production include the criteria pollutants sulfur dioxide (SO_2), nitrogen oxides (NO_x), carbon monoxide (CO), and volatile organic compounds (VOC), as well as volatile HAP organic compounds.

1.3 DEVELOPMENT AND USE OF EMISSION FACTORS FOR HMA FACILITIES

An emission factor relates the quantity (weight) of pollutants emitted to a unit of activity of the source. Emission factors for the HMA industry are generally determined in units of pounds of pollutant emitted per ton of HMA produced. These emission factors typically are used to estimate area-wide

emissions for a large number of facilities and emissions for specific facilities where source-specific emissions data are not available or where source testing is cost prohibitive.

To develop emission factors for the HMA industry, data from more than 390 emission test reports and other documents on the industry were compiled and reviewed. Through a careful screening process, the documents that were determined to be unusable for emission factor development were excluded from further evaluation. The remaining reports were compiled by plant type, emission source, pollutant, and emission control. For each emission test, emission factors were calculated by dividing the measured emission rates by the HMA production rate measured at the time of the emission test. These emission factors were then grouped by source, pollutant, and control device, and an average emission factor was calculated for each group.

Emission factors can be used to estimate emissions from one or more HMA facilities by multiplying the emission factor by the HMA production rate. For example, the emission factor for CO emissions from a natural gas-fired drum mix dryer is 0.13 pounds per ton (lb/ton). If the dryer produces 200,000 tons per year (ton/yr), the estimated CO emissions during that period would be: 200,000 ton/yr × 0.13 lb/ton = 26,000 lb/yr or 13 tons/yr.

1.4 ESTIMATED ANNUAL EMISSIONS FROM TYPICAL HMA FACILITIES

Annual emissions for a facility can be estimated by summing up the emissions from each emission source over the course of a year. Annual emissions for a specific source can be estimated by multiplying the annual throughput or production rate for that source by its corresponding emission factors. For an HMA facility, annual emissions can be estimated by multiplying the annual HMA production rate by the emission factors for each type of source at the facility. Table 1 summarizes annual emissions for a typical HMA batch mix plant, and Table 2 summarizes annual emissions for a typical drum mix HMA plant. The estimates presented in these tables account for all of the identified emission sources at each type of facility. For both batch mix plants (Table 1) and drum mix plants (Table 2), the estimate includes emissions from the dryer/mixer, load-out operations, asphalt storage, yard (fugitive emissions from loaded trucks), diesel exhaust, paved and unpaved road dust, and aggregate processing (screening, conveyor transfer, and reclaimed asphalt pavement [RAP] crushing). Additionally, for the drum mix plant (Table 2), the estimate includes emissions from silo filling operations. Estimates are presented for criteria pollutants (pollutants for which national ambient air quality standards have been developed) and hazardous air pollutants (HAPs, as defined in section 112(b) of the 1990 Clean Air Act Amendments). Criteria pollutants include PM-10, VOC, CO, SO_2, and NO_x. Emissions for three classes of HAPs are presented in Tables 1 and 2: polycyclic aromatic hydrocarbons (PAHs), volatile organic HAPs, and metal HAPs. The emissions were estimated using the emission factors developed for the HMA industry and the following assumptions:

- Dryers are fueled with natural gas or No. 2 fuel oil (estimates are presented for both types). It is estimated that between 70 and 90 percent of HMA plants use natural gas, although some HMA plants use fuel oil as an alternative to natural gas.
- Dryer emissions are controlled with fabric filters.
- PM emissions from load-out and silo filling are entirely PM-10.
- Annual HMA production rate for a typical batch mix plant is 100,000 ton/yr.
- Annual HMA production rate for a typical drum mix plant is 200,000 ton/yr.
- The typical HMA plant has two 18,000-gallon asphalt storage tanks.

As indicated in Table 1, a typical batch mix plant using a No. 2 fuel oil-fired dryer emits over 74,000 lb/yr of criteria pollutants, and a typical batch mix plant using a natural gas-fired dryer emits over

56,000 lb/yr of criteria pollutants, of which approximately 41,000 lb/yr are CO and approximately 10,700 lb/yr are PM-10; emissions of other criteria pollutants range from about 500 to about 12,000 lb/yr. The same plant would emit about 770 lb/yr of HAPs. A typical drum mix plant using a No. 2 fuel oil-fired dryer emits about 83,000 lb/yr of criteria pollutants, and a typical drum mix plant using a natural gas-fired dryer emits around 75,000 lb/yr of criteria pollutants, of which approximately 28,000 lb/yr are CO, about 10,000 lb/yr are VOC, and around 31,000 lb/yr are PM-10. A typical drum mix plant emits from 1,300 to 2,000 lb/yr of HAPs, depending on the fuel used in the dryer.

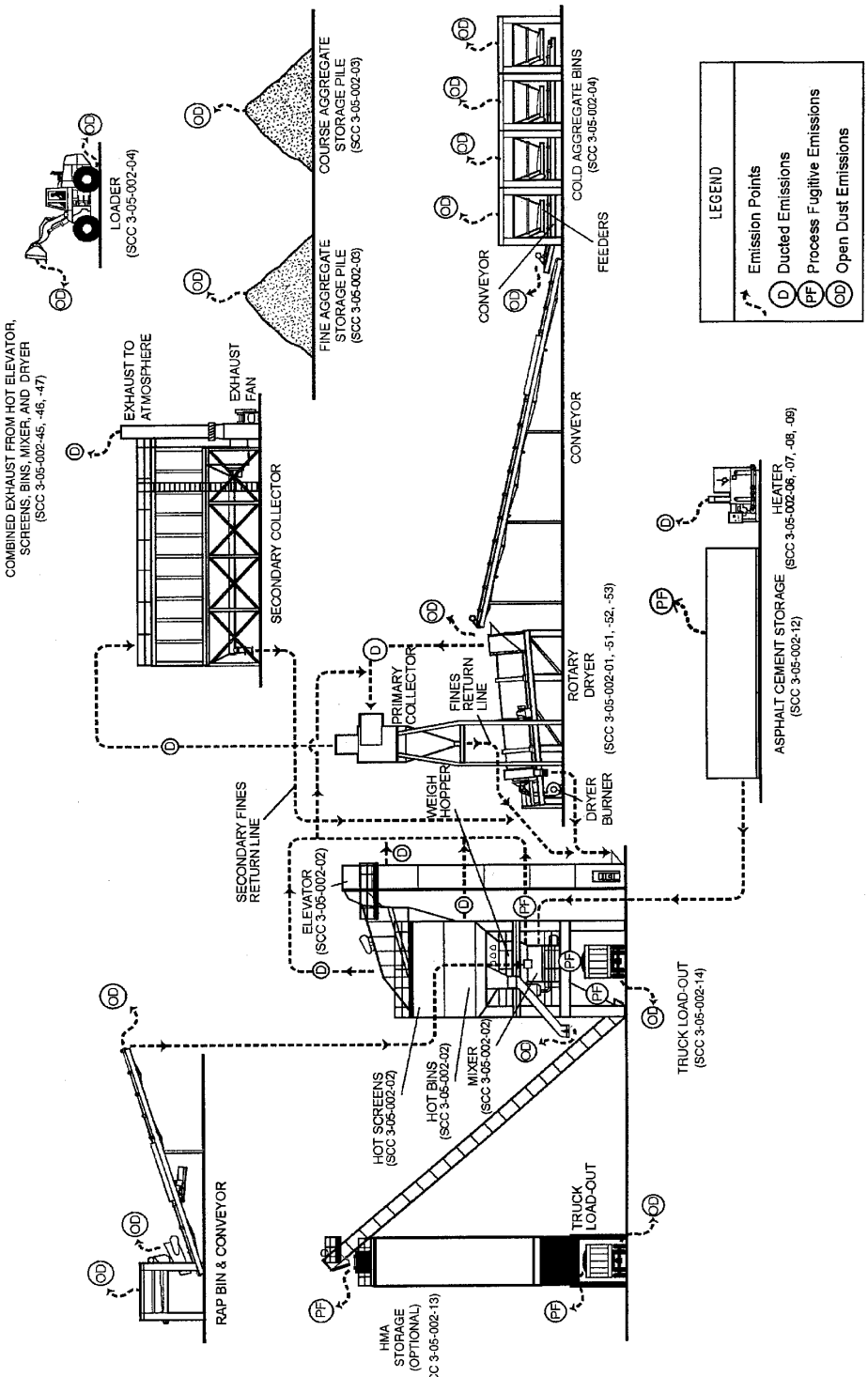

Figure 1. General process flow diagram for batch mix asphalt plants (source classification codes in parentheses).

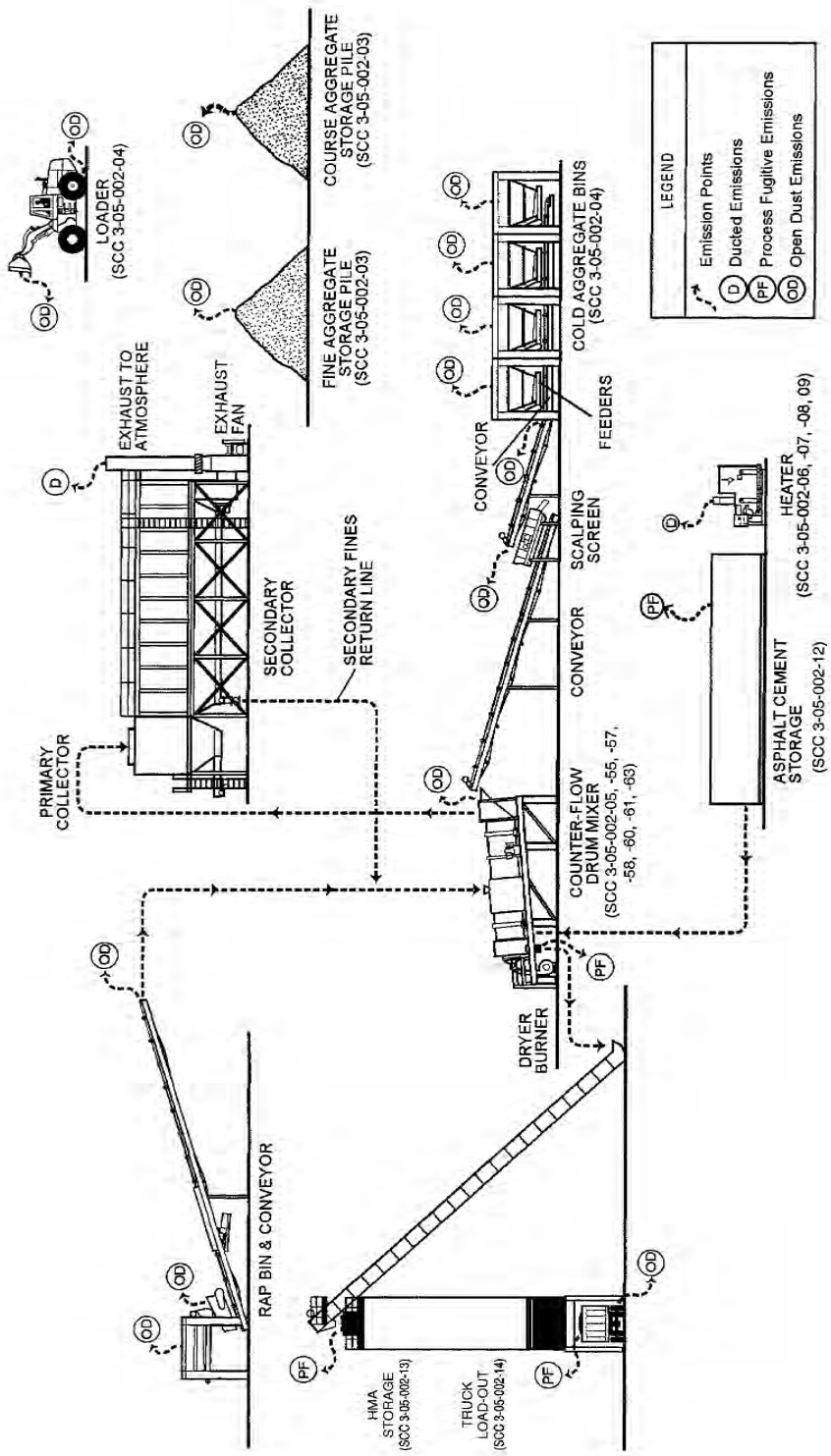

Figure 2. General process flow diagram for counter-flow drum mix asphalt plants (source classification codes in parentheses).

TABLE 1. ESTIMATED ANNUAL EMISSIONS FOR A TYPICAL BATCH MIX HMA FACILITY[a]

Pollutant	Annual emissions by source, pounds per year								
	Mobile sources (diesel exhaust)	Material handling and road dust	No. 2 fuel oil-fired dryer, hot screens, and mixer[b]	Natural gas-fired dryer, hot screens, and mixer[c]	Load-out[d]	Asphalt Storage[e]	Yard[f]	Total[g] (oil-fired)	Total[g] (gas-fired)
Criteria air pollutants									
Particulate matter less than 10 micrometers (PM-10)	46	7,900	2,700	2,700	52			10,700	10,700
Volatile organic compounds (VOC)	100		820	820	391	32	110	1,500	1,500
Carbon monoxide (CO)	700		40,000	40,000	135	3	35	41,000	41,000
Sulfur dioxide (SO_2)	22		8,800	460				8,800	480
Nitrogen oxides (NO_x)	380		12,000	2,500				12,400	2,900
Hazardous air pollutants (HAPs)									
Polycyclic aromatic hydrocarbons (PAHs)	0.035		11	11	2.0	0.12		13	13
Phenol					0.40			0.40	0.40
Volatile HAPs	1.9		751	751	6.2	140	1.6	760	760
Metal HAPs			1.4	1.4				1.4	1.4
Total HAPs[g]	1.9		760	760	8.6	140	1.6	770	770

[a] Based on an annual HMA production rate of 100,000 tons per year.
[b] Between 10 and 30 percent of the HMA is produced using fuel oil.
[c] Between 70 and 90 percent of the HMA is produced using natural gas.
[d] Loading of HMA into haul trucks.
[e] Includes emissions from oil-fired hot oil heaters.
[f] Fugitive emissions from loaded trucks prior to departure to the job site.
[g] Total expressed using two significant figures.

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TABLE 2. ESTIMATED ANNUAL EMISSIONS FOR A TYPICAL DRUM MIX HMA FACILITY[a]

Pollutant	Annual emissions by source, pounds per year									
	Mobile sources (diesel exhaust)	Material handling and road dust	No. 2 fuel oil-fired dryer[b]	Natural gas-fired dryer[c]	Load-out[d]	Silo filling[e]	Asphalt storage[f]	Yard[g]	Total[h] (oil-fired)	Total[h] (gas-fired)
Criteria air pollutants										
Particulate matter less than 10 micrometers (PM-10)	220	26,000	4,600	4,600	104	117			31,000	31,000
Volatile organic compounds (VOC)	190		6,400	6,400	782	2,440	64	220	10,000	10,000
Carbon monoxide (CO)	1,200		26,000	26,000	270	236	6	72	28,000	28,000
Sulfur dioxide (SO_2)	26		2,200	680					2,200	710
Nitrogen oxides (NO_x)	560		11,000	5,200					12,000	5,800
Hazardous air pollutants (HAPs)										
Polycyclic aromatic hydrocarbons (PAHs)	0.13		176	37	4.0	5.8	0.12		190	50
Phenol					0.80				0.80	0.80
Volatile HAPs	6.6		1,560	1,020	12.4	31	140	3.3	1,800	1,200
Metal HAPs			19	16					19	16
Total HAPs[h]	6.7		1,800	1,100	17	37	140	3.3	2,000	1,300

[a] Based on an annual HMA production rate of 200,000 tons per year.
[b] Between 10 and 30 percent of the HMA is produced using fuel oil.
[c] Between 70 and 90 percent of the HMA is produced using natural gas.
[d] Loading of HMA into haul trucks
[e] Filling of temporary storage silo prior to load-out.
[f] Includes emissions from oil-fired hot oil heaters.
[g] Fugitive emissions from loaded trucks prior to departure to the job site.
[h] Total expressed using two significant figures.

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2. ASSESSMENT OF HOT MIX ASPHALT EMISSIONS

This section presents the results of an assessment of emissions from HMA manufacturing. An overview of the HMA industry and process operations is provided first (Section 2.1). Section 2.2 summarizes the methodology used to develop emission factors for the HMA industry. Section 2.3 identifies other sections of AP-42 that apply to HMA plants. An overview of the process for conducting an emission inventory is presented in Section 2.4, and Section 2.5 presents estimates of annual emissions from typical HMA facilities.

2.1 INDUSTRY OVERVIEW AND PROCESS DESCRIPTION[1]

Hot mix asphalt paving materials are a mixture of well-graded, high-quality aggregate and liquid asphalt cement, which is heated and mixed in measured quantities. The aggregate often includes RAP. Aggregate and RAP (if used) constitute over 92 percent by weight of the total mixture. Aside from the amount and grade of asphalt cement used, mix characteristics are determined by the relative amounts and types of aggregate and RAP used. A certain percentage of fine aggregate (less than 74 micrometers [μm] in physical diameter) is required for the production of good quality HMA.

Hot mix asphalt plants can be classified by their mixing operation as one of the following: (1) batch mix plants, (2) continuous mix (mix outside dryer drum) plants, (3) parallel flow drum mix plants, and (4) counterflow drum mix plants. An HMA plant can be constructed as a permanent plant, a skid-mounted (easily relocated) plant, or a portable plant. All plants can have RAP processing capabilities.

In 1996, approximately 500 million tons of HMA were produced at the 3,600 (estimated) active asphalt plants in the United States. Of these 3,600 plants, approximately 2,300 are batch plants, 1,000 are parallel flow drum mix plants, and 300 are counterflow drum mix plants. The total 1996 HMA production from batch and drum mix plants is estimated at about 250 million tons and 260 million tons, respectively. About 85 percent of new plants being constructed today are of the counterflow drum mix design, while batch plants and parallel flow drum mix plants account for 10 percent and 5 percent respectively. Continuous mix plants represent a very small fraction of the plants in use ($\leq$0.5 percent) and, therefore, are not discussed further. While most HMA plants have the capability to use both fuel oil and natural gas, it is estimated that between 70 and 90 percent of the HMA in the U. S. is produced using natural gas. The process operations at typical batch mix and drum mix plants are described in the following paragraphs.

2.1.1 Batch Mix Plants[2]

Processing begins as the aggregate is hauled from onsite storage piles and is placed in the appropriate hoppers of the cold feed unit. The material is metered from the hoppers onto a conveyer belt and is transported into a rotary dryer (typically gas- or oil-fired). As the hot aggregate leaves the dryer, it drops into a bucket elevator, is transferred to a set of vibrating screens, then separated into as many as four different grades (sizes), and dropped into “hot” bins according to size. At newer facilities, RAP may be transferred to a separate heated storage bin. At the same time, liquid asphalt cement is pumped from a heated storage tank to an asphalt bucket, where it is weighed to achieve the desired aggregate-to-asphalt cement ratio in the final mix. To control the aggregate size distribution in the final batch mix, the operator transfers material from various hot bins (and RAP bins, if used) to a weigh hopper until the desired mix

[1] See Appendix A, Section 11.1.1, and Appendix B, Section 2.1, for more detailed information.

[2] See Appendix A, Section 11.1.1.1, and Appendix B, Section 2.2.1, for more detailed information.

and weight are obtained. The aggregate from the weigh hopper is dropped into the mixer (pug mill) and dry-mixed for 6 to 10 seconds. The liquid asphalt is then dropped into the pug mill where it is mixed for an additional period of time. At older plants, RAP typically is conveyed directly to the pug mill from a storage hopper and combined with the hot aggregate. Total mixing time usually is less than 60 seconds. Then, the hot mix is conveyed to a hot storage silo or is dropped directly into a truck and hauled to the job site. Figure 1 depicts a typical batch mix plant.

2.1.2 Drum Mix Plants[3]

This process is a continuous mixing type process. The major difference between this process and the batch process is that the dryer is used not only to dry the material but also to mix the heated and dried aggregates with the liquid asphalt cement. In a parallel flow drum mixer, the aggregate is introduced to the drum at the burner end. As the drum rotates, the aggregate, as well as the combustion products from the burner, move toward the other end of the drum in parallel. Liquid asphalt cement is introduced in the mixing zone midway down the drum in a lower temperature zone, along with any RAP and PM from collectors. In a counterflow drum mixer, the material flow in the drum is opposite or counterflow to the direction of exhaust gases. In addition, the liquid asphalt cement mixing zone is located behind the burner flame zone so as to remove the materials from direct contact with hot exhaust gases. After mixing, the mixture is discharged at the end of the drum and is conveyed to either a surge bin or HMA storage silos. Figure 2 illustrates a counterflow drum mix plant.

In a parallel flow mixer, the exhaust gases also exit the end of the drum and pass on to the collection system. Parallel flow drum mixers have an advantage, in that mixing in the discharge end of the drum captures a substantial portion of the aggregate dust, therefore lowering the load on the downstream PM collection equipment. For this reason, most parallel flow drum mixers are followed only by primary collection equipment (usually a baghouse or venturi scrubber). However, because the mixing of aggregate and liquid asphalt cement occurs in the hot combustion product flow, organic emissions (gaseous and liquid aerosol) may be greater than in other processes.

Counterflow drum mix plants likely will have organic stack emissions (gaseous and liquid aerosol) that are lower than parallel flow drum mix plants because the liquid asphalt cement, virgin aggregate, and RAP are mixed in a zone removed from the exhaust gas stream. A counterflow drum mix plant normally can process RAP at ratios up to 50 percent with little or no observed effect upon emissions.

2.1.3 Recycle Processes[4]

Reclaimed asphalt pavement significantly reduces the amount of new aggregate and asphalt cement needed to produce HMA. In the reclamation process, old asphalt pavement is removed from the road base. This material is then transported to the plant, and is crushed and screened to the appropriate size for further processing. The paving material then is heated and mixed with new aggregate (if applicable), and the proper amount of new asphalt cement is added to produce HMA that meets the quality requirements of the customer.

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[3] See Appendix A, Sections 11.1.1.2 and 11.1.1.3, and Appendix B, Sections 2.2.2 and 2.2.3, for more detailed information.

[4] See Appendix A, Section 11.1.1.4, and Appendix B, Section 2.2.4, for more detailed information.

2.1.4 Emissions and Controls[5]

Hot mix asphalt plants have two major categories of emissions: ducted sources (those vented to the atmosphere through some type of stack, vent, or pipe), and fugitive sources (those not confined to ducts and vents but emitted directly from the source to the ambient air). Dryers are the most significant ducted sources of emissions from both batch mix and drum mix HMA plants. Emissions from these sources consist of water (as steam evaporated from the aggregate); PM; products of combustion (carbon dioxide [CO_2], NO_x, and sulfur oxides [SO_x]); CO; and small amounts of organic compounds of various species (including VOC, methane [CH_4], and HAPs). The CO and organic compound emissions result from incomplete combustion of the fuel and also are released from the heated asphalt.

At batch mix plants, other potential process sources include the hot-side conveying, classifying, and mixing equipment, which are vented to either the primary dust collector (along with the dryer gas) or to a separate dust collection system. These emissions are mostly aggregate dust, but they also may contain gaseous organic compounds, CO, and a fine aerosol of condensed organic particles. This organic aerosol is created by the condensation of gas into particles during cooling of organic vapors volatilized from the asphalt cement in the mixer. The amount of organic aerosol produced depends to a large extent on the temperature of the asphalt cement and aggregate entering the mixer. Organic vapor and its associated aerosol also are emitted directly to the atmosphere as process fugitives during truck load-out, from the bed of the truck itself during transport to the job site, and from the asphalt storage tank. Both the low molecular weight organic compounds and the higher weight organic aerosol may contain small amounts of HAP. The ducted emissions from the heated asphalt storage tanks may include gaseous and aerosol organic compounds and combustion products from the tank heater.

At most HMA facilities, fabric filters are used to control emissions from dryers. Other controls used include mechanical collectors and scrubbers. Emissions from aggregate handling and transfer typically are controlled with fabric filters or scrubbers. Large diameter cyclones and settling chambers also are used as product recovery devices. The material collected in those devices is recycled back into the process.

There also are a number of fugitive dust sources associated with batch mix HMA plants, including vehicular traffic generating fugitive dust on paved and unpaved roads, aggregate material handling, and other aggregate processing operations.

2.2 EMISSION FACTOR DEVELOPMENT FOR AP-42 SECTION 11.1, HOT MIX ASPHALT PLANTS

A detailed description of how the emission factors were developed for the HMA industry is provided in Section 4 of Appendix B. The following paragraphs summarize the methodology used.

To develop emission factors for the HMA industry, data from about 390 emission test reports and other documents on the industry were compiled and reviewed (a complete list of these references is provided following Section 4 of Appendix B). The majority of these reports documented measurements of emissions from batch plant dryer/mixers and drum plant dryers. Through a careful screening process, 35 of the reports were determined to be unusable for emission factor development and were excluded from further evaluation. About 350 reports remained and were compiled by plant type, emission source, pollutant, and emission control. These emission factors were then grouped by source, pollutant, and

[5] See Appendix A, Section 11.1.2, and Appendix B, Section 2.3, for more detailed information.

control device, and an average emission factor was calculated for each group. Table 3 presents a matrix of all of the sources and pollutants for which emission factors are presented in AP-42 (Appendix A).

While the particulate, CO_2, CO, and TOC emission factors are based on over 100 tests, most of the remaining criteria pollutant emission factors are based on between 5 and 10 tests. A few HAP emission factors are based on more than 5 tests, although the majority are based on between 2 and 5 tests. Information on the supporting data for specific emission factors and the quality rating assigned to the emission factor is included in the section or table in Appendices A and B as indicated in Table 4. Column four of Table 4 references the tables in Appendix A that present the emission factors and quality ratings. Column five of Table 4 references the paragraphs in Appendix B that discuss the basis for the emission factors developed for all of the sources and pollutants. Column six of Table 4 references the tables in Appendix B that present the emission factors and the individual data used to develop the emission factors. Generally, the amount of supporting data is typical of many AP-42 sections. However, the amount of data supporting the particulate, CO_2, CO, and TOC emission factors is greater than most AP-42 sections. The following paragraphs summarize the procedures followed to develop the emission factors for HMA facilities.

2.2.1 Batch Mix and Drum Mix Dryers

The usable data on batch mix and drum mix plant dryer emissions were compiled according to source type, emission control, and pollutant. Data on fuel types, the percentage of RAP used in the mix, and the process operating rate (e.g., dryer production rate) also were recorded. The quality of the emission data was evaluated with respect to the level of documentation in the report, the test methods used, the number of test runs, and any reported problems with the sampling procedures or the operation of the source during the test period. On the basis of this evaluation, data ratings of A, B, C, or D were assigned to each data set. Specific procedures used to evaluate the data are specified in *Procedures for Preparing Emission Factor Documents (*EPA-454/R-95-015).

For each emission test, an emission factor also was calculated for each pollutant sampled. These test-specific emission factors then were grouped according to source type, emission control device, pollutant, and, in the case of combustion sources, fuel type. At this stage in the process, D-rated data sets were discarded, provided there were higher quality data available for that particular group (i.e., that specific combination of source, control, fuel, and pollutant). In addition, where there were data from multiple tests on the same specific emission source, the test-specific emission factors were averaged to yield a source-specific emission factor. In subsequent calculations, this source-specific emission factor was used.

A statistical analysis of the data for batch and drum mix dryers was performed to determine the effects of RAP content, fuel type, production rate on emissions of several pollutants. The analysis showed no strong correlation between these parameters and emission factors. Details on the statistical analysis can be found in Section 4.3 of Appendix B.

To develop emission factors, the mean of the test-specific emission factors was calculated for each of the emission factor groups discussed above. In some cases, the data for two or more groups were combined and an overall mean emission factor was calculated. For example, if the data indicated that fuel type had no apparent effect on emissions of a specific pollutant, fuel type was ignored and all of the data for that source type and pollutant were combined. The final step in developing emission factors is to assign a quality rating of A, B, C, D, or E. Quality ratings are a function primarily of the number of data points

from which a specific emission factor is calculated. Additional information on the rating system used is discussed in Section 3 of Appendix B.

2.2.2 Hot Oil Heaters

For hot oil heaters, only a single test report for an oil-fired hot oil heater was available. The report was reviewed and the emission factors compiled using the procedures described previously. Appendix B, Section 4.2.4.2, provides a detailed description of how these emission factors were developed. It should be noted that most hot oil heaters are gas-fired, and the emission factors developed from the available data would not necessarily be representative of gas-fired heaters.

2.2.3 Truck Load-Out

Truck load-out emissions were developed from two emission tests sponsored by the U. S. Environmental Protection Agency (EPA) (Appendix B References 355 and 356). In designing, performing and evaluating these two tests, EPA was involved with a number of groups. The groups included citizens, State and local health agencies, State and local air pollution control agencies, and industry associations. These different groups provided input on the selection of facilities for emissions testing, the design of the test program, reviewed the individual site-specific test plans, observed emissions testing, commented on the draft test reports and provided suggestions for analysis of the data to develop emission factors. The procedures used to develop emission factors generally were the same as those described above. However, additional steps were taken to ensure the quality and consistency of the data and the representativeness and universality of the emission factors developed from the data. For example, two quality assurance scientists from Research Triangle Institute were employed to independently audit the test. These additional steps are summarized below. Detailed explanations of the methodology used are provided in Section 4.4 of Appendix B.

At one of the facilities the sampling area was enclosed but did not meet EPA requirements for a total enclosure. Consequently, the capture efficiency was quantitatively estimated and the data were corrected for capture efficiency.

At one facility, emissions due to diesel truck operation could not be segregated from emissions due to truck load-out. Therefore, background concentrations also were sampled. To account for background levels of various pollutants emitted from truck operation, the as-measured background concentrations were subtracted from the capture efficiency corrected load-out emission concentrations. For the most part, values were treated as zero if the background concentration exceeded the capture-efficiency-adjusted run concentration.

Because the asphalt types and temperatures for the two facilities differed, adjustments also were made to normalize the emission data. To account for differences in the volatility of the liquid asphalts used, samples of asphalt were collected during the emission tests and analyzed by ASTM Method D 2872-88, *Effects of Heat and Air on a Moving Film of Asphalt (Rolling Thin Film Oven Test - RTFOT)* to determine the "loss-on-heating" values for the asphalts. Additional loss-on-heating data also were obtained from several State departments of transportation laboratories in order to determine a common RTFOT value to use as a default in those situations where no historical information is available. Based upon the RTFOT data collected and the desire to select a default which encourages the use of site-specific data, a default of -0.5 percent was selected as a default value for use in the predictive emission factor equations developed from the data.

To account for differences in the load-out temperatures of the two facilities the data were adjusted using the Clausius-Clapeyron equation, which relates vapor pressure and temperature of a substance. This equation and the asphalt laboratory data provide a mechanism to normalize the emissions to a temperature of 325°F, which is the maximum midpoint load-out temperature recommended by the Asphalt Pavement Environmental Council's Best Practices Guide dated March 2000.

Using the adjusted data and the temperature and volatility relationship described above, separate predictive emission factor equations were developed for emissions of total PM, organic PM, total organic compounds (TOC), and CO from drum mix and batch mix load-out operations. Additionally, adjusted data for a variety of HAP's were used to develop ratios of the HAP pollutant to either organic PM or TOC (speciation profiles). These speciation profiles are applicable to load-out emissions and yard emissions.

2.2.4 Silo Filling

Silo filling emission factors were developed from one of the emission tests described in the previous paragraphs for load-out emissions (Appendix B Reference 355). These data also were collected and evaluated with stakeholder involvement. Additionally, the same basic methodology described in the previous paragraphs for load-out emissions was used to adjust the data on emissions from silo filling operations. Predictive emission factor equations also were developed for total PM, organic PM, TOC, and CO. A detailed explanation of the methodology used to develop these equations is provided in Section 4.4.4 of Appendix B. Speciation profiles for silo filling emissions were also developed using the methodology described for load-out emissions. The speciation profiles from silo filling are applicable to asphalt storage tank emissions.

2.2.5 Asphalt Storage Tanks

To estimate emissions from heated organic liquid storage tanks, the methodologies described in Chapter 7 of AP-42 and the TANKS software are generally used. The emissions from these types of tanks depend on the contents of the tank, the volume of gas vented, and the operating temperature range of the liquid in the tank. Emissions during the filling of these tanks (working loss) are governed by the saturation concentration of the liquid stored in the tank and the volume of gas displaced by the addition of liquid to the tank. Emissions during other periods (breathing losses) are governed by the saturation concentration of the liquid stored in the tank and the changes in the volume of the gas caused by temperature variations. Although vapor pressure information on paving asphalt is not available to allow the use of the TANKS program without additional information, information was available from the silo filling test report to infer emissions during the filling of the asphalt storage tank and, by extension, the vapor pressure characteristics of paving asphalt at the typical operating temperatures. Using these data, input values for Antoine's equation and liquid and vapor molecular weight were developed for use with the TANKS program to calculate working and breathing losses for asphalt storage tanks. A detailed explanation of the methodology used to develop these values is presented in Section 4.4.5 of Appendix B.

2.2.6 Yard Emissions

At one of the EPA-sponsored emission tests described in the previous paragraphs for load-out emissions (Appendix B Reference 355), data also were collected on fugitive emissions from loaded trucks as they sat in the yard prior to departure for the job site. As with the other data from this reference, these data were evaluated with stakeholder involvement. The data obtained were fitted to a power function in order to develop an equation for these yard emissions as a function of time. A specific emission factor for cumulative emissions over an 8-minute period (which represents the maximum time represented by the

data) was calculated using the power function equation developed from the emission data. A detailed explanation of the methodology used to develop the equations and the emission factor is provided in Section 4.4.6 of Appendix B.

2.3 OTHER APPLICABLE AP-42 SECTIONS

Emission factors for other generic sources associated with HMA facilities can be found in other sections of AP-42 (http://www.epa.gov/ttn/chief/ap42/index.html). As discussed above, methodologies for estimating emissions from asphalt storage tanks can be found in Chapter 7 of AP-42. Methods for estimating fugitive dust emissions from vehicular traffic are presented in AP-42 Chapter 13 (Sections 13.2.1 and 13.2.2). Material handling emissions and storage pile emissions are addressed in AP-42 Chapter 11 (Section 11.19.2) and Chapter 13 (Section 13.2.4). Emission factors for truck exhaust are provided in AP-42 Volume II: Mobile Sources (http://www.epa.gov/oms/ap42.htm).

To calculate the material handling and mobile source emission estimates presented in Tables 1 and 2 of this report, suitable emission factors for these material handling and mobile sources were determined. The following paragraphs describe the basis for the emission factors that were used:

- Receipt of new aggregate – Used equation from AP-42 Section 13.2.4, assuming an average moisture content of 1.5 percent and an average wind speed of 10 miles per hour (mph). The resulting PM-10 emission factor is 0.0041 lb/ton of new aggregate. The resulting PM-2.5 emission factor is 0.0013 lb/ton of new aggregate.
- Transfer of aggregate from storage to conveyor belt or between conveyor belts – Used controlled emission factor from AP-42 Section 11.19.2. The PM-10 emission factor is 0.000048 lb/ton of new aggregate.
- Screening of aggregate – Used controlled emission factor from AP-42 Section 11.19.2. PM-10 emission factor is 0.00084 lb/ton of new aggregate.
- RAP crushing – Used controlled tertiary crushing emission factor from AP-42 Section 11.19.2. PM-10 emission factor is 0.00059 lb/ton of new aggregate.
- Paved road dust emissions – Used paved roads equation from AP-42 Section 13.2.1, assuming an average vehicle weight of 22 tons and a road silt content of 3 grams per square meter. The resulting PM-10 emission factor is 0.016 lb per vehicle mile traveled. The resulting PM-2.5 emission factor is 0.0040 lb per vehicle mile traveled.
- Unpaved road dust emissions – Used unpaved roads equation from AP-42 Section 13.2.2, assuming an average vehicle weight of 6 tons, a road silt percentage of 10 percent, a surface moisture content of 0.7 percent. The resulting PM-10 emission factor is 2.04 lb per vehicle mile traveled. The resulting PM-2.5 emission factor is 0.29 lb per vehicle mile traveled.
- Diesel exhaust emissions – Used heavy duty diesel truck emission factors for idling and for an average speed of 10 mph with a 250 brake horsepower engine. The diesel engines get 10 miles per gallon at 10 mph and burn 1 gallon per hour (gal/hr) of fuel at idle. The sulfur content of diesel fuel is 0.05 percent. At idle, the emissions factors for diesel engines are: VOC - 0.208 grams per minute (g/min) (0.00046 pound per minute [lb/min]), CO - 1.57 g/min (0.0035 lb/min), NO_x - 0.917 g/min (0.0020 lb/ min), SO_2 - 0.157s pounds per gallon of fuel (lb/gal) (where s is fuel sulfur content) and PM - 0.043 g/min (0.000095 lb/min). When traveling at an average speed of 10 mph, the emission factors for diesel engines are: VOC - 3.18 grams per mile (g/mile) (0.0070 pounds per mile [lb/mile]), CO - 18.82 g/mile (0.041 lb/mile), NO_x - 8.50 g/mile (0.019 lb/mile), SO_2 - 0.157s lb/gal fuel (where s is fuel sulfur content), and PM - 0.1011 grams per brake horsepower hour (0.00022 pounds per horsepower hour). For organic HAP emissions - Used medium duty diesel truck emission

factors from article by Schauer, et. al., in Environmental Science & Technology of May 15, 1999. The volatile HAP emission factors presented were 0.084 grams per kilometer (g/km) (0.00030 lb/mile) and 0.0016 g/km (0.0000057 lb/mile) for PAHs.

The ducted and process fugitive emissions estimates presented in Tables 1, 2, 7, and 11 are based on the following additional assumptions:

- 84,800 ton/yr of new aggregate for batch mix plant.
- 10,000 ton/yr of recycled pavement for batch plant.
- 1.25 million gallons (5,200 tons) of asphalt for batch plant.
- 150,900 ton/yr of new aggregate for drum mix plant.
- 40,000 ton/yr of recycled pavement for drum mix plant.
- 2.5 million gallons (10,400 tons) of asphalt for drum mix plant.
- Two 18,000-gallon asphalt storage tanks.
- Five open conveyor transfer points for new aggregate.
- Front end loader travel over unpaved roads of 0.25 mile per ton of RAP used.
- Vehicle travel over paved roads of 1.5 miles per 25 tons of HMA produced.
- Vehicle idling time of 128,000 min (an average of 4 trucks in line during the average 8-minute load-out time) for batch plant.
- Vehicle idling time of 72,000 min (an average of 6 trucks in line during the average 1.5-minute load-out time) for drum mix plant.

2.4 EMISSION INVENTORY FOR TYPICAL HOT MIX ASPHALT PLANTS

To perform an emission inventory for a typical HMA plant, the first step is to identify the types of emission sources and to count the total number of each type of source. The next step is to identify the best emission estimation tools, which include: (1) facility-specific emissions test data; (2) source-specific emission factors; (3) other types of source-specific data, such as mass balance data; (4) emission factors for similar sources; (5) emission factors for sources that are believed to be somewhat similar to the source being considered; and (6) engineering estimates. After selecting appropriate emission estimation tools, activity factors, such as production rates, should be determined for each source so that emissions can be estimated for a specified period of time. The emissions over the specified period of time for each source and pollutant then are summed to complete the emission inventory. Appendix C provides more detailed information on procedures for performing an emission inventory at an HMA plant.

2.5 EMISSION ESTIMATES FOR TYPICAL HOT MIX ASPHALT PLANTS

Tables 1 and 2 present annual estimates of emissions of criteria pollutants and HAPs for typical batch mix and drum mix HMA plants, respectively. The estimates presented in these tables account for the most significant emission sources at each type of facility. Tables 5 through 12 present more detailed annual emission estimates for typical batch and drum mix HMA plants. Table 5 summarizes the estimated emissions from a typical batch mix plant dryer, hot screens, and mixer. Included in the table are estimates for criteria pollutants as well as specific PAHs, volatile HAPs, and metal HAPs for which emission factors were developed. Estimated annual criteria pollutant, PAH and volatile HAP emissions from typical batch mix plant load-out operations and asphalt storage tank are summarized in Tables 6 and 7. Tables 8, 9, 10, and 11 summarize the estimated annual emissions from a typical drum mix plant dryer, load-out operations, silo filling operations, and asphalt storage tank respectively. These tables includes estimates for criteria pollutants, PAHs, volatile HAPs, and metal HAPs for which emission factors were developed. Finally, Table 12 presents estimates of fugitive emissions from loaded trucks (yard emissions) for a typical

batch mix and drum mix plant. The emissions estimates presented in Tables 5 through 12 are based on the emission factors developed for the HMA industry and the following assumptions:

- Batch mix plant and drum mix plant dryers are fueled with either natural gas or fuel oil. It is estimated that between 70 and 90 percent of HMA plants use natural gas, although some HMA plants use fuel oil as an alternative to natural gas. As shown in Tables 5 and 8, fuel oil-fired mixers and dryers have higher emissions of SO_2, NO_x, and some HAPs.
- Batch mix plant dryer, hot screens, and mixer and drum mix plant dryer emissions are controlled with fabric filters.
- PM emissions from load-out and silo filling are entirely PM-10. (However, the organic portion of these emissions also can be assumed to be PM-2.5. Information is available in AP-42 Appendix B.1, Particle Size Distribution Data and Sized Emission Factors for Selected Sources, for categorizing the inorganic or filterable PM into PM-10 and PM-2.5 fractions.)
- Average asphalt loss on heating is -0.5 percent (asphalt volatility).
- Average HMA load-out temperature is 325°F.
- The typical HMA plant has two asphalt storage tanks that are 50 feet long and 8 feet in diameter. It is estimated that these storage tanks require a total heating capacity of about 200,000 Btu/hr, based on a heat loss of 60 Btu/ft^2 of tank surface area. The asphalt storage tanks are kept at 325°F continuously for the five months the HMA plant operates. As a result, 720 million Btu are used to maintain the temperature of the asphalt in the storage tank. For a gas-fired hot oil heater, 720,000 ft^3 of gas is combusted. For an oil-fired hot oil heater, 5,100 gallons of fuel oil are combusted. It should be noted that this fuel usage is about 3 percent of the fuel used in a typical batch mix plant and 1.6 percent of the fuel used in a typical drum mix plant.

TABLE 3. MATRIX OF EMISSION FACTORS DEVELOPED FOR HMA SOURCES

Plant type	Source	Criteria pollutants	HAPs	Other pollutants
Batch mix	Dryer, hot screens, and mixer	PM-10, NO_x, CO, SO_2, VOC	24 organic HAPs 9 metal HAPs	CO_2 4 other organics 3 other metals
	Hot oil heaters		22 organic HAPs	
	Load-out	PM, CO, VOC,	41 organic HAPs	3 other organics
	Yard emissions	VOC	19 organic HAPs	
Drum mix	Dryer	PM-10, NO_x, CO, SO_2, VOC	58 organic HAPs 11 metal HAPs	CO_2 15 other organics, 6 other metals
	Hot oil heaters		22 organic HAPs	
	Load-out	PM, CO, VOC	41 organic HAPs	3 other organics
	Silo filling	PM, CO, VOC	28 organic HAPs	3 other organics
	Yard emissions	VOC	19 organic HAPs	

TABLE 4. LOCATIONS OF SUPPORTING DATA FOR EMISSION FACTORS

Plant Type	Source	Pollutant	Appendix A Table	Appendix B Section	Appendix B Table
Batch Mix	Dryer, hot screens, mixer	PM-10	11.1-1, 11.1-2	4.2.4.3.1-4.2.4.3.6	4-19
		CO	11.1-5	4.2.4.3.7	4-20
		CO_2	11.1-5	4.2.4.3.8	4-20
		NO_x	11.1-5	4.2.4.3.9	4-20
		SO_2	11.1-5	4.2.4.3.10	4-20
		TOC/VOC/methane	11.1-6	4.2.4.3.11, 4.2.4.3.12	4-20
		Speciated organics	11.1-9	4.2.4.3.12-4.2.4.3.15	4-22
		Trace metals	11.1-11	4.2.4.3.16	4-21
Drum Mix	Dryer/mixer	PM-10	11.1-3, 11.1-4	4.2.4.1.1-4.2.4.1.6	4-14
		CO	11.1-7	4.2.4.1.7	4-15
		CO_2	11.1-7	4.2.4.1.8	4-15
		NO_x	11.1-7	4.2.4.1.9	4-15
		SO_2	11.1-7	4.2.4.1.10	4-15
		TOC/VOC/methane	11.1-8	4.2.4.1.11	4-15
		HCl	11.1-8	4.2.4.1.18	4-17
		Speciated organics	11.1-10	4.2.4.1.12-4.2.4.1.15, 4.2.4.1.19	4-17
		Dioxin/furans	11.1-10	4.2.4.1.17	4-17
		Trace metals	11.1-12	4.2.4.1.16	4-16
Batch or Drum Mix	Hot oil heater	Organic pollutants	11.1-13	4.2.4.2	4-18
	Load-out	PM, organic PM, TOC, CO, speciated organics	11.1-14 11.1-15 11.1-16	4.4.4	4-27 to 4-37, 4-43, 4-44
	Silo filling	PM, organic PM, TOC, CO, speciated organics	11.1-14 11.1-15 11.1-16	4.4.4	4-38 to 4-44
	Asphalt storage	Speciated organics	11.1-15 11.1-16	4.4.5	4-43, 4-44
	Yard emissions	Speciated organics	11.1-15 11.1-16	4.4.6	4-45, 4-46

TABLE 5. ESTIMATED ANNUAL EMISSIONS FOR A TYPICAL BATCH MIX PLANT DRYER, HOT SCREENS, AND MIXER[a]

Pollutant	Oil-fired dryer	Natural gas-fired dryer
	Emissions, lb/yr	
Criteria Pollutants		
PM-10	2,700	2,700
VOC	820	820
CO	40,000	40,000
SO_2	8,800	460
NO_x	12,000	2,500
PAHs (semi-volatile HAPs)		
Naphthalene	3.6	3.6
2-Methylnaphthalene	7.1	7.1
Acenaphthene	0.090	0.090
Acenaphthylene	0.058	0.058
Anthracene	0.021	0.021
Benzo(a)anthracene	0.00046	0.00046
Benzo(a)pyrene	0.000031	0.000031
Benzo(b)fluoranthene	0.00094	0.00094
Benzo(g,h,i)perylene	0.00005	0.00005
Benzo(k)fluoranthene	0.0013	0.0013
Chrysene	0.00038	0.00038
Dibenz(a,h)anthracene	0.0000095	0.0000095
Fluoranthene	0.016	0.016
Fluorene	0.16	0.16
Indendo(1,2,3-cd)pyrene	0.00003	0.00003
Phenanthrene	0.26	0.26
Pyrene	0.0062	0.0062
Total PAHs	11	11
Volatile HAPs		
Acetaldehyde	32	32
Benzene	28	28
Ethylbenzene	220	220
Formaldehyde	74	74
Quinone	27	27
Toluene	100	100
Xylene	270	270
Total Volatile HAPs	751	751
Metal HAPs		
Arsenic	0.046	0.046
Beryllium	0.015	0.015
Cadmium	0.061	0.061
Chromium	0.057	0.057
Lead	0.089	0.089
Manganese	0.69	0.69
Mercury	0.041	0.041
Nickel	0.3	0.3
Selenium	0.049	0.049
Total metal HAPs	1.35	1.35

[a] Dryer, hot screens, and mixer controlled by fabric filter producing 100,000 tons of hot mix asphalt per year. Between 70 and 90 percent of HMA is produced using natural gas; most of the remaining HMA is produced using fuel oil.

TABLE 6. ESTIMATED ANNUAL EMISSIONS FOR TYPICAL BATCH MIX PLANT LOAD-OUT OPERATIONS[a]

Pollutant	Emissions, lb/yr
Criteria Pollutants	
PM-10	52
VOC	391
CO	135
PAHs (semi-volatile HAPs)	
Acenaphthene	0.089
Acenaphthylene	0.0095
Anthracene	0.0239
Benzo(a)anthracene	0.0065
Benzo(b)fluoranthene	0.0026
Benzo(k)fluoranthene	0.00075
Benzo(g,h,i)perylene	0.00065
Benzo(a)pyrene	0.00078
Benzo(e)pyrene	0.0027
Chrysene	0.035
Dibenz(a,h)anthracene	0.00013
Fluoranthene	0.017
Fluorene	0.26
Indeno(1,2,3-cd)pyrene	0.00016
2-Methylnaphthalene	0.81
Naphthalene	0.43
Perylene	0.0075
Phenanthrene	0.28
Pyrene	0.051
Total PAHs	2.02
Other semi-volatile HAPs	
Phenol	0.40
Volatile HAPs	
Benzene	0.22
Bromomethane	0.040
2-Butanone	0.20
Carbon disulfide	0.054
Chloroethane	0.00087
Chloromethane	0.062
Cumene	0.46
Ethylbenzene	1.16
Formaldehyde	0.37
n-Hexane	0.62
Isooctane	0.0075
Methylene chloride	0.00
Methyl tert-butyl ether	0.00
Styrene	0.030
Tetrachloroethene	0.032
Toluene	0.87
1,1,1-Trichloroethane	0.00
Trichloroethene	0.00
Trichlorofluoromethane	0.0054
m-/p-Xylene	1.70
o-Xylene	0.33
Total volatile HAPs	6.18

[a] Uncontrolled emissions from 100,000 tons of hot mix asphalt per year.

TABLE 7. ESTIMATED ANNUAL EMISSIONS FOR TYPICAL BATCH MIX PLANT ASPHALT STORAGE TANK[a]

Pollutant	Emissions, lb/yr
Criteria Pollutants	
PM-10	ND
VOC	32
CO	3
PAHs (semi-volatile HAPs)	
Acenaphthene	0.0027
Acenaphthylene	0.0010
Anthracene	0.00092
Benzo(b)fluoranthene	0.00051
Fluoranthene	0.00022
Fluorene	0.00016
Naphthalene	0.087
Phenanthrene	0.025
Pyrene	0.00016
Total PAHs	0.12
Volatile HAPs	
Benzene	0.010
Bromomethane	0.0016
2-Butanone	0.012
Carbon disulfide	0.0051
Chloroethane	0.0012
Chloromethane	0.0074
Ethylbenzene	0.012
Formaldehyde	140
n-Hexane	0.032
Isooctane	0.000099
Methylene chloride	0.000086
Phenol	0.00
Styrene	0.0017
Toluene	0.020
m-/p-Xylene	0.061
o-Xylene	0.018
Total volatile HAPs	140

[a] Uncontrolled emissions from plant producing 100,000 tons of hot mix asphalt per year. Includes emissions from oil-fired hot oil heaters. All calculated PAH emissions and almost all of the formaldehyde emissions are from the oil-fired hot oil heater.

TABLE 8. ESTIMATED ANNUAL EMISSIONS FOR A TYPICAL DRUM MIX DRYER[a]

Pollutant	No. 2 fuel oil-fired dryer	Natural gas-fired dryer
	Emissions, lb/yr	
Criteria Pollutants		
PM-10	4,600	4,600
VOC	6,400	6,400
CO	26,000	26,000
SO_2	2,200	680
NO_x	11,000	5,200
PAHs (semi-volatile HAPs)		
2-Methylnaphthalene	34	15
Acenaphthene	0.28	0.28
Acenaphthylene	4.4	1.7
Anthracene	0.62	0.044
Benzo(a)anthracene	0.042	0.042
Benzo(a)pyrene	0.0020	0.0020
Benzo(b)fluoranthene	0.020	0.020
Benzo(e)pyrene	0.022	0.022
Benzo(g,h,i)perylene	0.0080	0.0080
Benzo(k)fluoranthene	0.0082	0.0082
Chrysene	0.036	0.036
Fluoranthene	0.12	0.12
Fluorene	2.2	0.76
Indeno(1,2,3-cd)pyrene	0.0014	0.0014
Naphthalene	130	18
Perylene	0.0018	0.0018
Phenanthrene	4.6	1.5
Pyrene	0.60	0.11
Total PAHs	180	37
Volatile HAPs		
Isooctane	8.0	8.0
Hexane	184	180
Benzene	78	78
Ethylbenzene	48	48
Formaldehyde	620	620
Methyl chloroform	9.6	9.6
Toluene	580	30
Xylene	40	40
Total volatile HAPs	1,568	1,020
Metal HAPs		
Lead	3	0.12
Mercury	0.52	0.048
Antimony	0.036	0.036
Arsenic	0.11	0.11
Beryllium	0.000	0.000
Cadmium	0.082	0.082
Chromium	1.1	1.1
Manganese	1.5	1.5
Nickel	12.6	12.6
Selenium	0.070	0.070
Total metal HAPs	19	16

[a] Dryer controlled by fabric filter producing 200,000 tons of hot mix asphalt per year. Between 70 and 90 percent of HMA is produced using natural gas; most of the remaining HMA is produced using fuel oil.

TABLE 9. ESTIMATED ANNUAL EMISSIONS FOR TYPICAL DRUM MIX PLANT LOAD-OUT OPERATIONS[a]

Pollutant	Emissions, lb/yr
Criteria Pollutants	
PM-10	104
VOC	780
CO	270
PAHs (semi-volatile HAPs)	
Acenaphthene	0.177
Acenaphthylene	0.0191
Anthracene	0.0477
Benzo(a)anthracene	0.013
Benzo(b)fluoranthene	0.0052
Benzo(k)fluoranthene	0.0015
Benzo(g,h,i)perylene	0.0013
Benzo(a)pyrene	0.00157
Benzo(e)pyrene	0.0053
Chrysene	0.070
Dibenz(a,h)anthracene	0.00025
Fluoranthene	0.034
Fluorene	0.53
Indeno(1,2,3-cd)pyrene	0.00032
2-Methylnaphthalene	1.62
Naphthalene	0.85
Perylene	0.015
Phenanthrene	0.55
Pyrene	0.10
Total PAHs	4.05
Other semi-volatile HAPs	
Phenol	0.80
Volatile HAPs	
Benzene	0.43
Bromomethane	0.080
2-Butanone	0.41
Carbon disulfide	0.11
Chloroethane	0.0017
Chloromethane	0.12
Cumene	0.91
Ethylbenzene	2.3
Formaldehyde	0.73
n-Hexane	1.25
Isooctane	0.015
Methylene chloride	0.00
Methyl tert-butyl ether	0.00
Styrene	0.06
Tetrachloroethene	0.064
Toluene	1.74
1,1,1-Trichloroethane	0.00
Trichloroethene	0.00
Trichlorofluoromethane	0.011
m-/p-Xylene	3.40
o-Xylene	0.66
Total volatile HAPs	12.35

[a] Uncontrolled emissions from 200,000 tons of hot mix asphalt per year.

TABLE 10. ESTIMATED ANNUAL EMISSIONS FOR TYPICAL DRUM MIX PLANT SILO FILLING OPERATIONS[a]

Pollutant	Emissions, lb/yr
Criteria Pollutants	
PM-10	120
VOC	2,400
CO	240
PAHs (semi-volatile HAPs)	
Acenaphthene	0.24
Acenaphthylene	0.0071
Anthracene	0.066
Benzo(a)anthracene	0.028
Benzo(e)pyrene	0.0048
Chrysene	0.11
Fluoranthene	0.076
Fluorene	0.51
2-Methylnaphthalene	2.7
Naphthalene	0.92
Perylene	0.015
Phenanthrene	0.91
Pyrene	0.22
Total PAHs	5.8
Other semi-volatile HAPs	
Phenol	0.00
Volatile HAPs	
Benzene	0.78
Bromomethane	0.12
2-Butanone	0.95
Carbon disulfide	0.39
Chloroethane	0.095
Chloromethane	0.56
Ethylbenzene	0.93
Formaldehyde	17
n-Hexane	2.4
Isooctane	0.0076
Methylene chloride	0.0066
Styrene	0.13
Toluene	1.5
m-/p-Xylene	4.6
o-Xylene	1.4
Total volatile HAPs	31

[a] Uncontrolled emissions from 200,000 tons of hot mix asphalt per year.

TABLE 11. ESTIMATED ANNUAL EMISSIONS FOR TYPICAL DRUM MIX PLANT ASPHALT STORAGE TANK[a]

Pollutant	Emissions, lb/yr
Criteria Pollutants	
PM-10	ND
VOC	64
CO	6
PAHs (semi-volatile HAPs)	
Acenaphthene	0.0027
Acenaphthylene	0.0010
Anthracene	0.00092
Benzo(b)fluoranthene	0.00051
Fluoranthene	0.00022
Fluorene	0.00016
Naphthalene	0.087
Phenanthrene	0.025
Pyrene	0.00016
Total PAHs	0.12
Volatile HAPs	
Benzene	0.020
Bromomethane	0.0031
2-Butanone	0.025
Carbon disulfide	0.010
Chloroethane	0.0025
Chloromethane	0.015
Ethylbenzene	0.024
Formaldehyde	140
n-Hexane	0.064
Isooctane	0.00020
Methylene chloride	0.00017
Phenol	0.00
Styrene	0.0035
Toluene	0.040
m-/p-Xylene	0.12
o-Xylene	0.036
Total volatile HAPs	140

[a] Uncontrolled emissions from plant producing 200,000 tons of hot mix asphalt per year. Includes emissions from an oil-fired hot oil heater. All of the calculated PAH emissions and almost all of the formaldehyde emissions are from the oil-fired hot oil heater.

TABLE 12. ESTIMATED ANNUAL YARD VOC EMISSIONS FOR TYPICAL BATCH MIX AND DRUM MIX HMA PLANTS[a]

	Batch mix[b]	Drum mix[c]
Pollutant	Emissions, lb/yr	
Criteria Pollutants		
PM-10	ND	ND
VOC	110	220
CO	36	72
PAHs (semi-volatile HAPs)	ND	ND
Other semi-volatile HAPs		
Phenol	0.00	0.00
Volatile HAPs		
Benzene	0.057	0.11
Bromomethane	0.011	0.021
2-Butanone	0.054	0.11
Carbon disulfide	0.014	0.029
Chloroethane	0.00023	0.0046
Chloromethane	0.017	0.033
Cumene	0.12	0.24
Ethylbenzene	0.31	0.62
Formaldehyde	0.10	0.19
n-Hexane	0.17	0.33
Isooctane	0.0020	0.0040
Methylene chloride	0.00	0.00
Styrene	0.0080	0.016
Tetrachloroethene	0.0085	0.017
Toluene	0.23	0.46
Trichlorofluoromethane	0.0014	0.0029
m-/p-Xylene	0.45	0.90
o-Xylene	0.088	0.18
Total volatile HAPs	1.6	3.3

[a] Fugitive VOC emissions from loaded haul truck for eight minutes after completion of load-out.
[b] Uncontrolled emissions from plant producing 100,000 tons of hot mix asphalt per year.
[c] Uncontrolled emissions from plant producing 200,000 tons of hot mix asphalt per year.

APPENDIX A

AP-42 Section 11.1
Hot Mix Asphalt Plants

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APPENDIX B

Emission Factor Documentation for AP-42 Section 11.1
Hot Mix Asphalt Production

Written Public Comments
3:00pm 4/28/2023

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APPENDIX C

Chapter 3:
Preferred and Alternative Methods for Estimating
Air Emissions from Hot Mix Asphalt Plants
Emission Inventory Improvement Program (EIIP)
July 1996

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TECHNICAL REPORT DATA
(Please read Instructions on reverse before completing)

1. REPORT NO.	2.	3. RECIPIENT'S ACCESSION NO.
EPA-454/R-00-019		

4. TITLE AND SUBTITLE	5. REPORT DATE
Hot Mix Asphalt Plants Emission Assessment Report	December 2000
	6. PERFORMING ORGANIZATION CODE

7. AUTHOR(S)	8. PERFORMING ORGANIZATION REPORT NO.
Ron Myers (EPA) Brian Shrager (MRI) Gary Brooks (ERG)	

9. PERFORMING ORGANIZATION NAME AND ADDRESS	10. PROGRAM ELEMENT NO.
U.S. Environmental Protection Agency Office of Air Quality Planning and Standards Research Triangle Park, NC 27711	11. CONTRACT/GRANT NO. 68D-98-027 (MRI) 68-D7-0068 (ERG)

12. SPONSORING AGENCY NAME AND ADDRESS	13. TYPE OF REPORT AND PERIOD COVERED
Office of Air Quality Planning and Standards Office of Air and Radiation U.S. Environmental Protection Agency Research Triangle Park, NC 27711	14. SPONSORING AGENCY CODE EPA/200/04

15. SUPPLEMENTARY NOTES

16. ABSTRACT The United States Environmental Protection Agency (EPA) Emission Factors and Inventory Group (EFIG) is investigating the Hot Mix Asphalt industry to identify and quantify criteria and hazardous air pollutants (HAP's) emitted from kiln stacks, transport truck loading and silo filling. EFIG obtained over 300 emission tests from kiln stacks that characterize emissions of criteria pollutants and hazardous air pollutants' emissions. EFIG requested that EPA's Emission Measurement Center (EMC) conduct the required testing of the transport truck and silo filling operations. Under separate EPA contracts, Midwest Research Institute (MRI) and Pacific Environmental Services (PES) performed two emissions tests. The primary objective of the testing program was to characterize uncontrolled emissions of the criteria pollutants particulate matter (PM) and total hydrocarbons (THC) and emissions of volatile and semi-volatile organic HAP's including polycyclic organic matter, phenol, benzene, toluene, xylene, ethyl benzene, 2-butanone, cumene, formaldehyde, hexane, isooctane and others. The results of the two test reports and responses to comments on these test reports are covered in separate EPA reports (EPA 454/R-00-024, EPA 454/R-00-025 (a through h), EPA 454/R-00-026, EPA 454/R-00-027, EPA 454/R-00-028 and EPA 454/R-00-029). This document characterizes hot mix asphalt plant operations, summarizes emissions from the typical batch mix and drum mix plants, presents emission factors specifically developed for hot mix asphalt plants and presents analyses used to develop the emission factors developed and presents information needed to inventory the emissions at hot mix asphalt plants.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
	Air Pollution control	

18. DISTRIBUTION STATEMENT	19. SECURITY CLASS *(Report)*	21. NO. OF PAGES
Release Unlimited	Unclassified	592
	20. SECURITY CLASS *(Page)*	22. PRICE
	Unclassified	

EPA Form 2220-1 (Rev. 4-77) PREVIOUS EDITION IS OBSOLETE

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Written Public Comments
3:00pm 4/28/2023

FW: Connell Resources Asphalt Plant

Patti Garcia <garciapa@wellingtoncolorado.gov>
Thu 4/27/2023 3:24 PM

To: chad.guides@gmail.com <chad.guides@gmail.com>
Cc: **Board of Trustees <boardoftrustees@wellingtoncolorado.gov>**;Cody Bird <birdca@wellingtoncolorado.gov>

Hi Chad –

Thank you for your email. The email you sent was to the Board of Trustees; the Planning Commission is a separate advisory board which will be considering the site plan for Connell Resources. Appeals of decisions made by the Planning Commission are made to the Board of Trustees so the Mayor and Trustees are not permitted to comment on this item as it could be considered ex-parte communications if there is an appeal.

I wanted to respond to you so that you understood why the Mayor and Trustees did not reply to your email. You can view the May 1, 2023 Planning Commission packet at this link https://www.wellingtoncolorado.gov/Archive.aspx?AMID=56.

Patti

TOWN OF WELLINGTON

Patti Garcia
Town Administrator
Mobile: (970) 473-6033
Email: garciapa@wellingtoncolorado.gov
Web: www.wellingtoncolorado.gov
8225 3rd Street, Wellington, CO 80549

From: Calar Chaussee <chausseec@wellingtoncolorado.gov>
Sent: Thursday, April 27, 2023 10:50 AM
To: Patti Garcia <garciapa@wellingtoncolorado.gov>
Subject: Fwd: Connell Resources Asphalt Plant

God Bless,
Mayor Chaussee
Ph:(970)652-3261

Begin forwarded message:

> **From:** Chad Mickschl <chad.guides@gmail.com>
> **Date:** April 27, 2023 at 10:39:17 MDT
> **To:** Calar Chaussee <chausseec@wellingtoncolorado.gov>, Eetzs@wellingtoncolorado.gov, David Wiegand <wiegandd@wellingtoncolorado.gov>, Brian Mason <masonb@wellingtoncolorado.gov>, Jon Gaiter <gaiterjm@wellingtoncolorado.gov>, Rebekka Dailey

<dailey rm@wellingtoncolorado.gov>
Subject: Connell Resources Asphalt Plant

Mayor and Trustees of Wellington,

I am a resident of Wellington in the Sage Meadows subdivision. I am writing to you all regarding the proposed development of the Connell Resources Asphalt Plant. I wanted to voice my thoughts and am very against the asphalt plant being built in its proposed location.

1. The town of Wellington was re-zoned in 2022 with the land that Connell Resources wants to develop zoned as Heavy Industrial. As Wellington was re-zoned, Heavy Industrial land came with setback requirements of 1000ft linear and 45ft height restrictions. The claim by Connell Resources that the land is not suitable for Heavy Industrial use with current setbacks should have led town planners to decide that this property should be re-zoned to Light Industrial to limit the setback needs. The need for a greater setback of 2640ft is actually more appropriate given the language in the Land Use Code Section 4.03.21 B curating toxic chemicals. Especially since it is adjacent to a residential neighborhood, a park and school. Additionally, the asphalt plant will not only impact the nearby neighborhoods, but our entire small town as the air quality will be impacted.

2. I have issues with the lack of informed decision making to grant the setback variance as well. It does not appear the town of Wellington has done any environmental (air quality, water quality and quantity, soil erosion and discharge), traffic impact, view shed impacts, noice, environmental justice for underserved communities, or economic impacts analysis that this will have on the health and safety of Wellington residents and wildlife such as migrating birds. The town must clearly understand and communicate to the public, the risks and/or benefits associated with the Asphalt Plant. This has yet to have been completed.

Based on other locations where Asphalt Plants are located near neighborhoods, property values decreased 56% according to Blue Ridge Environmental Defense League (BREDL). BREDL also found that 45% of residents living within a half mile of a new asphalt plant reported a deterioration of their health, which began after the plant opened. Known toxins also come with an Asphalt Plant such as odor, formaldehyde, hexane, phenol, polycyclic organic matter, and toluene. The CDC's National Institute for Occupational Safety & Health states, "Known carcinogens have been found in asphalt fumes generated at work sites."* Exposure to these air toxins may cause cancer, central nervous system problems, liver damage, respiratory problems, and skin irritation (EPA Asphalt Plant Emission Assessment Report 2000).

The town of Wellington has a number of human health and safety issues to deal with currently, they do not need to add another issue. The responsibility of the Town of Wellington and its elected representatives is the health, safety, and well being of its residents. If this asphalt plant is approved, the town is falling far short of this responsibility.

3. The economic impact on the residents and the town will be noticeable. Residents will lose property value and will likely look to move out of town. With issues Wellington is already trying to deal with (train crossings, water quality, water price, concentrated feed lots, close proximity to the highway), this will likely be the final thing to tilt residents to leave. Businesses will also likely leave and close as their consumers will leave town.

4. There are certainly better locations for the Asphalt Plant to be located. Connell Resources likes to mention that homes have been built in Fort Collins next to their plants, however that is a homeowners decision. With this approval in Wellington, homeowners were not able to make a decision to live next to an Asphalt Plant, the town of Wellington is poorly making that decision for them. As elected officials, you must stand up for your constituents.

Written Public Comments
3:00pm 4/28/2023

There are large swaths of county land in Larmier and Weld where this could be located away from residential areas. Connell Resources claims that the counties don't want the Asphalt Plants, but there is a process to get those approved there. There are also areas within Weld County where these plants are welcomed. Connell Resources also claimed that they could open in Carr (where they get their aggregate) but its too cold and windy for transporting. There are common mitigations such as lining and insulating trucks for transport. These plants exist in far colder places than the Front Range of Colorado. It's time for the town of Wellington to STOP being Fort Collins' dumping ground.

5. One other concern is the lack of transparency with this proposal and process. I do not feel there has been adequate public notification of this controversial proposal. As I speak to residents in my neighborhood, people are not aware, but once they find out are very against the Asphalt Plant being built. The decision of permit the Asphalt Plant should absolutely be put on hold until there is an adequate public notification process completed.

Thank you for taking comments and I trust the right decision will be made regarding the health, safety, and viability of residents and the town of Wellington.

Chad Mickschl

6915 Grassy Range Dr

Asphalt batch plant

M S <antisubmarine@yahoo.com>

Tue 4/25/2023 9:10 PM

To: Shirrell Tietz <tietzs@wellingtoncolorado.gov>;David Wiegand <wiegandd@wellingtoncolorado.gov>;Jon Gaiter <gaiterjm@wellingtoncolorado.gov>;daileryrm@wellingtoncolorado.gov <daileryrm@wellingtoncolorado.gov>;Calar Chaussee <chausseec@wellingtoncolorado.gov>;Cody Bird <birdca@wellingtoncolorado.gov>;Brian Mason <masonb@wellingtoncolorado.gov>

Town of Wellington

My grave disappointment in you is so profound. We bought our forever home 2 ½ years ago. My husband put in his retirement papers this week. This was supposed to be a time of relaxing and celebrating. Instead, we are trying to figure out where in the USA we want to live since Wellington is now off the table. Thanks to you, this is no longer our forever home, but our for-the-moment home. I have breathing issues. My neighbors with small children have contacted a realtor. You are breaking up my community. Soon our beautiful Wellington will look like LaPorte – only people who don't care about their property or communities will be living here. Why, why, why would you put our most beautiful park which means our children – our most sacred gifts – in a toxic environment? I hope your children and grandchildren live on the other side of town. I am especially disappointed that you didn't even ASK your own citizens. Thank you for the reminder that my life, my health and my success are none of your concern. You need to take down the sign letting people know "We are the playful city" and change it to "We are the toxic city." I just wanted to remind you that what you do impacts people. Are you making a positive impact, or a horrendous impact?

Mary Beth Smith

9088 Painted Horse Ln

Wellington, CO

May 1, 2023 Planning Commission Meeting Comments

Kimjosh Cruz-Rodenbeck <kimjoshchuy@yahoo.com>

Fri 4/28/2023 11:07 AM

To: Cody Bird <birdca@wellingtoncolorado.gov>

2 attachments (235 KB)

Connell Plant Settlement Agreement 12-5-22.pdf; Board of Trustees - Mar 28 - 2023.docx;

To the Planning Commissioners:

First, I would like to thank you for affording Wellington citizens and yourselves the time to further research asphalt plant operations, zoning and the harms that may or may not be posed by locating a hot batch asphalt plant in proximity to residential and open spaces. I also want to thank you for asking hard questions at the March 6 meeting. I appreciate the commissioners taking the reigns, asking hard questions and requesting more of the applicant in order to demonstrate (from their perspective) historical safety compliance and effects to the environment.
Second, I would like to point out a few items that concern me regarding Connell and asphalt plants in general based on comments made at the March 6 meeting.

1. At the 2hr 31m mark during the meeting, Mr. Warren stated, "we have been able to pass all their air quality permits to date." I believe this statement was made to demonstrate the trustworthiness of Connell and their ability to follow all rules and regulations. Unfortunately, this just wasn't true. When researching the public records the first report I came to was an inspection that they failed. They remained in non-compliance for several months and were later fined $7,000 for this non-compliance (please see attached settlement document). Mr. Warren did allude to the severity of the financial repercussions of falling out of compliance but there was never any mention of what happens to those individuals who happen to live in proximity of an asphalt plant when these non-compliant events occur. This should concern all of us. Especially if a non-compliance event occurs during their busy season.

2. Connell's busy season, in which emissions will spike, is the summertime, precisely when all our children will be outdoors, playing at the Wellington Community park, riding their bikes through our neighborhoods.
According to the American Lung Association,

"Children have more respiratory infections than adults, which also seems to increase their susceptibility to air pollution.
Furthermore, children don't behave like adults, and their behavior also affects their vulnerability. They are outside for longer periods
and are usually more active when outdoors. Consequently, they inhale more polluted outdoor air than adults typically do." (https://www.lung.org/clean-air/outdoors/who-is-at-risk/children-and-air-pollution#:~:text=Children%20have%20more%20respiratory%20infections,their%20susceptibility%20to%20air%20pollution.&text=Furthermore%2C%20children%20don't%20behave,usually%20more%20active%20when%20outdoors

3. At the 1hr 56m mark Ms. Lea Schnider from the Larimer County Health Department stated that, "air toxics are really understudied." She goes on to talk about how the oil and gas industry didn't have to comply with as many safety regulations until AFTER air toxics were studies in more depth. I am very concerned that as a self-reporting industry there is little incentive for the asphalt industry to actually invest the time and money to make sure we are all safe.

4. Ms. Schnider also stated at the 3hr 23m mark that, "the (Connell) plant DOES produce air toxins." This statement along with point 3 above should really give us pause as a community.

And finally, I believe the **Adjustments Committee failed to follow the rules set forth in the Town of Wellington Land Use Code** when they approved a setback variance for Connell**. Specifically section 4.03.21 subsection B1.** "Any Industrial and Manufacturing, Heavy use producing and curating toxic chemicals or conducting animal slaughtering shall be located at least two thousand six hundred forty (2,640) feet from any residential district, religious land use, medical care facility or school." It is a fact that Connell's Asphalt plant will be producing and releasing toxic chemicals into the air as a direct result of their asphalt production. This should not only disqualify them from the variance granted, but also prohibit them from operating on the proposed heavy industrial parcel they are seeking approval on based on it's proximity to a residential district.

Thank you for your time and energy on this. It really matters.

Kim Cruz-Rodenbeck
3255 Wild West Ln

I have also attached my comments to the Board of Trustees (March 28, 2023) to make sure they get into the record for this meeting. Thank you.

Written Public Comments
3:00pm 4/28/2023

To The Wellington Board of Trustees,

I am writing to respectfully request that you reconsider the appropriateness of having Heavy Industrial zoned parcels of land adjacent to residential and public zoned parcels which contain parks where the most vulnerable people in our community spend much of their time…our children.

The following quotes are taken from the Land Use Leadership Alliance Training Program Guidance Manual, a publication of the Colorado Chapter of the American Planning Association. Here is the link to the publication: https://www.law.du.edu/documents/rmlui/workshops/LinkingLandUse-Water-GuidanceManual.pdf

- "**The general purpose of zoning is to regulate uses of land and the physical improvements to land *in the interest of the public welfare*, without imposing undue burdens on landowners**."
- While the land owner is protected from undue burdens "**a land owner is not entitled to the most profitable or best use of his or her property.**"
- "**Prior court decisions have held that where a landowner has not been deprived of all reasonable economic uses of his or her land, a zoning regulation will generally be upheld.**"

Wellington is a bedroom community where many have moved to raise their children. According to the most recent census, 39.2% of our residence are under the age of 18 (https://www.census.gov/quickfacts/fact/table/wellingtontowncolorado/AFN120217). Many of those children live, go to school and play outside within a 2 mile radius of the currently zoned Heavy Industrial parcels within our town limits. Any future heavy industrial development would have a disproportionately negative impact on this population as they will spend most of their waking and sleeping hours in proximity to heavy industry.

The American Lung Association reports that,
"**Children have more respiratory infections than adults, which also seems to increase their susceptibility to air pollution. Furthermore, children don't behave like adults, and their behavior also affects their vulnerability. They are outside for longer periods and are usually more active when outdoors. Consequently, they inhale more polluted outdoor air than adults typically do.**" (https://www.lung.org/clean-air/outdoors/who-is-at-risk/children-and-air-pollution#:~:text=Children%20have%20more%20respiratory%20infections,their%20susceptibility%20to%20air%20pollution.&text=Furthermore%2C%20children%20don't%20behave,usually%20more%20active%20when%20outdoors.) Any additional pollutants released into the atmosphere by heavy industry, however nominal, would increase the possibility of respiratory issues in the short and long term for these most precious members of our community.

I have not been able to see the proposed zoning changes that are up for consideration by the Board of Trustees, but I do know that the proximity to homes, schools and recreational/outdoor

Written Public Comments
3:00pm 4/28/2023

areas of the currently zoned Heavy Industrial properties seems problematic and inappropriate. Changing the currently zoned heavy industrial parcels to light industrial would be more consistent with the general purpose of zoning as stated above. Heavy Industry has no place in close proximity to residential property, parks or schools.

I respectfully request that the Board of Trustees and the Town of Wellington put our children's safety and the welfare of all its citizens **ABOVE** the interests of any heavy industry that may seek to operate within the town limits by eliminating any heavy industrial zoning that is, or would be, adjacent to residentially zoned parcels, parcels that are zoned open space that contain parks and schools/daycares.

Thank you for your time and consideration.

Kim Cruz-Rodenbeck
3255 Wild West Ln.
Wellington, CO 80549

Written Public Comments
3:00pm 4/28/2023

COLORADO
Department of Public Health & Environment

December 5, 2022

SENT VIA ELECTRONIC MAIL

Brandon Martin
Connell Resources, Inc.
7785 Highland Meadows Pky. #100
Fort Collins, CO 80528

Re: Proposed Early Settlement Agreement in the Matter of Connell Resources, Inc.
AIRS No.: 069-0373
Case No.: 2022-180

Dear Brandon Martin:

Connell Resources, Inc. ("CRI") owns and operates the asphalt paving material plant located at 5150 SE Frontage Road, Fort Collins, Larimer County, Colorado ("Facility"). The Facility is subject to the terms and conditions of Colorado Construction Permit Number 00LR0746, Issuance 4 issued to CRI on November 30, 2020 ("Permit Number 00LR0746"); Colorado Air Quality Control Statutes; and Colorado Air Quality Control Commission ("AQCC") Regulations. The Facility's hot mix asphalt equipment (AIRS ID 069-0373-001), is relevant to this enforcement action.

On June 25, 2021, CRI conducted compliance testing on the Facility's hot mix asphalt equipment ("Compliance Test"). The Compliance Test was unobserved by the Colorado Air Pollution Control Division ("Division"). Based on the Compliance Test, and a review of records related to the Facility, the Division issued a Compliance Advisory to CRI on October 20, 2022. On November 15, 2022, the Division and CRI met to discuss the issues identified in the Compliance Advisory.

Based upon a review of the inspection, records related to the Facility, and the information provided by CRI, the Division has determined the following:

A. Pursuant to Permit Number 00LR0746, Condition 7, emissions of air pollutants from the Facility's hot mix asphalt equipment must not exceed 8.5 tons per year of NOx and 19.9 tons per year of CO. Pursuant to Permit Number 00LR0746, Condition 19, a source initial compliance test must be conducted on the main stack to measure and demonstrate compliance with the pollutant emission rates in the permit. The compliance test must be conducted in accordance with the Division's Compliance Test Manual. The Compliance Test conducted on June 25, 2021 was stopped by CRI before completion due to failing test results. CRI was therefore out of compliance with the hot mix asphalt equipment NOx and CO emission rates. From June 25, 2021 to October 20, 2021, CRI failed to demonstrate compliance with the hot mix asphalt equipment NOx and CO emission rates, violating Permit Number 00LR0746, Conditions 7 and 19.

Written Public Comments
3:00pm 4/28/2023

On October 20, 2021, CRI successfully conducted a full compliance test of the hot mix asphalt equipment, demonstrating compliance with the emission rates in Permit Number 00LR0746.

The Colorado Air Pollution Prevention and Control Act, at § 25-7-122(1)(b), C.R.S., specifies the penalty for such violations. The monetary amount of the Division's settlement offer specified below takes into account, among other factors, the magnitude and severity of the violation, cooperation of the company, as well as the prior history of violations of air quality requirements associated with any of the company's facilities/operations in the State of Colorado (including a company's parent or subsidiary relations, if applicable). Settlement offers are based on the evaluation of the same factors and criteria in all cases. Based upon CRI's cooperation, and its efforts to bring its operations into compliance with the regulations and permit conditions identified above, the Division acknowledges that CRI has appropriately and adequately addressed all compliance issues identified above. In the interest of settling the matters cited herein, the Division therefore offers the following settlement in accordance with the Division's settlement policy.

1. Payment of a reduced penalty in the sum of **Seven Thousand Dollars ($7,000.00)**. Payment of the penalty precludes further enforcement by the Division for the above-described violation against CRI. The Division retains its authority to take enforcement actions based on any and all violations not specifically described above.

2. Entering into this settlement shall not constitute an admission of violation of the air quality laws, or the alleged facts relating thereto, nor shall any third party infer it to be such an admission in any administrative or judicial proceeding. However, CRI agrees not to challenge the factual or legal determinations herein, the Division's authority to bring, or the court's jurisdiction to hear, any action, insofar as it pertains to the matters contained herein, to enforce the terms of this settlement agreement. The described violation will constitute part of CRI's compliance history for any purpose for which such history is relevant.

This letter constitutes an offer of settlement and is not a demand for payment. Please contact me if you wish to discuss this offer of settlement. We remain willing to consider any information you wish to submit related to the violation. Please be advised, however, that the offer of settlement contained in this letter is predicated on resolving this matter within fifteen (15) days of the date of this settlement proposal letter. If you elect to continue the negotiation of this matter beyond that date, this offer shall be deemed withdrawn, and any penalty mitigation built into this settlement proposal may be revoked. If you require additional time to evaluate this settlement proposal or discuss remaining issues with the Division, however, please contact me regarding your request for an extension of the offer. Any extension of the offer, if agreed to by the Division, must be confirmed, in writing, by the Division.

If the above terms are acceptable to you, please have the appropriate person sign and return this letter and send a check in the sum of **$7,000.00**, made payable to the Colorado Department of Public Health and Environment, to

Air Pollution Control Division
Attn: Heather Wuollet
4300 Cherry Creek Drive South
APCD-SS-B1
Denver, Colorado 80246-1530

This offer of settlement, upon being fully endorsed by both the Division and CRI, shall constitute full and final resolution of the noncompliance issues identified herein and in the Compliance Advisory issued to CRI.

Written Public Comments
3:00pm 4/28/2023

You may write or call to request a settlement conference if you wish to discuss the matter with representatives of the Division's compliance staff. If we do not receive a response from you within fifteen (15) days of the date of this letter, we will assume that you are not interested in resolving this matter as outlined above. Please call me, at 303-692-3259, or Heather Wuollet, at 720-515-0279, if you have any further questions regarding this matter.

Sincerely,

DocuSigned by:
17DC47B908A249B...

Shannon McMillan
Compliance and Enforcement Program Manager

I certify that I am authorized by Connell Resources, Inc. to execute this settlement agreement and bind Connell Resources, Inc., and any affiliated entities, to the terms and conditions of this agreement. I have read the above settlement and agree to the terms and conditions of this offer.

Name: John M Warren

Title: President

DocuSigned by:
81F5D0EAF45E47B...

Signature	Telephone Number	Date
	970.223.3151	12/19/2022

cc:

Shannon McMillan, APCD	Jeffrey Bishop, APCD
Paul Carr, APCD	Beth Pilson, APCD
Heather Wuollet, APCD	Tom Lovell, APCD
Ben Cappa, APCD	Michael Stovern, EPA (Region VIII)
Tom Roan, Attorney General's Office	File

Written Public Comments
3:00pm 4/28/2023

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Written Public Comments
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Kim Cruz-Rodenbeck
3255 Wild West Ln.
Wellington, CO 80549

Written Public Comments
3:00pm 4/28/2023

COLORADO
Department of Public Health & Environment

December 5, 2022

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Air Pollution Control Division
Attn: Heather Wuollet
4300 Cherry Creek Drive South
APCD-SS-B1
Denver, Colorado 80246-1530

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Written Public Comments
3:00pm 4/28/2023

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Sincerely,

DocuSigned by:
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Shannon McMillan
Compliance and Enforcement Program Manager

I certify that I am authorized by Connell Resources, Inc. to execute this settlement agreement and bind Connell Resources, Inc., and any affiliated entities, to the terms and conditions of this agreement. I have read the above settlement and agree to the terms and conditions of this offer.

Name: John M Warren

Title: President

DocuSigned by:
81F5D0EAF45E47B...

Signature	970.223.3151	12/19/2022
	Telephone Number	Date

cc:
Shannon McMillan, APCD
Paul Carr, APCD
Heather Wuollet, APCD
Ben Cappa, APCD
Tom Roan, Attorney General's Office
Jeffrey Bishop, APCD
Beth Pilson, APCD
Tom Lovell, APCD
Michael Stovern, EPA (Region VIII)
File

Written Public Comments
3:00pm 4/28/2023

Asphalt plant

Lori Flitcroft <lorisbassets1@aol.com>

Fri 4/28/2023 3:44 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Sir,

I am writing to you in support of the asphalt plant in Wellington, CO. I feel that most of the people against this plant are ill informed and honestly have no idea what they are talking about. It is very important to have industry in your town. I come from a small town in Kansas and most industry left that town. They barely survived. Luckily a technical school moved which brought money back in. I truly believe it is just a small contingency that opposes this plant. Please, do not bow to the minority which seems to the norm in our country. This town needs this plant. I am sure they will put back into the town. Thank you for your time.

Lori Flitcroft

Written Public Comments
3:00pm 4/28/2023

RECEIVED
APR 2 6 2023
Wellington, CO

Board of Trustees

for 5/1/23 Planning Mtg.

Written Public Comments
3:00pm 4/28/2023

RECEIVED

APR 2 8 2023

Wellington, CO

April 20, 2023

Dear Town of Wellington Trustees and appointed officials,

I'm writing this letter for three primary purposes:

1. I'm frustrated and upset that the amount of public input has decreased by one week, per Mr. Bird, Planning Commissioner. He has changed the routine of having written comments submitted to the Planning Commission no later than 3 pm on the meeting day. Just today, I learned that the cutoff for the May 1 meeting is tomorrow, April 21, at 3 pm! This certainly does not comply with the Theme, Reliable & Resilient Public Services, of the Comprehensive Plan. It almost appears to be a sabotage of getting as much public input as possible to reflect the truly diverse desires of the community. **Please reverse this decision!**

2. **I do not want the asphalt plant built downtown!** It counters the community themes written in our town's Comprehensive Plan (2021). It is an irrefutable source of detriment to the environment and health of our residents. Although the owners of the plant deny any causes of toxicity, the attached sampling of researched articles strongly refutes their claims:

    - "EPA Hot Asphalt Plant Emission Assessment Report, EPA Document #EPA 454R.00.019, December 2000." Please pay special attention to the following pages sections:
        - Pg.1, Sect. 1.2 – "Overview of the HMA (Hot Mix Asphalt) Industry."
        - Pg.11, Sect. 2.1.4 – "Emissions and Controls," especially the first paragraph listing the emissions from the two significant emissions categories. *A little more than "just water in that steam!"*
        - Pg. 19, Table 5 - estimated annual emissions for a typical batch mix plant dryer, hot screens, and mixers
        - Pgs. 20-26, Tables 6-12 - refer to the toxic contributions of additional production sources: plant load-out operations; storage tank emissions; drum mix dryers; drum mix plant silos; estimated annual yard VOC (volatile organic compounds) emissions.
        - Pg. 15, Sect. 2.3 – "Emission Factors for Other Generic Sources Associated with HAP Facilities:" - **these are often overlooked in discussing the *cumulative* toxic output of HAPs!**
            - Receipt of new aggregate
            - Transfer of aggregate from storage to the conveyor belt
            - Unpaved road dust emissions
            - Paved road dust emissions
            - Diesel exhaust emissions (think 20 trucks a day just idling in the yard while waiting to load or unload)

    - Center for HMA, Environmental, and Justice (CHEJ): "A Bad Place for An Asphalt Plant: An African American Community Fights Back," March 3, 2022. (Please relate this to our community with a particular focus on the severe health problems suffered by those living in proximity to a HAP): Cancer, Nervous system dysfunction, Liver damage.

    - Extracts from other articles:
        - Living near an HMA plant exposes residents to toxic air pollutants of polycystic aromatic oxide, sulfur dioxide, and hydrogen sulfide; volatile organic compounds; and metals. (North Carolina Department of Environmental Quality).

Written Public Comments
3:00pm 4/28/2023

- Exposure to asphalt (Study by North Carolina government) and detrimental health effects include **breathing fumes**; irritate nose, throat, and lungs causing coughing, wheezing, shortness of breath, headache, dizziness, nausea, and vomiting; **contact** with asphalt: severe skin burns, dermatitis, acne-like lesions.

- "Timnath group opposing TopGolf to submit petitions Wednesday," Loveland Reporter-Herald, Dallas Heltzell, 3/27/23: This article from our neighboring town of Timnath reflects the concerns of residents about heavy industry taking over and their need for development plans to be congruent with their 2020 Comprehensive Plan.
  - Petition signatures more than double the needed signatures gathered to trigger a special election to block Topgolf. The ballot measure would stipulate land use/development parameters for future commercial industries.
  - The opposition focuses on wildlife protection and the negative impacts on residential quality of life.
  - Topgolf also does not remotely coincide with the goals of the town's Comprehensive Plan for future development, and this significantly concerns the residents. *Sound familiar?*

3. I thank you for attempting to promote the community themes in our Comprehensive Plan, with a focus on creating that "small town" feeling where tourists would be drawn to visit, thus boosting our economy. I doubt that 70 ft. smokestacks and an asphalt plant will contribute much to the atmosphere of a "charming" small town and be much of a tourist attraction. Nor would people using our projected parks and trails find it peaceful and placid to run/walk past a "delightfully" roiling, dusty, loud asphalt plant.

Please, do whatever it takes to revise zoning, land use codes, health codes, etc., **to halt the asphalt plant and any other heavy industries from ever being considered in our downtown in the future**. This request comes at a pivotal point in the design, vision, and desired characteristics of 'our little town.'

Thank you for your perseverance in reviewing this rather lengthy letter and for all your hard work in developing our unique town of Wellington with timely input from us, the residents.

Sincerely,

Sandra L Hunnicutt

Sandra L Hunnicutt
3940 Ginkgo St.
Wellington, CO 80549

P.S. I could not send this through email to each of you because your emails were ***blocked***. Therefore, the EPA report is not attached.

Written Public Comments
3:00pm 4/28/2023

To whom it may Concern:

Wellington Planning Board,

I Nancy V. McKay
3803 Roosevelt ave, Wellington
970-342-5378, request to
Speak at the 5-1-23 6:30pm
Meeting pertaining to the
future planning on the Cornell
Resources Asphalt plant. As
a Citizen of Wellington and
a homeowner I feel a strong
need to input.

Thank You
Nancy Mckay

RECEIVED
APR 28 2023
TOWN OF WELLINGTON

Town of Wellington
Planning Board
(May 1 meeting request)

Written Public Comments
3:00pm 4/28/2023

Asphalt Plant in Wellington

Claudia Simpson <claudiasimpson11@gmail.com>

Fri 4/28/2023 3:20 PM

To: Cody Bird <birdca@wellingtoncolorado.gov>

Dear Mr Bird, please add my name to the list of people who oppose the building of an asphalt plant here in Wellington. This plant is not conducive to the wellbeing of the people of this community, especially the children. I have 6 grandchildren that are going or will be going to Eyestone and Rice. That fact that the plans are to build it so close to one of our parks and elementary school scares me!!! We will already be dealing with a not too distant landfill in our backyards, please stop this from happening!!! Sincerely, Claudia Simpson

Print

Planning Commission May 1, 2023 Public Comment - Submission #3035

Date Submitted: 4/25/2023

First and Last Name*

Stacie L Magruder

Email Address*

staciemagruder@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3294 thundering herd way

Public Comment for the Planning Commission May 1, 2023 Meeting

Strong opposition to the proposed asphalt plant. The priority for this commission should be the health and wellbeing of its residents that already undergo under representation in the community with high utility fee. When are the needs of the residents going to be the priority? My property value is the most important asset I own and I hope you will oppose the plant and put community first.

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Written Public Comments
3:00pm 4/28/2023

Print

Planning Commission May 1, 2023 Public Comment - Submission #3038

Date Submitted: 4/26/2023

First and Last Name*

Joe Harkins

Email Address*

jhark40@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3313 Firewater Ln

Public Comment for the Planning Commission May 1, 2023 Meeting

My family is strongly opposed to the proposed Asphalt plant. There is no â€œsafeâ€ asphalt plant that could be made at the proposed site because of its close proximity to others. To place a plant that produces severe pollutants less than a mile from neighborhoods, parks, a library, and a school is unethical. Why are we even considering putting an Asphalt plant this close to our community??? The Town leaders present today and all leaders of the Town of Wellington can and must do better. Stop wasting time and resources on a project that will harm the community. Turn your efforts to a project that will benefit our town. Reject the Asphalt Plant! Thank You.

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Planning Commission May 1, 2023 Public Comment - Submission #3040

Date Submitted: 4/26/2023

First and Last Name*

Page Melcher

Email Address*

Page.burdick@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

3905 Eucalyptus St

Public Comment for the Planning Commission May 1, 2023 Meeting

I am opposed to the proposed development of the asphalt plant on the north west side of town. A search of peer-reviewed journal studies indicates there are negative respiratory effects to living near an asphalt plant. These negative health effects impact young children more than adults and I have two young kids who love to play outside. As a mother and a Public Health specialist I do not want to live so close to something that will have adverse effects on my childrenâ€™s future.

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Planning Commission May 1, 2023 Public Comment - Submission #3041

Date Submitted: 4/26/2023

First and Last Name*

Brian Harrison

Email Address*

bah511@yahoo.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

bah511@yahoo.com

Public Comment for the Planning Commission May 1, 2023 Meeting

To the members of the planning commission: My name is Brian Harrison. I live at 9073 Painted Horse Ln. in Wellington. I am very concerned about the effects that the proposed hot mix asphalt plant would have on the health, property values, and culture of our community. Like many people in Wellington, I moved here because it gave me an opportunity to purchase a house and raise a family in a small town. I value both the new and old communities that exist here, and it is important that we prioritize the health of our residents, especially our children. One of the many cancer-causing chemicals that hot mix asphalt plants generate is benzene. In addition to causing cancer, this chemical damages the human nervous system in adults and affects the development of children. A representative from Connell stated that hot mix asphalt plants create less benzene than a fast food restaurant like the Burger King down the road, but that information is from a study paid for by the National Asphalt Pavement Association (https://www.sanbornhead.com/wp-content/uploads/2021/08/Emissions-Comparison-Report.pdf). There are, in fact, many known negative health effects from exposure to asphalt and other hydrocarbons. â€œAvailable epidemiological studies have shown statistically significant links between exposure to hydrocarbons and/or metal fume and childhood leukemia2 and between exposure to asphalt fume and a variety of cancers.â€ (https://www.epa.gov/sites/default/files/2020-10/documents/stkhld-opn.pdf). And there are even more unknown negative health effects. â€œSince EPAâ€™s current approach is based on considering each chemical by itself, knowledge about the health effects of each individual chemical will not be available for many decades. Further, even after this data has been compiled, the synergistic interactions between these chemicals in a complex mixture will not be available and would require further study.â€ (https://www.epa.gov/sites/default/files/2020-10/documents/stkhld-opn.pdf) I donâ€™t understand why a variance for setbacks and silo height were ever granted in the first place. We donâ€™t need an asphalt plant in Wellington, and we definitely donâ€™t need it to be built so close to existing and already-approved residential sites. I moved here to raise a family, not to put my familyâ€™s health at risk. I urge you to find the legal means to protect the residents in Wellington and stop the approval of this plant. Sincerely, Brian Harrison Buffalo Creek Resident 9073 painted Horse Ln. Wellington, CO

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Planning Commission May 1, 2023 Public Comment - Submission #3037

Date Submitted: 4/26/2023

First and Last Name*

Kaitlyn Folmer

Email Address*

kaitlyn.pierson@gmail.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

14112 N County Road 7

Public Comment for the Planning Commission May 1, 2023 Meeting

Dear Planning Board, The Connell site plan doesnâ€™t meet the more stringent requirements that apply to toxic chemicals and so cannot be located at the proposed location. Land use code 4.03.21,B, regarding the production and curing of toxic chemicals requires these sites be located at least 2,640 feet from any residential district, religious land use, medical care facility, or school. I would appreciate you reading this article published by Wright County- in Minnesota (linked below). The article dives into the repercussions the town and people dealt with, the smell (doctors from across the country warn that smell equates to fume exposure), cites the CDC and OSHA, and all came to the same conclusion- â€œThe complex chemical composition of asphalt makes it difficult to identify the specific components responsible for adverse health effects observed in exposed workers. Known carcinogens have been found in asphalt fumes generated at worksites. Observations of acute irritation in workers from airborne and dermal exposures to asphalt fumes and aerosols and the potential for chronic health effects, including cancerâ€¦â€ The people living within the 2640 foot setback would be at great risk. The children playing, going to school, and growing up with in the 2640 foot setback would be at great risk. Approving this asphalt plant should not be a risk we are willing to take. This batch asphalt plant produces and curates toxic chemicals. The planning board should not approve this plan due to the producing and curing setback of 2,640 feet. No variance for this specific setback has been sought. Thanks for your consideration, Kaitlyn Article https://www.co.wright.mn.us/AgendaCenter/ViewFile/Item/6844?fileID=14104 If the link doesnâ€™t work- google â€œhow many people per year are affected by asphalt plantsâ€ and itâ€™s the first result.

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6844.pdf

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Health Issues with an Asphalt Plant Nearby

Here are some short quotes and abstracts from articles referencing the health problems that occur with working, and/or living near an Asphalt Plant.

Asphalt and Diesel Exhaust Fumes

> " Over a half-million workers are exposed to fumes from asphalt, a petroleum product used extensively in road paving, roofing, siding, and concrete work. Health effects from exposure to asphalt fumes include headache, skin rash, sensitization, fatigue, reduced appetite, throat and eye irritation, cough, and skin cancer. "

Reference: Asphalt Fumes - United States Department of Labor, Occupational Safety and Health Administration

Reference: Hot Mix Asphalt Plants - Truck Loading and Unloading

> " The primary emission sources associated with Hot Mix Asphalt(HMA) production are the dryers, hot bins, and mixers, which emit particulate matter (PM) and a variety of gaseous pollutants. Other emission sources found at HMA plants include storage silos, which temporarily hold the HMA; truck load-out operations, in which the HMA is loaded into trucks for hauling to the job site; liquid asphalt storage tanks; hot oil heaters, which are used to heat the asphalt storage tanks; and yard emissions, which consist of fugitive emissions from the HMA in truck beds. Emissions also result from vehicular traffic on paved and unpaved roads, aggregate storage and handling operations, and vehicle exhaust. "

> " The PM emissions associated with HMA production include the criteria pollutants PM-10 (PM less than 10 micrometers in aerodynamic diameter) and PM-2.5, hazardous air pollutant (HAP) metals, and HAP organic compounds. The gaseous emissions associated with HMA production include the criteria pollutants sulfur dioxide (SO 2), nitrogen oxides (NO x), carbon monoxide (CO), and volatile organic compounds (VOC), as well as volatile HAP organic compounds. "

Reference: EPA - Hot Mix Asphalt Plant Emission Assessment

Summary of Research on Diesel and Asphalt Hazards

Toxic Smell

> "It smells."

Written Public Comments
3:00pm 4/28/2023

> "While a state study indicates the air quality in a neighborhood next to a controversial paving plant meets safety standards, neighbors say their problems with the plant are as much about quality of life as quality of air.
>
> The odor of asphalt coming from the R.C. & Sons paving plant has been a prime complaint of several residents of the nearby Grandview neighborhood."

Bangor Daily News - It smells, but Maine Asphalt Plant meets standards

> " Dr. Mitchell said that tiny particles in asphalt production plant emissions can cause lung damage, exacerbate breathing conditions and ultimately cause more severe problems. "

New York Times Article - Who Wants to Live Near an Asphalt Plant

Noise

Here are typical noise emissions from a Hot-Mix Asphalt Plant.

Noise Level	Distance from Center of Plant
85 dBA	50 feet (measured reference level)
78 dBA	100 feet
70 dBA	200 feet
63 dBA	400 feet
55 dBA	800 feet
46 dBA	1,600 feet
36 dBA	3,200 feet
24 dBA	6,400 feet

We do not know the assumptions that went into the measurements in this noise summary table.

Looking at the California study, we do not know the age or size/capacity of the plant(s) measured.

Remember that newer plants are quieter, and older plants make more noise.

Reference: Full Document - Caltrans - State of California

Overall Health Effects

> " The complex chemical composition of asphalt makes it difficult to identify the specific component(s) responsible for adverse health effects observed in exposed workers. Known carcinogens have been found in asphalt fumes generated at worksites. Observations of acute irritation in workers from airborne and dermal exposures to asphalt fumes and aerosols and the potential for chronic health effects, including cancer, warrant continued diligence in the control of exposures. "

Reference: CDC - Hazard Review - Health Effects of Occupational Exposure to Asphalt

What the Federal Government Regulates on Asphalt Plants and Air Quality

What federal rules apply to asphalt plants?

- Asphalt plant emissions of particulate matter (PM2.5 and PM10, carbon monoxide, sulfur dioxide nitrogen dioxide, and lead must not exceed National Ambient Air Quality Standards (NAAQS) at the property boundary.
- Asphalt plants manufactured after June 11, 1973, are subject to 40 CFR 60 Subpart I-New Source Performance Standards for Hot Mix Asphalt Plants. NSPS, Subpart I limits only the emissions of particulate matter from material handling systems.
- On November 8, 2002 , USEPA removed Asphalt Hot Mix Production from the Source Category List for which development of National Emission Standards for Hazardous Air Pollutants Standar is required.

Reference: North Carolina Division of Air Quality - Air Toxics and Asphalt Plants

Web Sites With More Information

Here are addition web sites that have information on Asphalt Plants and health effects.

- Hot Mix Asphalt Plants - Stakeholders Opinions Report - US EPA
- Fact Sheet - Hot Mix Asphalt Plants - Oregon Department of Environmental Quality
- Preventing Pollution at Hot Mix Plants - A Guide to Environmental Compliance and Pollution Prevention for Asphalt Plants in Missouri - State of Missouri
- Asphalt Plant Pollution - Blue Ridge Environmental Report
- Road Paving Asphalt - State of New Hampshire - Fact Sheet
- Asphalt - Hazardous Fact Sheet - State of New Jersey
- North Carolina Division of Air Quality - Air Toxics and Asphalt Plants

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We are PARC - Protectors of the Ammonoosuc River Corridor in Lisbon, New Hampshire.

You can contact PARC at

PARC
P.O. Box 515
Sugar Hill, New Hampshire.
03586

Fiscal Agent: Peter Nightingale
Phone #: (603) 616-9292

ASPHALT PLANT POLLUTION

Asphalt plants mix gravel and sand with crude oil derivatives to make the asphalt used to pave roads, highways, and parking lots across the U.S. These plants release millions of pounds of chemicals to the air during production each year, including many cancer-causing toxic air pollutants such as arsenic, benzene, formaldehyde, and cadmium. Other toxic chemicals are released into the air as the asphalt is loaded into trucks and hauled from the plant site, including volatile organic compounds, polycyclic aromatic hydrocarbons (PAHs), and very fine condensed particulates.[EPA]

Asphalt Fumes are Known Toxins. The federal Environmental Protection Agency (EPA) states "Asphalt processing and asphalt roofing manufacturing facilities are major sources of hazardous air pollutants such as formaldehyde, hexane, phenol, polycyclic organic matter, and toluene. Exposure to these air toxics may cause cancer, central nervous system problems, liver damage, respiratory problems and skin irritation." [EPA]. According to one health agency, asphalt fumes contain substances known to cause cancer, can cause coughing, wheezing or shortness of breath, severe irritation of the skin, headaches, dizziness, and nausea. [NJDHSS] Animal studies show PAHs affect reproduction, cause birth defects and are harmful to the immune system. [NJDHSS] The US Department of Health and Human Services has determined that PAHs may be carcinogenic to humans. [DHHS]

Health Impacts & Loss of Property Value. The Blue Ridge Environmental Defense League (BREDL), a regional environmental organization, has done two studies on the adverse impacts on property values and health for residents living near asphalt plants. A property value study documented losses of up to 56% because of the presence of a nearby asphalt plant. In another study, nearly half of the residents reported negative impacts on their health from a new asphalt plant. The door-to-door health survey found 45% of residents living within a half mile of the plant reported a deterioration of their health, which began after the plant opened. The most frequent health problems cited were high blood pressure (18% of people surveyed), sinus problems (18%), headaches (14%), and shortness of breath (9%). [BREDL]

Flawed Tests Underestimate Health Risks. In addition to smokestack emissions, large amounts of harmful "fugitive emissions" are released as the asphalt is moved around in trucks and conveyor belts, and is stored in stockpiles. A small asphalt plant producing 100 thousand tons of asphalt a year may release up to 50 tons of toxic fugitive emissions into the air. [Dr. R. Nadkarni] Stagnant air and local weather patterns often increase the level of exposure to local communities. In fact, most asphalt plants are not even tested for toxic emissions. The amounts of these pollutants that are released from a facility are estimated by computers and mathematical formulas rather than by actual stack testing, estimates that experts agree do not accurately predict the amount of toxic fugitive emissions released and the risks they pose. According to Dr. Luanne Williams, a North Carolina state toxicologist, 40% of the toxins from asphalt plant smokestacks even meet air quality standards—and for the other 60% of these emissions, the state lacks sufficient data to determine safe levels.

BE SAFE: Take Precautionary Action to Protect Our Communities from Asphalt Plant Air Pollution

Written Public Comments
3:00pm 4/28/2023

OSHA ARCHIVE

NOTICE: This is an OSHA Archive Document, and no longer represents OSHA Policy. It is presented here as historical content, for research and review purposes only.

Asphalt Fumes

Over a half-million workers are exposed to fumes from asphalt, a petroleum product used extensively in road paving, roofing, siding, and concrete work. When hot asphalt is applied in a molten state, it generates toxic fumes. Workers exposed to asphalt fumes are at risk of developing headaches, rashes, cough, and possibly cancer. There is no OSHA standard for asphalt fumes. OSHA is developing an action plan to reduce worker exposures to this hazard but is not initiating rulemaking at this time.

Hazard Description

NIOSH estimated that over 500,000 workers were potentially exposed to asphalt fumes (1). OSHA estimated in 1992 that over 300,000 construction workers were exposed primarily in road-paving and roofing operations (2). Exposures vary considerably between different types of asphalt work (i.e. roofing vs. paving) and the different worker jobs (i.e. kettle operator vs. paver operator.) More research needs to be performed to determine and control important factors which cause increased worker exposures (i.e. application temperatures, type of equipment used, environmental conditions, workplace practices, and asphalt constituents.)

The acute effects of exposure to asphalt fumes include headache, skin rash, fatigue, reduced appetite, throat and eye irritation, and cough. Asphalt paving workers, for example, have reported breathing problems, asthma, bronchitis, and skin irritation (6). A recent study has shown that some of these effects occur at exposures of 0.5 to 1.3 mg/m3 (3).

Human studies have reported lung, stomach, and skin cancers following chronic exposures to asphalt fumes. However, these studies have been inconclusive, and the possible chronic effects to workers following exposures to asphalt fumes are areas of continuing investigations. One recent summary analysis of the available human studies found a nearly twofold increase in risk of lung and stomach cancer among roofers. Increased risks were also noted for other asphalt workers for lung, stomach, and bladder cancer, and for leukemia (4).

Laboratory studies have shown chemical extracts of asphalt fumes to have cancer-causing and mutagenic properties. For example, painting of asphalt extracts on mouse skin produces tumors that increase with dose (7). Other laboratory studies show DNA changes in mouse lung and skin cells (8) and in human fetal cells exposed to asphalt fume extracts (9). Urinalysis of exposed workers shows mutations in laboratory tests (10).

Current Status

OSHA does not have a standard for asphalt fumes although it proposed a 5 mg/m3 permissible exposure limit (PEL) in 1992 (5). OSHA's quantitative risk assessment estimated a significant risk of lung cancer among exposed workers at levels as low as 0.2 mg/m3.

The American Conference of Governmental Industrial Hygienists (ACGIH) currently recommends a Threshold Limit Value (TLV) of 5 mg/m3 as an 8-hour time weighted average. In 1977, the National Institute for Occupational Safety and Health (NIOSH) recommended a 5 mg/m3 15 minute short-term exposure limit. NIOSH is developing a new Criteria Document for asphalt fumes and expects to make new recommendations for exposure limits within six months.

The International Agency for Research on Cancer (IARC) found:

- "There is sufficient evidence for the carcinogenicity of extracts of steam-refined bitumens, air-refined bitumens and pooled mixtures of steam- and air-refined bitumens in experimental animals."
- There is limited evidence for the carcinogenicity of undiluted steam-refined bitumens and for cracking-residue bitumens in experimental animals.
- There is inadequate evidence for the carcinogenicity of undiluted air-refined bitumens in experimental animals.
- There is inadequate evidence that bitumens alone are carcinogenic to humans."

Rationale

Asphalt fume exposure meets several of the criteria for designation as an OSHA priority. In particular, the known and potential health effects are serious and a large number of workers are potentially exposed, especially considering high industry turnover rates. although the human studies of workplace cancer have limitations, there is considerable experimental evidence of cancer risk. There is also evidence of acute health effects among workers exposed to asphalt fumes.

References

1. NIOSH; National Occupational Exposure Survey; 1981-1983.
2. Federal Register, vol. 57, no. 114, June 12, 1992. Air Contaminants; Proposed Rule. pp. 26001-26602.
3. Chase, R.M., Liss, G.M., Cole, D.C., and Heath, B. 1994. Toxic health effects including reversible macrothrombocytosis in workers exposed to asphalt fumes. Am. J. Indus. Med. 25:279-289.
4. Partanen, T. and Boffetta, P. 1994. Cancer risk in asphalt workers and roofers: review and meta-analysis of epidemiologic studies. Am. J. Indus. Med. 26:721-740.
5. Federal Register vol. 57, June 12, 1992. Air Contaminants; Proposed Rule. p. 26182-26190 deals specifically with asphalt fume.
6. Norseth T, Waage J, and Dale I. Acute Effects and Exposure to Organic Compounds in Road Maintenance Workers Exposed to Asphalt. Am J Ind Med; 1991; 20:737-44.
7. "Assessment of the Cocarcinogenic/Promoting Activity of Asphalt Fumes;" U.S. Department of Health and Human Services, National Institute for Occupational Safety and Health; Contract 200-83-2612; December 1989.

New Jersey Department of Health and Senior Services

HAZARDOUS SUBSTANCE FACT SHEET

Common Name: **ASPHALT**

CAS Number: 8052-42-4
DOT Number: NA 1999 (Asphalt)
UN 1999 (Tars, Liquid)
DOT Hazard Class: 3 (Flammable)

RTK Substance number: 0170
Date: January 2001 Revision: April 2007

HAZARD SUMMARY

* **Asphalt** can affect you when breathed in.
* Extracts of certain *Asphalts* have been shown to cause cancer in animals.
* **Asphalt** *fumes* can irritate the eyes on contact.
* Breathing **Asphalt** *fumes* can irritate the nose, throat and lungs causing coughing, wheezing and/or shortness of breath.
* Contact can irritate and cause severe burns of the skin and may cause dermatitis and acne-like lesions.
* Exposure to **Asphalt** *fumes* can cause headache, dizziness, nausea and vomiting.
* Long-term contact can cause skin pigment change which is made worse by sunlight exposure.
* *Cutback* and *Rapid Curing* **Asphalt** are FLAMMABLE and FIRE HAZARDS.
* **Asphalt** is derived from *Petroleum*. **Asphalt** and *Coal Tar Pitch* are different. If you are actually working with *Coal Tar* chemicals, *CONSULT THE NEW JERSEY DEPARTMENT OF HEALTH AND SENIOR SERVICES HAZARDOUS SUBSTANCE FACT SHEETS ON COAL TAR PITCH AND COAL TARS.*
* *Asphalt, Oxidized* (CAS # 64762-93-4) is a carcinogen. *CONSULT THE NEW JERSEY DEPARTMENT OF HEALTH AND SENIOR SERVICES HAZARDOUS SUBSTANCE FACT SHEET ON ASPHALT, OXIDIZED.*

IDENTIFICATION

Asphalt is a blackish-brown solid, semi-solid or liquid, depending on the formulation or mixture of **Asphalt** used. **Asphalt** *fumes* are produced during the manufacture and heating of **Asphalt**, which is used for road building and roofing, and in rubber and adhesives.

REASON FOR CITATION

* **Asphalt** is on the Hazardous Substance List because it is cited by ACGIH, DOT, NIOSH, IARC and NFPA.
* Definitions are provided on page 5.

HOW TO DETERMINE IF YOU ARE BEING EXPOSED

The New Jersey Right to Know Act requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information and training concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard (29 CFR 1910.1200) requires private employers to provide similar training and information to their employees.

* Exposure to hazardous substances should be routinely evaluated. This may include collecting personal and area air samples. You can obtain copies of sampling results from your employer. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).
* If you think you are experiencing any work-related health problems, see a doctor trained to recognize occupational diseases. Take this Fact Sheet with you.

WORKPLACE EXPOSURE LIMITS

NIOSH: The recommended airborne exposure limit is **5 mg/m^3**, which should not be exceeded during any 15-minute period.

ACGIH: The recommended airborne exposure limit is **0.5 mg/m^3** (for the *inhalable fraction* of the *Benzene*-soluble aerosol), averaged over an 8-hour workshift.

WAYS OF REDUCING EXPOSURE

* Where possible, enclose operations and use local exhaust ventilation at the site of chemical release. If local exhaust ventilation or enclosure is not used, respirators should be worn.
* Wear protective work clothing.
* Wash thoroughly immediately after exposure to **Asphalt** and at the end of the workshift.
* Post hazard and warning information in the work area. In addition, as part of an ongoing education and training effort, communicate all information on the health and safety hazards of **Asphalt** to potentially exposed workers.

ASPHALT

This Fact Sheet is a summary source of information of all potential and most severe health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

HEALTH HAZARD INFORMATION

Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to **Asphalt**:

* **Asphalt** *fumes* can irritate the eyes on contact.
* Breathing **Asphalt** *fumes* can irritate the nose, throat and lungs causing coughing, wheezing and/or shortness of breath.
* Contact can irritate and cause severe burns of the skin and may cause dermatitis and acne-like lesions.
* Exposure to **Asphalt** *fumes* can cause headache, dizziness, nausea and vomiting.

Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to **Asphalt** and can last for months or years:

Cancer Hazard

* While **Asphalt** has not been identified as a carcinogen, it should be HANDLED WITH CAUTION since extracts of certain **Asphalts** have been shown to cause cancer in animals.

Reproductive Hazard

* According to the information presently available to the New Jersey Department of Health and Senior Services, **Asphalt** has not been tested for its ability to affect reproduction.

Other Long-Term Effects

* Long-term contact can cause skin pigment change which is made worse by sunlight exposure.
* **Asphalt** *fumes* can irritate the lungs. Repeated exposure may cause bronchitis to develop with cough, phlegm, and/or shortness of breath.

MEDICAL

Medical Testing

Before beginning employment and at regular times after that, for those with frequent or potentially high exposures, the following are recommended:

* Lung function tests

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).

Mixed Exposures

* Because smoking can cause heart disease, as well as lung cancer, emphysema, and other respiratory problems, it may worsen respiratory conditions caused by chemical exposure. Even if you have smoked for a long time, stopping now will reduce your risk of developing health problems.

Conditions Made Worse By Exposure

* Exposure to sunlight may make skin effects of **Asphalt** worse.

WORKPLACE CONTROLS AND PRACTICES

Unless a less toxic chemical can be substituted for a hazardous substance, **ENGINEERING CONTROLS** are the most effective way of reducing exposure. The best protection is to enclose operations and/or provide local exhaust ventilation at the site of chemical release. Isolating operations can also reduce exposure. Using respirators or protective equipment is less effective than the controls mentioned above, but is sometimes necessary.

In evaluating the controls present in your workplace, consider: (1) how hazardous the substance is, (2) how much of the substance is released into the workplace and (3) whether harmful skin or eye contact could occur. Special controls should be in place for highly toxic chemicals or when significant skin, eye, or breathing exposures are possible.

In addition, the following controls are recommended:

* Where possible, automatically pump liquid **Asphalt** from drums or other storage containers to process containers.
* Before entering a confined space where **Asphalt** may be present, check to make sure that an explosive concentration does not exist.

Good **WORK PRACTICES** can help to reduce hazardous exposures. The following work practices are recommended:

* Workers whose clothing has been contaminated by **Asphalt** should change into clean clothing promptly.
* Contaminated work clothes should be laundered by individuals who have been informed of the hazards of exposure to **Asphalt**.
* Eye wash fountains should be provided in the immediate work area for emergency use.
* If there is the possibility of skin exposure, emergency shower facilities should be provided.
* On skin contact with **Asphalt**, immediately wash or shower to remove the chemical. At the end of the workshift, wash any areas of the body that may have contacted **Asphalt**, whether or not known skin contact has occurred.

ASPHALT

* Do not eat, smoke, or drink where **Asphalt** is handled, processed, or stored, since the chemical can be swallowed. Wash hands carefully before eating, drinking, applying cosmetics, smoking, or using the toilet.

PERSONAL PROTECTIVE EQUIPMENT

WORKPLACE CONTROLS ARE BETTER THAN PERSONAL PROTECTIVE EQUIPMENT. However, for some jobs (such as outside work, confined space entry, jobs done only once in a while, or jobs done while workplace controls are being installed), personal protective equipment may be appropriate.

The OSHA Personal Protective Equipment Standard (29 CFR 1910.132) requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

Clothing

* Avoid skin contact with **Asphalt**. Wear protective gloves and clothing. Safety equipment suppliers/manufacturers can provide recommendations on the most protective glove/clothing material for your operation.
* All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Eye Protection

* Wear indirect-vent, impact and splash resistant goggles when working with liquids.
* Wear a face shield along with goggles when working with corrosive, highly irritating or toxic substances.
* Contact lenses should not be worn when working with this substance.

Respiratory Protection

IMPROPER USE OF RESPIRATORS IS DANGEROUS. Such equipment should only be used if the employer has a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing, and medical exams, as described in the OSHA Respiratory Protection Standard (29 CFR 1910.134).

* Where the potential exists for exposure over **0.5 mg/m^3**, use a NIOSH approved full facepiece respirator with an organic vapor cartridge and particulate prefilters. Increased protection is obtained from full facepiece powered-air purifying respirators.
* If while wearing a filter or cartridge respirator you can smell, taste, or otherwise detect **Asphalt**, or if while wearing particulate filters abnormal resistance to breathing is experienced, or eye irritation occurs while wearing a full facepiece respirator, leave the area immediately. Check to make sure the respirator-to-face seal is still good. If it is, replace the filter or cartridge. If the seal is no longer good, you may need a new respirator.
* Be sure to consider all potential exposures in your workplace. You may need a combination of filters, prefilters or cartridges to protect against different forms of a chemical (such as vapor and mist) or against a mixture of chemicals.
* Where the potential exists for exposure over **5 mg/m^3**, use a NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode.

HANDLING AND STORAGE

* Prior to working with **Asphalt** you should be trained on its proper handling and storage.
* **Asphalt**, when HEATED, can give off toxic *Hydrogen Sulfide gases*.
* **Asphalt** may ignite or explode when mixed with NAPHTHA, other VOLATILE SOLVENTS, and LIQUID OXYGEN.
* **Asphalt** is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE).
* Store in tightly closed containers in a cool, well-ventilated area.
* Sources of ignition, such as smoking and open flames, are prohibited where *Cutback* and *Rapid Curing* **Asphalt** are used, handled, or stored.
* Metal containers involving the transfer of *Cutback* and *Rapid Curing* **Asphalt** should be grounded and bonded.
* Use only non-sparking tools and equipment, especially when opening and closing containers of *Cutback* and *Rapid Curing* **Asphalt**.

QUESTIONS AND ANSWERS

Q: If I have acute health effects, will I later get chronic health effects?
A: Not always. Most chronic (long-term) effects result from repeated exposures to a chemical.

Q: Can I get long-term effects without ever having short-term effects?
A: Yes, because long-term effects can occur from repeated exposures to a chemical at levels not high enough to make you immediately sick.

Q: What are my chances of getting sick when I have been exposed to chemicals?
A: The likelihood of becoming sick from chemicals is increased as the amount of exposure increases. This is determined by the length of time and the amount of material to which someone is exposed.

Q: When are higher exposures more likely?
A: Conditions which increase risk of exposure include physical and mechanical processes (heating, pouring, spraying, spills and evaporation from large surface areas such as open containers), and "confined space" exposures (working inside vats, reactors, boilers, small rooms, etc.).

Q: Is the risk of getting sick higher for workers than for community residents?
A: Yes. Exposures in the community, except possibly in cases of fires or spills, are usually much lower than those found in the workplace. However, people in the community may be exposed to contaminated water as well as to chemicals in the air over long periods. This may be a problem for children or people who are already ill.

Q: Don't all chemicals cause cancer?
A: No. Most chemicals tested by scientists are not cancer-causing.

Q: Should I be concerned if a chemical causes cancer in animals?
A: Yes. Most scientists agree that a chemical that causes cancer in animals should be treated as a suspected human carcinogen unless proven otherwise.

Q: But don't they test animals using much higher levels of a chemical than people usually are exposed to?
A: Yes. That's so effects can be seen more clearly using fewer animals. But high doses alone don't cause cancer unless it's a cancer agent. In fact, a chemical that causes cancer in animals at high doses could cause cancer in humans exposed to low doses.

The following information is available from:

New Jersey Department of Health and Senior Services
Occupational Health Service
PO Box 360
Trenton, NJ 08625-0360
(609) 984-1863
(609) 984-7407 (fax)

Web address: http://www.state.nj.us/health/eoh/odisweb/

Industrial Hygiene Information
Industrial hygienists are available to answer your questions regarding the control of chemical exposures using exhaust ventilation, special work practices, good housekeeping, good hygiene practices, and personal protective equipment including respirators. In addition, they can help to interpret the results of industrial hygiene survey data.

Medical Evaluation
If you think you are becoming sick because of exposure to chemicals at your workplace, you may call personnel at the Department of Health and Senior Services, Occupational Health Service, who can help you find the information you need.

Public Presentations
Presentations and educational programs on occupational health or the Right to Know Act can be organized for labor unions, trade associations and other groups.

Right to Know Information Resources
The Right to Know Infoline (609) 984-2202 can answer questions about the identity and potential health effects of chemicals, list of educational materials in occupational health, references used to prepare the Fact Sheets, preparation of the Right to Know Survey, education and training programs, labeling requirements, and general information regarding the Right to Know Act. Violations of the law should be reported to (609) 984-2202.

>>>>>>>>>>>>>>>>> EMERGENCY INFORMATION <<<<<<<<<<<<<<<<<

Common Name: **ASPHALT**
DOT Number: **NA 1999 (Asphalt)**
UN 1999 (Tars, Liquid)
DOT Hazard Class: **3 (Flammable)**
NAERG Code: **130**
CAS Number: **8052-42-4**

Hazard rating	NJDHSS	NFPA
FLAMMABILITY	-	1, 2 or 3
REACTIVITY	-	0
FLAMMABLE OR COMBUSTIBLE DEPENDING ON FORMULATION POISONOUS GASES ARE PRODUCED IN FIRE CONTAINERS MAY EXPLODE IN FIRE		

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

FIRE HAZARDS

* *Cutback* and *Rapid Curing* **Asphalt** are FLAMMABLE.
* *Typical* or *Medium* to *Slow Curing* **Asphalt** is COMBUSTIBLE.
* Use dry chemical, CO_2, water spray, or a foaming agent.
* Water may cause frothing so do not apply solid streams of water directly on **Asphalt**.
* POISONOUS GASES ARE PRODUCED IN FIRE including *Sulfer Oxides* and *Hydrogen Sulfide*.
* CONTAINERS MAY EXPLODE IN FIRE.
* Use water spray to keep fire-exposed containers cool.
* Vapors may travel to a source of ignition and flash back.
* Vapor is heavier than air and may travel a distance to cause a fire or explosion far from the source.
* If employees are expected to fight fires, they must be trained and equipped as stated in the OSHA Fire Brigades Standard (29 CFR 1910.156).

SPILLS AND EMERGENCIES

If **Asphalt** is spilled or leaked, take the following steps:

* Evacuate personnel and secure and control entrance to the area.
* Eliminate all ignition sources.
* Absorb liquids in vermiculite, dry sand, earth, or a similar material and deposit in sealed containers.
* Ventilate and wash area after clean-up is complete.
* Keep **Asphalt** out of a confined space, such as a sewer, because of the possibility of an explosion.
* It may be necessary to contain and dispose of **Asphalt** as a HAZARDOUS WASTE. Contact your state Department of Environmental Protection (DEP) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.
* If employees are required to clean-up spills, they must be properly trained and equipped. The OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) may apply.

FOR LARGE SPILLS AND FIRES immediately call your fire department. You can request emergency information from the following:

CHEMTREC: (800) 424-9300
NJDEP HOTLINE: 1-877-WARN-DEP

HANDLING AND STORAGE (See page 3)

FIRST AID

For POISON INFORMATION call 1-800-222-1222

Eye Contact
* Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting upper and lower lids.

Skin Contact
* Quickly remove contaminated clothing. Immediately wash contaminated skin with large amounts of soap and water.

Breathing
* Remove the person from exposure.
* Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
* Transfer promptly to a medical facility.

PHYSICAL DATA

Flash Point:
Cutback Asphalt: less than 50°F (10°C)
Slow to *Rapid Curing Asphalt*: 80°F (27°C) to 225°F (107°C)
Typical Asphalt: greater than 400°F (204°C)
Water Solubility: Insoluble

OTHER COMMONLY USED NAMES
This Fact Sheet can also be used for:
Alphalt (Cutback) RTK # 3172
Chemical Name:
Asphalt
Other Names:
Road Tar; Mineral Pitch; Petroleum Pitch; Bitumen

Not intended to be copied and sold for commercial purposes.

NEW JERSEY DEPARTMENT OF HEALTH AND SENIOR SERVICES
Right to Know Program
PO Box 368, Trenton, NJ 08625-0368
(609) 984-2202

Written Public Comments
3:00pm 4/28/2023

Amador County News

Study Reveals Dangers of Asphalt Plants

NEW STUDY REVEALS ASPHALT PLANT DANGERS
http://www.bredl.org/press/2007/Young-McQueenasphaltplant.htm

Today at a press conference in Spruce Pine, the Mitchell County Citizens for Clean Air and the Blue Ridge Environmental Defense League released an air pollution study of the proposed Young & McQueen asphalt plant which shows that air toxins would be deposited far from the plant site. The League's report shows dangerous levels offsite of formaldehyde, benzene and arsenic.

The study concludes that formaldehyde would exceed the state's health-based air pollution limit at 200 meters beyond the plant property line. Even worse, the study concludes that benzene would be deposited at dangerous levels 1.8 miles away and that arsenic would be deposited at dangerous levels 2.17 miles away.

Janet Marsh, the League's Executive Director, said, "The state has long maintained that their computer modeling is conservative and health protective, while we have long maintained what we now can demonstrate—that the state's approach cannot protect human health while ignoring huge amounts of asphalt plant pollution." The new study points out that the state permit fails to include the asphalt tank heater and a 10,000 gallon liquid asphalt storage tank. Marsh continued, "The state can't have it both ways: they can't claim that their hands are tied by these

Written Public Comments
3:00pm 4/28/2023

exemptions and that their permit means that area residents are safe from pollution."

Louis Zeller, who authored the report, used the US Environmental Protection Agency's worst-case computer model for air pollution from the proposed asphalt plant. This EPA model calculates ground-level air poisons as well as smokestack sources. Having accessed this worst-case model only two weeks ago, the League chose the Young & McQueen plant for its first study.

Dr. James Carroll, a local resident, said, "The Mitchell County Citizens for Clean Air was formed to protect our health, our homes and our community. We know that if this plant is built, it will create bad smells, increased dust and poisonous chemicals like formaldehyde and arsenic. We want our local officials to protect us from polluting industries like this asphalt plant by keeping them away from populated areas, and we want the state to protect us by denying this air pollution permit."

Sue Dayton, who coordinates the League's NC Health Communities Project, said, "We are particularly concerned about the emissions of arsenic, benzene and formaldehyde. Both arsenic and benzene are known to cause cancer, and, in addition to being a suspected human carcinogen, formaldehyde is an acute irritant, causing coughing, wheezing, nausea, headaches and asthma."

Both organizations recognize that the state's air pollution permit does not consider plant location. The Mitchell County Board of Commissioners has the power under state statute to adopt an asphalt plant moratorium and implement a protective polluting industries ordinance.

Return to Front-page

E-mail a comment for posting here...
Remember to include the title of the article for

Print

Planning Commission June 5, 2023 Public Comment - Submission #3222

Date Submitted: 6/2/2023

Timeline

Please use the form below to submit public comment for the June 5, 2023, Planning Commission meeting.

Comments received before 3 p.m. Tuesday, May 30, 2023, will be included in the meeting agenda packet available prior to the meeting. Click here to access meeting agendas and minutes.

Written comments received after 3 p.m. Tuesday, May 30, 2023, will be published in an amended packet. All written comments must be received by 3 p.m. Friday, June 2, 2023.

Public comment may be given in person at the meeting on June 5.

First and Last Name*

Ben Leistikow

Email Address*

ben.leistikow@me.com

Are you a Town of Wellington Resident? *

- [x] Yes
- [ ] No

Address

8605 citation ct

Public Comment for the Planning Commission June 5, 2023 Meeting

This planning board should add a condition requiring Connell to seek a variance for producing and curating toxic chemicals. The data for the air dispersion study is over 10 years old, the only way to truly help the town is for Connell to be required to get the right additional variance

Optional File Attachment

Planning board request.pdf

Optional File Attachment

Choose File No file selected

Optional File Attachment

Choose File No file selected

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The data for the air dispersion study is over 10 years old, the only way to truly help the town is for Connell to be required to get the right additional variance

TOWN OF WELLINGTON
PLANNING COMMISSION
June 5, 2023

MINUTES
REGULAR MEETING – 6:30 PM

1. CALL SPECIAL MEETING TO ORDER – 6:30 p.m.

   The Planning Commission for the Town of Wellington, Colorado, met on June 5, 2023, at the Wilson Leeper Center, 3800 Wilson Avenue, Wellington, Colorado at 6:30 p.m.

2. ROLL CALL

Commissioners Present:	Eric Sartor, Chairperson Lisa Chollet Tim Whitehouse Bert McCaffrey Stephen Carman Lowrey Moyer Linda Knaack
Absent:	
Town Staff Present:	Cody Bird, Planning Director Paul Whalen, Planner III Patty Lundy, Planning Analyst

3. ADDITIONS TO OR DELECTIONS FROM THE AGENDA

   None

4. PUBLIC FORUM

   None

5. CONSIDERATION OF MINUTES

   A. Meeting Minutes of May 1, 2023

   Commissioner Chollet moved to approve the meeting minutes of May 1, 2023. Commissioner Whitehouse seconded.

   Yeas – Carman, Whitehouse, McCaffrey, Moyer, Chollet, Knaack, Sartor
   Nays – None
   Motion carried

6. NEW BUSINESS

A. Connell Resources Site Plan Review (Continued from May 1, 2023)

Chairman Sartor thanked everyone for coming. He explained that this will be a long meeting. There are several presentations. There will also be breaks throughout the meeting. Please keep the noise level down as the meeting is being recorded.

Chairman Sartor asked if there were any conflicts of interest or any ex parte communications.

Commissioner Moyer said she was out of town for the last meeting and asked people to come to the meeting.

Commissioner Carman stated he was on the Board of Adjustments as an alternate when the variance request for the same site was presented.

Cody Bird, Planning Director said that this was originally submitted for the March 6th Planning Commission Meeting and subsequently it was tabled to allow additional time for the applicant to be gather answers to questions. It was tabled to May 1, 2023. At the May 1st meeting, the applicant requested additional time to finish putting that information together. There were challenges with the consultant's schedule to present the final reports and so that agenda item was also tabled to tonight.

Bird showed slides of where the 35 acre property was located which is at the north side of town along the west side of the railroad. The property is zoned Industrial for heavy industrial uses. A hot mix asphalt plant is a permitted land use within the industrial zone category. The applicant has gone through the variance process and was granted 2 variances with 6 conditions of approval from the Board of Adjustments. They were granted a variance to reduce the 1,000 foot separation setback to 800 feet and a variance for 70 foot silo structure height (from 45 feet). The 6 conditions are:

1) The site plan must be reviewed and approved by the Planning Commission,
2) the height variance is the silo only,
3) a 15 foot earthen berm and landscaping is required on the west side,
4) there is to be no signage on the silo,
5) there is to be signage and operator policies to disallow engine braking ("Jake Brakes") and
6) must comply with all applicable County and State permits for operation of an Asphalt Plant.

There was also a recommendation that the Town-supplied potable water should not be used for plant process operations.

Bird went over the process for Site Plan review. The Planning Commission is the final review and decision-making authority. The Planning Commission goes over the Findings for Approval which is in the Land Use Code. The Planning Commission has 3 options. They can approve the site plan, approve the site plan with conditions, or they can deny the site plan application. Shown on the screen was the findings for approval.

Carolyn White is the Land Use Counsel for the applicant. She explained that the applicant is a family-owned business that has 265 full-time employees and some of them live in Wellington. They are looking to relocate from Timnath to the proposed site at 3548 East County Road 66. The site is zoned for heavy industrial and has been since at least 2000. This is a site plan approval process. The question is does the site plan as presented meet the criteria in the code that Bird summarized. The question is not about setbacks as the Board of Adjustments has already decided that. She briefly went over the conditions that the Board of Adjustments made and highlighted the compliance with all applicable County and State permits for operation of an asphalt plant. Asphalt plants are heavily regulated both at the State and local level, referring to details in the packet showing this as well as reports of tests that are done to comply. Again, the purpose of the hearing is about the Site Plan which is consistent with the Comprehensive Plan and the intent stated in the Land Use Code. She showed on a slide what the reduced setbacks look like as well as the height of the silos to give reference to what has already been approved.

John Warren, Connell Resources shared a 6-minute video recording of a drone flyover of the existing Connell Resources operations at the Timnath site. He showed that the silos are the only thing on the property that will be 70 feet high. Not any of the other buildings. He showed the plant operating and that there was no particulate matter in the emission. It was 99% steam. The asphalt plant process is simply mixing 2 raw materials. It is aggregate and asphalt cement. It shows the aggregate on a conveyor belt going into a drum. He explained that the Wellington site will look much like the one in Timnath. He said that they listened to all the questions and comments from the May and March meetings and worked hard to address them all. That is why there are 1,100 pages of information in the packet. The company contracted to have all the studies completed to help answer some of the questions as well. He is committed to being a good neighbor and has talked with property owners close by. He said his trucks will stay off the local streets unless they need to deliver to a customer site in town. The truck route will go north up County Road 7 to I-25. The noise studies that were done showed that they would be expected to be below 55 decibels. The noise is primarily from the generators that are running. He showed more slides of what the existing Timnath operation looks like with their landscaping and explained that the berms at the Wellington location will be higher. The landscaping will be about 18.38% of the property. He showed what the different symbols on trucks mean and that his trucks have none of the hazardous materials classifications on them. There was a study done for wildlife impacts and it showed that there was little wildlife presence on or near the project area. He went through a summary chart of the permits that are required and the fines associated with them. He addressed a letter that shows the company was fined, and explained that he was doing a self-preformed test on the stack and there were mechanical issues so they shut everything down not knowing that if they stopped a test it is considered a failed test.

Jill Burrell with Ditesco presented information about the stormwater design for the project. For any development project it is required that stormwater detention and treatment are handled per the Town of Wellington development standards. So that means the property cannot have a discharge of stormwater that is greater than what is currently being operated on that site. They must match the historic flow. So, if they pave a road, that becomes an impervious area and they have to offset that by building a detention pond that can capture the additional volume of water that would have previously percolated into the ground. They do this with a detention pond. Shown on the screen was a cross section of the outlet

structure. This is where debris and solids will be kept from going out when the water is discharged into the North Poudre Irrigation Company ditch.

Warren continued his presentation and explained that he has not had any complaints about any odor, but that he has 3 employees trained to use a tool called a “Nasal Ranger” that is used for detecting odors. He continued to go through a few more slides about the voluntary air quality studies. He showed that the plant operations are expected to be below any of the EPA screening values.

Stephen Zemba, PhD with Sanborn Head provided an overview of his company and credentials. They have a small office in Denver, and do lots of different environmental types of studies, including environmental radiation or contaminants in the environment as the company focus. He reviewed the air impact study prepared by Antea Group. He reminded everyone that it was a voluntary study, that this level of review is not required for State or County permitting requirements. There were 3 key locations used in the study which were the nearest residence, Wellington Community Park, and Eyestone Elementary School. He showed a slide with the scope of pollutants on it. The left side shows Criteria Pollutants which shows Particulate Matter smaller than 2.5 and beyond 10 are small. They also looked at nitrogen, oxides, nitrogen dioxide. There's an ambient standard for sulfur dioxide and also carbon monoxide are all subject to national quality standards. They are emitted by hot mix asphalt plants, but are also emitted by any combustion process, including our cars and the other sources that Warren had mentioned earlier. The list is shown on the right side of the slide. He showed a slide with the wind results from the study that shows the wind from every direction. He showed on the screen Table 3: Summary of AerMod Calculated Emissions and NAAQS. This is one table from the report looking at predictions for criteria pollutants, and these are not the ones he focuses on, but says there is some importance here, because criteria pollutants look at both long-term effects and short-term effects in particular. If you look at the NOx and SO2, they both have one-hour standards, and if you were worried about health effects such as asthma, those would be short-term stimulus. They could cause an asthma attack as an example. The third column shows the largest impact that could go from this plant for an hour in that year they modeled. He wanted to talk about ozone because we’re near a non-attainment area for ozone in this region. He said that if we had one air quality issue of concern, it should be ozone. Ozone is not actually emitted by sources. It is created in the atmosphere from photochemical reactions. But 2 of the pollutants that will be released in small levels by this plant will be nitrogen oxides and volatile organic compounds (VOCs). Ozone is a reginal issue and it counts all emissions from all the cars and other sources mentioned earlier. Since the plant is meeting the air quality it won’t matter if the plant is moved. He shows on the screen the air modeling contours. The results depict long-term annual impacts for toluene. The red rings are the highest concentrations which is .0050. So even the very peak level is still hundreds and thousands of times lower for toluene than the level that would lead to some long-term health effect. So based on the modeling, toluene is not going to be a problem. He also said that other toxins are not expected to be a significant risk. They look at the risk of cancer. We all have a high chance of getting cancer in our lifetime. Males have an average risk of 41 out of 100 and for females it is 39 out of 100. Most are genetic factors, not environmental sources. For an average man, the chance of getting cancer is 410,000 in a million. If we look at an environmental project like Connell's plant, the allowable risk would typically be 1 to 100 per one million extra risk of getting cancer. So, if he took a one in a million risk, and added it to 410,000 in a million, the total cancer risk from just other sources, and the emissions from

this plant would increase from 410,000 in a million to 410,001 in a million. You couldn't measure that difference or notice that difference. This is something called a "de minimis" risk. If you are at or below that, usually this is an acceptable risk, it's very small. It's not going to add to someone's cancer risk. Just putting that in words again. If you take that one in a million, you add it to the 410,000, you get 410,001 per 1 million. There is very little differentiation between those 2 risks, adding a one in a million risk. It is different for every chemical, but if you look at the third column, it is low for them all. He says that emissions from the hot-mix asphalt plant will not present significant risks to human health and the highest incremental modeled concentrations will be small compared to existing background levels already existing from other sources.

White came back up to conclude the slide presentation and discussed the Site Plan and the Site Plan criteria. She showed a slide with all the things they will be doing to mitigate any site impacts, including: the Board of Adjustments conditions; the controls from other permitting agencies; and the cognizant site planning that has gone into this plan. She went over all the criteria set forth in section 2.12.3 of the Town's land use code.

She talked a little bit about each of the criteria. The first one being the future land use map. It is consistent with the Comprehensive Plan and the intent stated in the Land Use Code, and there are a couple of different ways that you measure consistency with the Comprehensive Plan. You look at the use itself, the future land use map and in fact, this is actually the only real parcel within the town that could accommodate a use like this within the town of Wellington, and that's probably one of the reasons why you decided several times to keep it zoned industrial over the last several years because of the proximity to the railroad. The vision for the town, and the code expresses the specific criteria and standards by which that vision will be measured. So, when we are talking about the Comprehensive Plan, we are talking about goals. When we talk about the Land Use Code, we are talking about standards.

Disruptions from talking and comments from the audience was interfering with the meeting progress. Chairman Sartor called a 10-minute recess.

Meeting resumed.

White continued with her explanation of the site plan evaluation criteria. Another is to develop a supportive business environment that aids in creating a thriving local economy. This site plan meets this goal by providing commercial land uses that provide job opportunities and needed services. The next one has to do with the size and lot dimensions being consistent with the final plat – In this case, it just so happens that the Site Plan is being considered before the final plat, so the reverse will actually be true. The final plat will be measured against the Site Plan, so that criteria will not be applicable in this instance. No buildings or structures infringe on the easements, nor will they. We heard about the drainage and how it will be worked on to the site and those requirements will be met. The density and dimensions shown conform with Article 4 of the code or the requirements. All of Section 5 of the code which is about 50 criteria. It has to do with landscaping, screening, and buffering, parking – all making sure that the site meets the parking requirements, architecture and building design, transportation, and connectivity. This Site Plan provides for safe and efficient transportation in and around the site and connections to the roadways and properties outside the site, and the staff has found that all of these are met, and that this criterion is met overall.

Lea Schneider, Larimer County Environmental Health Planner came to talk about air quality. Their agency is one of the regulatory agencies involved in the air quality protection. She went over 6 criteria pollutants and the health impacts. She shows the table that the State Division of Air Pollution Control uses to evaluate permits for air pollution sources. The column on the left are the volatile or criteria pollutants. Carbon monoxide, sulfur dioxide and oxides of nitrogen are not technically a criteria pollutant, but they are an ingredient for one of our criteria pollutants, which is ozone. So, it is highly regulated because it can impact the ozone criteria pollutants. The proposed site is located within an attainment area for everything particulate matter, carbon monoxide, sulfur dioxide, oxides and nitrogen. The State permit thresholds are a little different than the EPA standards. She showed a slide of Connell Resource's permits based on 2021 permits. Connell's thresholds are below the Hazardous Air Pollutant requirements. The asphalt plant is not over 10 tons per individual or combined over 2,510 ton per year. Connell had an air dispersion modeling for criteria and noncriteria pollutants of Hazardous Air Pollutants/Air Toxics done to evaluate community risk and determine if the planned controls were adequate. The date for the modeling included the maximum pollutant emissions rates from Connell's current 2021 permit, control equipment and local meteorology. The air dispersion model for criteria pollutants and Hazardous Air Pollutants were determined to be below both the chronic and acute levels known to cause harmful health impacts under Federal and State screening values and health guidelines. She shows several slides with the results on them which showed low values for each pollutant. She showed a slide with a thermometer on it with different thresholds. She wanted to show that just because someone might be near a threshold, it does not mean to panic and that everyone will get cancer. Good is the range is below the health advisory levels. You should not experience health impacts in the range. Connell is at the top of this level. Caution is in this range, numbers above the health advisories do not always mean you will experience health impacts. The Hazard category is in this range there is greater concern for health impacts. Even at this level of exposure there are other factors that determine which groups are more vulnerable to health impacts, including genetics, pre-existing conditions, and overall health.

Commissioner Chollet asked what was the height of the building elevation included in the site paln. Bird said it was 17 feet. Warren said the maintenance shop is about 22 feet and the lean-to is 16 feet. Commissioner Chollet also wanted to know if the berm by the railroad tracks would be considered a natural buffer. Warren said it is about 22 feet higher than the site.

Commissioner Carman asked if the proposed administration building is also behind a berm. Warren replied there was a 10 foot berm around it that was requested. Bird explained that staff had asked for a landscape berm for visual interest and landscaping, but did not want to completely obscure the administration building.

Commissioner Carman asked if the berm was going to affect the stormwater drainage by the street. Burrell said that it still matches the current historic flow and that the stormwater on the southwest side will go into the pond.

Commissioner Moyer asked about the image on page 36 of the packet and asked can you confirm and explain why we are measuring setbacks for the 800 ft. and the 1,000 ft. and the illustration of the 2,640 ft. radius from the highest point of activity on the site, but we

measure marijuana stores setbacks from the property lines. Bird replied no, it is not from the property line that marijuana stores are measured is the answer to the question. What was looked at was the industrial land use and what is the operational element of an asphalt plant. The offices and the buildings are not the more intense use for which the greater setbacks are applied. That is the reason why staff specifically asked the applicant to locate the office and other structures on the west side of the site, to help mitigate and buffer from the most intense uses to offices, mechanical shops, landscaping, and screening to help transition that down to the adjacent land uses. But marijuana setbacks are measured from the nearest wall of the building to the other protected use in accordance with the marijuana ordinance.

Commissioner Chollet wanted to know if this site plans have been approved by the Town Engineers. Bird said that site plan will change and some things will move. Town Engineer comments required some additional information and they will keep reviewing so that the Town standards will be met. There is still coordination ongoing before final engineering plans will be accepted..

Commissioner Carman wanted to know if the maintenance shop will serve as screening more like a berm. Bird replied that it would be since there could not be an actual berm located there due to the pond.

Commissioner Chollet asked if the buildings would move. Bird said it was a possibility for the buildings to move, but that they would not move significantly.

Commissioner Chollet asked why the signs will be done differently as there have been signs as part of this process in the past. Bird replied that monument sign locations are reviewed by the Planning Commission, but since plans have not been approved yet, the applicant decided to wait before considering signs since signs are so expensive. The applicant has committed that there will not be any signage on the silos.

Commissioner Chollet asked about the photometric plan as there is a letter saying that all lighting is for the safety of the employees. Warren said that night operations are very limited. Last year they only worked a total of 6 nights, and the lighting stays the same.

Commissioner Chollet was concerned if there was a spill who is responsible. Warren said if they did it, they will clean it up.

Commissioner Chollet wanted to know if the earth berms were adequate. Warren replied that he will be putting in a 15-foot berm on the west side which was a condition of approval by the Board of Adjustments. The berm cannot go all the way around because of the pond.

Commissioner Chollet was interested to know if there could be a bicycle lane and protective bollards on County Road 66. Bird was unsure if that could be done and meet all applicable safety standards, but that staff would investigate it.

Commissioner Whitehouse asked about where the process water would be trucked from. Warren said they had 2 locations adjudicated that they could pull from.

Commissioner Whitehouse asked about the expected timeline for construction. Warren replied that his goal is to be under construction late 2023 and be operational by April 2025.

Commissioner Whitehouse asked if the County Health Department supports the results of the air dispersion study. Schneider said it is the same as the company's existing permit, and they will be adding some equipment improvements that will be cleaner than the existing operations.

Commissioner Chollet asked about the noise modeling. Warren said that the background noise was higher than in Timnath but is confident the berms will work.

Chairman Sartor explained that the had received a list of all the individuals that had signed up wanting to speak and would call names in the order they signed up. He said that if there were people wanting to speak that had not yet signed up, he would allow for others at the end to come up.

Public comment period opened.

Jarod Cordell – called, but chose not to speak.

Matt Goepel wanted to know if asphalt plants go in, do they increase the property values and if not, is that in line with the vision of the Planning Commission. Photometrics and truck pollution will be increased. He talked to John Warren about talking to Harvest Farm (Denver Rescue Mission, located on County Road 7) and Warren did not talk to them. It is a residential area though. Goepel asked if the Planning Commission purpose statement could be repeated.

Erin Lines says EPA does recognize that asphalt plants do have toxic chemicals. Yet all the information tonight says they are not harmful. She sited a study she found that property values do go down for homes close to asphalt plants. The setbacks are not enough.

Andrea Taillacq saw in the slides the site plan showed discharge to the North Poudre Irrigation lateral and wanted to know whether that water was actually being shepherded to the natural waterway or whether that would be diverted by North Poudre Irrigation. She asked if the water that was described as being trucked in from the adjudicated source was adjudicated for this site.

Richard Clark – called, but chose not to speak.

Matt Mullett is a business owner in Town. He believes this will be good for the Town. He thinks home values will go up because this will bring more businesses to town which will increase the value of the homes. He thinks that Connell has gone above and beyond by doing extra studies and talking and working with the people.

Donna Rodriguez has lived here for 23 years and there were many unpaved roads. She has worked for Connell Resources for 27 years. She had no health issues. There are many things that have toxins that are close by. Like diesel trains have a lot of the same chemicals. Buffalo Creek Subdivision is right next to a dairy. Connell had 1 non-compliance because of stopping a test. The emissions from their trucks have low emissions.

Reesa Conrey asked why there is heavy industrial by residential. Why was it 1000-foot setback and reduced to 840 feet. The setbacks changed in October of 2022, and no one knew. The communication should have been better. On some of the tests the winds reported did not seem right for Wellington. She asked if the noise reported was from just a single day. She said this is not a good location.

Lisa Clay is the owner of the property where Connell would like to be located. The property has been zoned industrial since before Buffalo Creek was created. The property was not listed for sale. Connell came to them interested in the property. Connell had looked at the zoning and found their business was an allowed permitted use for that location. This is not about the money – it is about the principle. Clay said her company has been in Wellington for over 40 years. They bought the land around them to build a buffer of industrial land from the expanding residential. She believes that Connell has presented a nice plan and that it would not be harmful. They have employees that live in Buffalo Creek and would not want to do anything that would cause harm to them. She asked, why, if someone had an issue with the industrial zoning, why would they buy a house in Buffalo Creek when this industrial property was already there?

Nancy McKay said she and others will be filing a lawsuit against the Board of Adjustments. The previous lady had said that the zoning has already been decided and the right for an asphalt plant has already been decided. She said that is not true. 15 foot berms don't matter. The letter from the owner of the property is unreal.

Commissioner Sartor explained that this is the Planning Commission considering the site plan and that they are not the Board of Adjustments.

McKay continued to make comments from the back of the room. Commissioner Sartor reminded McKay that her public comment time limit had ended.

Gerry Brown – called, but chose not to speak.

Melissa Whitehouse explained she was not there to discuss the site plan, or the environmental projections. She wanted to talk about the growth management area. On page 34 she couldn't figure out what it was that was disturbing her about the big star in the middle. It is in the middle of instead of the outer limits of the growth management area that has been current practice by Connell. For the last 20 plus years they have been on the outer limits of the growth management area for where they go. Connell is violating their own precedent. On page 38, it shows 95% of the trips will go to Owl Canyon Road which is outside the growth management area. Why change the precedent now.

Dawn Burch – called, but chose not to speak.

Kayla Burgett is a nurse who is concerned about the health implications of the asphalt plant. She read a CDC letter that mentioned that headache clusters are present close to asphalt plants. How can we consider the air quality report valid when it was done at one time of the year.

Tom Peterson is the director of the Colorado Asphalt Pavement Association. When comments have been raised with respect to toxins, cancer causing pollutants – it is quantified and defined in your permits. That's where it is stipulated and restricted and measured and monitored and required by the operator. If you go back years to what you see today, Connell's plan is state of the art and utilizes best management practices, including the "Big 4", and they have all 4 – counterflow drums, emission recovery system, natural gas fuel, bag house systems. Connell is committed to being a good neighbor. Asphalt is a heavily regulated industry. The permit is to ensure clean air and to protect public health. There are 65 asphalt plants in 42 counties around Colorado. Nearly every plant in Colorado is either near a school, a subdivision, a home or a stream and all of them ensure public health.

Jason Waldo showed on the map where he lives and stated he is the nearest resident to the proposed development. He did research and had meetings with John Warren. He was worried about the dust in the area and Warren said they would have water trucks. He was worried about "Jake Brakes," and Warren said he would put up signs on the county roads to restrict Jake Braking. They are doing landscaping to make the location better than it is. The hours of operation are Monday through Friday and some months they are closed. He supports this development proposal as a good neighbor.

Ben Trabing asked for an additional 4-5 minutes of speaking time. Chairman Sartor agreed that he could give 6 minutes. Trabing introduced himself as a meteorologist and an atmospheric scientist and is more qualified to talk about the air emissions studies. Page 11 of the packet seems to still question whether asphalt plants should trigger the Land Use Code for the production and curation of toxic chemicals. From the staff comments it says that all the ingredients that liquid asphalt as well as the aggregates that go into making hot asphalt are not considered dangerous and that is true, but you could also make the same statement for ingredients that go into a Molotov cocktail or an explosive device. That isn't necessarily a true statement, and it does not make the devices any less dangerous. If you look at the air dispersion modeling study, it shows that the site is not large enough to contain all the fumes produced by the plant. With the batch plant confined to the northeast corner of the property, their proposal cannot be accepted because it does not actually meet the Land Use Code, by keeping all the fumes and toxins remain on site. He believes that the model does not show the actual values since the plant will not be open year around and does not operate 24/7 like was used for the calculations. So, the values will be higher during the time they are emitting any pollution. Also the results are presented as yearly averages for the park, the school and the residential areas to the west. This does not adequately assess the risk for toxins. Also, the data that was used in the study was from 2006 and there is a better atmospheric data today. The only thing this emission study truly proves is that hazardous airborne pollution is produced. It is emitted and goes off-site to the property, and that is in violation of the Land Use Code. One of the conditions for the setback reduction to 800 feet is that this Planning Commission actually approves the Site Plan. But you need to reject the Site Plan because it is directly in contrast to the Land Use Code. It is too close to the residential areas given the toxicity and the emissions are not going to be confined to the site itself.

Jade Cowan – called, but chose not to speak.

Sarah Mickschl sees Wellington as a developing community that has become a very desirable place to live. However, an asphalt plant does not help our community to grow. Releasing toxins into the air does not help our community. It does not help the value of our homes. There is a better use for the land and I cannot believe the land is still zoned heavy industrial. She has spoken to a couple of people that live in town and have worked at asphalt plants in other States. They warned of the vastly negative impacts the plant would have on our community. She would like to see the land used for something else like recreation items or other businesses that would attract residents to the town. The aggregate is already coming from Carr. They should open the plant there.

Chad Mickschl said the Land Use Code section 101.1 states that the zoning regulations are designed to promote the health, safety, values and general welfare of the town residents. An asphalt plant does not meet that goal. Section 4.03.21 Industrial and Manufacturing, Heavy shall be at least 1,000 feet from any residential district. This part was not adhered to and a variance was granted. What decision making went into this? The section then says that the facilities producing toxic chemicals shall be located 2,640 feet from residential districts. The Connell plant curates toxic chemicals and adds them to produce asphalt. They also emit them into the air. No additional analysis is needed. It produces a toxic chemical. Also there has been a lack of transparency. He never received any mailings about zoning changes or notifications to attend a meeting. He believes that Wyatt Knutson on the Board of Adjustments had a conflict of interest since he works for CTL Thompson which was hired by Connell. Also Mr. Carman was on the Board of Adjustments and should he be allowed to vote on this now being on the Planning Commission.

Erin Ramler wants the application denied. Our Land Use Code does not distinguish between minor chemicals. It just says toxic chemicals. They should meet the setbacks in the Land Use Code. Would like to see this project sent back to the Board of Adjustments. She added since the Connell lawyer nicely mentioned adhering to the Town's vision for the Comprehensive Plan, the Town's 2022-2024 Strategic plan vision statement states that this town strive to make Wellington one of the best small towns in America, to live, work and raise a family. And no one wants to raise their family in a toxic town.

Brittany Cowan does not believe this is meeting the Land Use Code health, safety, values and general welfare and the chemicals will not be confined to the site. The Board of Adjustments did not grant approval because one of the conditions is the Planning Commission approval.

Ayla Leistikow page 250 of the packet it says it does produce toxins and it does not matter because the Land Use Code says there are locations in Larimer County and in Greeley. It should not be 800 feet from residential and the variance has not been approved. The Planning Commission has the power to apply any condition to the site plan and they should right the wrong and apply the correct setback. One question is the thresholds for the toxic air dispersion studies for those for healthy adults, elderly children, or infants.

Ben Leistikow said this board participated in the Town's Comprehensive Plan, and thought the community cohesion part was outstanding, and it states we take pride in our community by providing safe and attractive neighborhoods, oriented around parks, trails, amenities, and public spaces, and by offering for our community to shop, gather and celebrate. A key call out from that Comprehensive Plan was to promote air quality in and around Wellington to ensure air quality is maintained and we continue to grow. The air dispersion study seems to

be old and does not seem to be indicative of a good partner for air quality. Connell, at best is a push in the Comprehensive Plan, and at worst fails to meet the goals. The only way to truly help the town is for Connell to be required to get the right variances. The Planning Commission should add a condition requiring Connell to seek a variance for producing and curating toxic chemicals.

Rachel Hayes – called, but chose not to speak.

Debbie Condos says it does not matter how many permits they have, stuff happens and then what? Why didn't everyone get notified? There is about 75% to 80% of the residents that do not know what is going on. People do not know. She found out with a letter under her door mat from a neighbor.

Chairman Sartor asked if there was anyone else who would like to speak that did not get signed up to do so. No one responded so he closed the public comments.

Public comment period closed.

Chairman Sarot asked the Commissioners if they had any questions or comments.

Commissioner Moyer repeated what she shared at the March meeting. The role of the Planning Commission is to form recommendations based on the promotion of the community's health, safety and welfare in the future. Consider all research and information when forming a recommendation or making a decision, respect all views, and treat everyone equally. Give citizens a meaningful opportunity to participate. Focus on the bigger picture goal setting for the Commission in order to achieve long-term accomplishments. Commissioner Moyer also shared some of the findings that are in the packet that she is not sure we comply with at this time. The zoning and uses of properties nearby, public health, safety and welfare by the possible diminution in value of applicant's property as compared to the hardship imposed on the applicant if the request is denied, opposition or support of neighborhood residents, conformance of the requested change to the Town's Master or Comprehensive Plan. Commissioner Moyer also wanted to share her notes on section 4.03.21 about the toxic chemicals for her – Toxic chemicals come up multiple times on several pages. She said there are potential health risks and the risks for you are not mine to take.

Chairman Sartor asked Schneider to come back up and address any of the questions or comments she heard that she would like.

Schneider said that Connell was not required to do the air dispersion modelling because the limits coming from their plant do not require this type of modeling. She said that there are a lot of asphalt plants out there. Some use older technology and some use newer technology. She said that the chemicals that are being used could cause cancer. Higher winds for these tests would dilute the chemicals in the area so the static conditions were evaluated to illustrate worst case scenario is chemicals were pooling in the area due to lack of wind.

Commissioner Carman asked if Ms. Schneider if she works independently from Connell research group. Schneider said yes, she is an inspector on behalf of the State.

White made closing statements. She suggested bringing everything back to the reason we are here which is for Site Plan review. It states in the Land Use Code these zoning regulations are designed to promote health, safety, values, and general welfare of the town residents. It is the standard which all other standards in the code follow. All the comments tonight about the chemicals gets lost in the fact that the regulations themselves rely on the State system for issuing the permits for this use. The Larimer County Health Department chart which showed the EPA standards across the board all of the numbers in the air dispersion modeling study were way lower than the maximum safe recommended levels. Some of the chemicals in question are emitted by a gas station or a fast food restaurant that have already been allowed within the town and they are allowed to be less than 2,640 feet from residential. The point is that if you are going to apply the Land Use Code here, you need to apply uniformly to all potential sources of emissions, no matter how small. These proceedings can have anything introduced. Anyone can say anything they want. Anyone can introduce anything that they want to as evidence. There is no restriction on what comes in. Rather, you all get to weigh the credibility of all the evidence that is presented to you, and decide whether it weighs in favor of the finding that the criteria are met versus not finding that the criteria are met, and you get to decide how much weight to give credentialed experts who have provided data and reports, and have presented themselves to answer questions. The opposition is presenting the equivalent of Google research on the Internet. Some of the information presented that falls into the category of the latter is about irrelevant sites, because they are in China, or they might be bigger. They might be smaller. They might be totally different. We have presented actual data about this actual site in this location. Basded on actual studies presented by experts. We thank you for that opportunity to present this information to you and for your consideration to this matter, and again ask for your approval of the Site plan.

Bird wanted to address some of the items he heard that had not already been addressed. There was a question about why the property is zoned Industrial and located next to residential. It has been this way for years and prior other code adoption , there was not a separation requirement. There was a question about not having an environmental or re-mediation plan and the Town does not require one. The question about why the entire town wasn not notified. The Town publishes in the Coloradoan, there are signs on the property, there were notices that went to properties that are within 500 feet of the proposed property, and the meeting is on our website. A public hearing is not required for Site Plan review.

Commissioner Moyer asked what options they had. Bird said they can approve, approve with conditions, or deny the application.

Chairman Sartor would like to hear the intent of the code about pollutants, vapors, and dust that several community members brought up. Bird said the intent would be to mitigate all that can be mitigated through site planning controls.

Commissioner McCaffrey was wondering what would happen if one of the Connell trucks gets hit by a train what happens. Warren said their products are not flammable or explosive, it is just hot. Commissioner Carman asked the same about the silos and tanks. Warren said it is the same.

Commissioner Whitehouse was interested in knowing if this could go back to the Board of Adjustments to redo the setbacks. Can there be clarification as if it can go back since the Board of Adjustments has already ruled. Bird said no, since the Board of Adjustments, has already ruled, that question does not get sent back. The legal process would be that question would be appealed in a court of law. Bird does not think the Planning Commission has the ability to say that the Board of Adjustments did things right or wrong – that is their purview and only their purview. If the decision by the Board of Adjustments wants to be looked at that is appealed to District Court, not the Planning Commission.

Commissioner Carman said that the Board of Adjustments knew there was a site plan going to the Planning Commission and it was hard to see which should have come first. Bird said the Board of Adjustments knew it had to go to the Planning Commission so it was included as a condition of approval.

Commissioner Whitehouse asked if the time frame to appeal the Board of Adjustments decision had ended. Bird said that was correct.

Commissioner Chollet wanted to know if there was a remediation plan if the owner picks up and leaves. Warren says they have reclamation plans with the State and since he has not introduced anything here yet, one option would be to have a bond on the property while he owns it.

There was discussion about water usage. Warren said that Town-treated water was going to be for the interior office and building facilities, not the operations.

Chairman Sartor asked if anyone had a motion.

Commissioner Whitehouse moved to approve the site plans for Connell Resources subject to conditions identified in the staff report including conditions on page 20 paragraph 15.

Motion seconded by Commissioner Knaack.

There was a discussion about having an amended motion to include water restrictions. The discussion ended and roll call took place.

Yeas – Carman, Whitehouse, McCaffrey, Chollet, Knaack, Sartor
Nays – Moyer
Motion carried

7. COMMUNICATIONS

None

8. ADJOURNMENT

Chairman Sartor adjourned the regular meeting at 11:19 PM.

Approved this 10th day of July, 2023

PATTY LUNDY

Recording Secretary

Board of Trustees Meeting

Date: **August 23, 2023**
Subject: **Addition 1 - Published August 17, 2023**

BACKGROUND / DISCUSSION

This section constitutes the first addition to the amended packet and includes 4 documents that were published on August 17, 2023.

STAFF RECOMMENDATION

ATTACHMENTS

1. Record Table of Contents
2. Record Part 1885 - 1963
3. Connell Appeal Slides
4. Wellington Asphalt Plant Appeal Hearing V3 PDF

Record Full

Table of Contents

1. March 6, 2023, Packet CR-TOW-0001

a. Staff Memo CR-TOW-0003-0010

b. Ditesco Letter – Site Plan CR-TOW-0011-0014

c. Connell Resources – Site Plan CR-TOW-0015-0043

d. Site Plan Response – Dec. 21, 2022 .....CR-TOW-0044-0051

e. Site Plan Referral Review CR-TOW-0052-0056

f. Fire Protection Site Plan CR-TOW-0057-0058

g. Wellington Site Plan Referral CR-TOW-0059-0065

h. Public Comments Received CR-TOW-0066-0138

2. May 1, 2023, Packet CR-TOW-0139

a. Staff Memo CR-TOW-0140

b. Request for Continuance CR-TOW-0141

c. Public Comment Received CR-TOW-0142-0299

d. Proposed Early Settlement Agreement CR-TOW-0300-0302

e. Public Comments Continued CR-TOW-0303-0325

3. May 1, 2023, Addendum CR-TOW-0326

a. Public Comments Received CR-TOW-0327-0401

4. June 5, 2023, Packet CR-TOW-0402

a. Minutes CR-TOW-0404-0407

b. Staff Report CR-TOW-0408-0425

i. Site Maps CR-TOW-0426-0407

c. Connell Site Plan CR-TOW-0428-0443

d. Ditesco Site Plan Application CR-TOW-0444-0445

e. Ditesco Site Plan Resubmittal CR-TOW-0046-0047

f. Connell Resources Site Plan Maps CR-TOW-0448-0487

g. Connell Answers to Commission Questions CR-TOW-0488-0502

h. Connell Wildlife Mitigation CR-TOW-0503-0508

i. Community Noise Assessment April 28 .....CR-TOW-0509-0530

j. Community Noise Assessment May 19 .....CR-TOW-0531-0553

k. Proposed Early Settlement Agreement Dec. 5 .....CR-TOW-0554-0556
l. Notice of Violation CR-TOW-0557-0559
m. Groundwater Monitoring Proposal CR-TOW-0560-0561
n. Emissions Comparison CR-TOW-0562-0581
o. Tables CR-TOW-0582-0595
p. Health Consultation CR-TOW-0596-0644
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r. Proposed Hot-Mix Asphalt Plant CR-TOW-0663-0687
s. Refined Modeling Report CR-TOW-0688-1213
t. Refined Modeling Report Addendum CR-TOW-1214-1331
u. Transportation impact study – Response CR-TOW-1332-1337
v. Transportation impact study CR-TOW-1338-1404
w. Air Quality CR-TOW-1405-1414
x. May 1 Addendum Packet CR-TOW-1415-1537
y. May 30th Written Public Comments CR-TOW-1491-1537

5. June 5, 2023, Addendum Packet CR-TOW-1538
a. Connell Presentation CR-TOW-1539-1564
b. Zemba Health Risk Assessment CR-TOW-1565-1582
c. Connell Presentation pt.2 .....CR-TOW-1583-1590
d. Public Comment Received CR-TOW-1591-1869

6. June 5, 2023, Official Meeting Minutes CR-TOW-1870-1884

7. June 5, 2023, Planning Commission Transcript CR-TOW-1885-1960
a. Samuel Grace - Transcribers Affidavit CR-TOW-1961
b. Steven Rovetto - Transcribers Affidavit CR-TOW-1962
c. Emily Erikson - Transcribers Affidavit CR-TOW-1963

Starter: Good deal. All right. We'll go ahead and get started. Can I have a roll call, please.

Speaker 1: It's ready.

Starter: They're not supposed to be two different things. You ready?

Speaker 1: Yes. Commissioner Carmen.

Carmen: Present.

Speaker 1: Whitehouse.

Whitehouse: Here.

Speaker 1: McCaffrey.

McCaffrey: Here.

Speaker 1: Moyer.

Moyer: Here.

Speaker 1: Chalet.

Chalet: Here.

Speaker 1: Connick.

Connick: Here.

Speaker 1: Starter.

Starter: Here. Any additions or deletions from the agenda tonight?

Bird: None from town staff.

Starter: Thank you, Mr. Bird. Anyone here to speak on something other than Connell? This would be the time for you to have the podium. Yeah, I didn't think so. Can we get a motion to approve the minutes from the May meeting?

Chalet: I move to approve the minutes from the May 1st 2023 meeting.

Whitehouse: I'll second that.

Starter: Roll call please.

Speaker 1: Commissioner Carmen.

Carmen: Yes.

Speaker 1: Whitehouse.

Whitehouse: Yes.

Speaker 1: McCaffrey.

McCaffrey: Yes.

Speaker 1: Moyer.

Moyer: Yes.

Speaker 1: Chalet.

Chalet: Yes.

Speaker 1: Connick.

Connick: Yes.

Speaker 1: Starter.

Starter: Yes. Old business, this is what everybody's here for tonight. We're going to hear a couple of presentations tonight. We've got a presentation from staff. We have a presentation from Connell. We also have a presentation from Larimer County Health. There's going to be a lot of information here. It's going to go kind of a long time. After all the presentations and after the Board gets a chance to ask some follow up questions, we're going to build in a recess and just give everybody a break at that point. So just a heads up there will be in a built-in recess after the presentations. Thank you everybody for coming. I know everybody's going to be anxious to speak after these presentations are over. I just want to ask, please allow the presenters their time at the podium, keep the side noise down, keep the side conversations down. The faster we can get through the presentations, the faster you'll be able to come up here and make your comments and we can get to the meat of the matter here tonight. So that said, Mr. Bird, we'll go ahead and start with the staff presentation.

Bird: Thank you, chairman. I also wanted to do a couple of housekeeping items. Can everyone in the very back hear through the sound system? Is there a way to crank up the volume for the back? Are you hearing anything coming through the speakers in the back of the room? And just maybe quiet. We're going to see if we can address that if we're going to do the best we can. A couple of other housekeeping items, in the past and I've been through a lot of public hearings, sometimes it's there's emotions in the room and people want to applaud and clap and cheer and

that really does disrupt the meeting. And just remind everyone, we are recording the meeting, it's streamed live, background noise has an extremely detrimental effect on the recordings our meetings and it does become the record as well as for people viewing online. So, we really do ask you to be respectful so that our recording comes out clean. And lastly, actually my last comment, I think I just covered two and one with one comment. So, we think we're good there. Any success in the back of the room with the…okay, then we're going to do that now.

Lowry: May I say something before we get started?

Starter: Yes, Commissioner Lowry.

Lowry: I just wanted to go on record saying that I did watch the May 1st meeting and its entirety and listen to all the public comment.

Bird: We're going to allow just a little bit more time for the speakers in the back of the house. Does that help in the back of the room?

Starter: Try it out. That help it all in the back?

Bird: The monitor. Right. Yeah, we'll adjust that monitor during the presentations. We can aim that towards the back of the room. When we get into public comments, we may turn that monitor back around just because it has the timer on it for the planning Commissioners to see. But during public comment, we wouldn't expect there to be any presentation materials. So hopefully that will coordinate that and that makes sense for everyone. Okay, those are the couple of housekeeping items.

Starter: Appreciate it.

Bird: Yeah, I appreciate everyone's patience as we got set up. So, I'm going to start the presentations off here. My name is Cody Bird. I'm the town's planning director. I'm going to keep my presentation relatively brief. I have a number of slides that might be more productive near the end of the presentation, so I'll probably split mine into two parts. But I'll start this off with an introduction and some background and then we'll move on to other presenters. So, thanks everyone for being here tonight as Chairman presented, this is a continuation of a site plan for Connell resources. The presentation was originally submitted for the March 6th Planning Commission meeting and subsequently it was tabled to allow additional time for resources to be gathered, for questions to be answered, and represented, and it was tabled to May 1st. At the May 1st meeting, the applicant had requested additional time to finish putting that information together. There were challenges with the consultants' schedule to present the final reports and so that meeting or that agenda item was also tabled to tonight, June 5th. See if we can get the slides to advance. Never know what the right click is going to be here. There we go. So just to kind of help orient everyone, the request for the site plan is for a property. It's about 35 acres in size and it's located at the north side of town, along the BNSF Railroad line. The location is shown on the map here. It's about the furthest north that you can be within the town limits on, and the property is zoned industrial for heavy

industrial uses. The site has been zoned industrial and a hot mix asphalt batch plant is a permitted land use within the industrial zone category. That property was identified by the applicant as a use by right and therefore pursued that use in coordination with the property owner. That land is under contract for sale. And in navigating the town's processes, the applicant had identified that although the site had was an industrial zoning and an asphalt batch plant was a use by right, they identified that some of their structures and equipment did not meet the 45-foot height limitation for the industrial zone district. Then they requested a variance which the board of adjustments granted on October 27th, 2022. That approval for the variance on the height was for the silos only, no other structures, just the silos, to be a maximum height of 70 feet.

And in addition to the height variance, the applicant also requested a variance of the setback from a residential district. The set back from a residential district was a regulation that was added when the land use code was updated in March of 2022. That consideration came out of a lot of public comments and our comprehensive plan and land use code process with the desire stated to create separation between some of our more intense land uses in town and residential subdivisions and districts. So that was a new regulation that hadn't existed that impacted both the industrial site and the residential site. The board of adjustments was presented with that variance request to reduce the 1,000-foot separation from a residential property. The request was to reduce it to 800 feet, which was granted by the board of adjustments at the October 27th, 2022 meeting that the two variances were considered at the same time for the height and for the setback, and when the board of adjustments heard and granted those variances, they granted that with conditions of approval. There's well, there's the text of some of the information I just shared. The conditions of the board of adjustments approval are also listed on this screen. The top three bullets are what I just explained and the conditions are listed below, one through six. The conditions I'll read real quickly that the site plan must be reviewed and approved by the Planning Commission and that's the action that's before the Planning Commission tonight is the site plan. The conditions were that the height variance was 70 feet for the silos only, I mentioned a moment ago. The board of adjustments also required a 15-foot earthen berm with landscaping on the west side of the site. The board of adjustments required that additional height for that earthen berm and landscaping specifically to provide mitigation between the residential properties to the west and the site operations. The intent there being that if the, if the setback was reduced there needed to be something required to soften the impacts that would have otherwise been achieved through the setback. So, the 15-foot Berman landscaping was a requirement. The requirement was also that there be no signage on the silo, that was something the applicant had offered in the board of adjustments that yes, that makes a lot of sense. Let's not allow signage. And they, the board of adjustments required both physical signage on roadways and an operator policy to disallow engine braking or Jake braking, as it's commonly referred to. Several of the residents nearby had expressed concerns about large trucks and using engine brakes, that's disruptive to the neighborhoods. And so that was a requirement. And lastly, the requirement that all applicable county and state permits for operations of an asphalt Plan B obtained and maintain. The board of

adjustments also had conversations about they didn't make it a requirement, but a recommendation that the applicant consider using non-potable water sources for the landscape irrigation for the site so as to not put additional strain on the town's water resources. So, we included that recommendation here.

So, to give you kind of a quick recap on where we're at, I mentioned the timeline a moment ago beginning with the March 6th meeting. At the March 6th, 2023 meeting, this Planning Commission was presented with a site plan prepared by the applicant in coordination with staff. Staff conducted review of the initial site plan application, we provided review comments back to the applicant with a number of things that were required changes to satisfy town standards, and the applicant went through the process of working with staff to address all the staff comments. Town staff also referred that application to our referral agencies. Our referral agency review process included the railroad, school districts, County Health Department, County Road and Bridge CDOT, utility agencies, all of those referrals went out. We don't get comments back from everyone, but we did get quite a few comments back for this particular site plan and in working with each of those respective referral agencies the applicant has addressed the concerns raised by those. Just a headline a few, Larimer County Road and Bridge had identified that they have County Road standards that are not just adjacent to the site that where the truck routes go that required turn lanes and so the traffic impact study included in your packet was revised and updated to reflect the requirements of Larimer County. We've also included, we got feedback from utilities with electric had some specific requirements and needs that had to be addressed and those were being addressed through coordination with the applicant. So those are just a couple of headlines, but we did have a pretty broad response from referral agents and least of which was Leah Schneider from Larimer County Department of Health and Environment and she is here tonight. She was at the March 6th meeting. She has been a reviewer. She's continued to review and she has presentation materials that we'll get to in just a moment. Following that, the Planning Commission heard the request, as you know, it was tabled and then a second time, but we did identify through those meetings a number of topics and questions that were we have attempted to try to answer and those items were listed here on this slide, as well as in parentheses, we've included who we think are the parties that are answering those questions for you tonight. So that was just kind of a quick headline on where we've been and kind of what has happened since the March 6th meeting.

I also want to take a moment, I know that there's been a lot of conversations in these meetings and a lot of emotions and we want to, you know, be really cognizant of what we're hearing from all of our residents. And we wanted to help, that it might be helpful for the residents to understand to what the Planning Commission's role is in the site plan. And so, we pulled a little bit of information, we included some in the packet outlining our site plan review procedures. And I'm just kind of headlining some of those tasks here tonight on this slide. The Planning Commission, just as a reminder, is the final review and decision-making authority for site plans. This is these are elements from the land use code that identifies procedures, applications, review processes, and decision making authorities for a

site plan the Planning Commission is the final review and approval. And in reviewing a site plan, the planning commissioners look at, they take consideration for the findings for approval. The findings for approval are identified in the land use code, as these are the factors that the Planning Commission needs to look at and evaluating the site plan review request and those are the factors that form the basis for the Planning Commission's approval, with conditions or denial of a site plan application. And these are the findings for approval A through F. These are from the land use code. I won't read these word-for-word, and I don't think that's helpful for everyone in the audience. And this was in the packet, it's in your presentation slides, but this this is kind of the findings that the Planning Commission will look at and making the determination on a site plan. And it might be helpful at some point in the evening to go through these findings kind of one at a time, if that's the desire of the Planning Commission, I'm certainly happy to help facilitate that, if you're, upon your request. And at that, I think I'd like to come back to the next couple of slides because it gets into kind of the analysis of the findings and I'm happy to come back to those. But at this point, are there any questions on the procedures, the background, how we've got to where we're at today? We still have other presentations and I want to be respectful of time, but I'm happy to answer any questions quickly.

Starter: Anything from the board? For Cody.

Bird: I'm going to stop sharing and I'll come back to these slides a little bit later on and, Miss Bureau, if you're ready, we can advance you to panelists for the applicant's presentation slides. While the applicant is getting those presentations up here and coming up to the podium, I also want to, now that we've refreshed on where we're at, where the project site is and generally the request. The applicants gonna get into more information on the specifics of their request but before we do, I'd like to also take a moment to for the planning Commissioners to disclose any conflicts of interest or any ex parte communications. Conflicts of interest are a little bit different. If anyone has a conflict, you can state that now, ex parte communications is the other piece of that ex parte communications or communications are things that happen outside of this meeting that is information that this Commission might find useful so that everyone has the same information. So, if anyone has any conflicts or ex parte communications, this would be the appropriate time to disclose.

Speaker 2(female): I don't.

Speaker 3(female): You won't be surprised to have any useful information for the board, but I did. I was at a town event where this came up as a topic of discussion at the table that I was at. I removed myself from the table and later went to the individual and just suggested they come to the public meeting to express their thoughts.

Speaker 4(male): I would like to disclose to the board that I serve currently as an alternate on the board of adjustments. Also served actively on the board of adjustments last year when this came before the board of adjustments.

Bird: Thank you, any others?

Chalet: Not sure if this is ex parte or just additional information, but I've actively participated with Commissioner Copalis with his Wellington community conversations where the landfill has come up, including the truck route for that which inform some of what we're looking at in terms of traffic impact study. For number of expected trucks per day, which is somewhere in the range of 250 trucks, and that information was all...

Bird: No.

Chalet: Hold on.

Bird: Yeah, this is the board's time.

Chalet: And that information was also shared with me, unsolicited, from another county commissioner. So, I just wanted to let you know that those two things were told to me.

Speaker 5(male): Point of information that number you cited about truck trips, is that referring to the landfill?

Chalet: Yes, at I-25 and Owl Canyon, not all the way directly to the site, but just concerning the intersection of I-25 and Owl Canyon. Not the, not the adjacent streets to the site.

Starter: I don't believe that information has any bearing on anything we'll be discussing tonight, so I'd, it can't have any bearing on what we are discussing tonight with the site plan review. So I'd, Mr. Bird correct me if I'm wrong, I don't believe that's any ex parte information that the rest of us couldn't have obtained or that's pertinent to the discussion.

Bird: I think it's as I understood it, the numbers that Ms. Chalet was referring to were from the traffic impact study from the Larimer County Landfill, north of north of County Road 70.

Chalet: Correct, and it was shared with me in this and I'm just letting you know what was said to me just to be thorough. Not seeing just in terms of traffic impact at I-25 and Owl Canyon, the landfill trucks are not coming through town, nor is the applicant proposing that. But in terms of the traffic and impact study, it was shared with me and I thought I should make sure that everyone was aware, that's all.

Bird: So to answer the question, Chairman, I think that the comment was made in the context of perhaps both the proposed landfill site and the applicant site, both truck routing plans would be utilizing the same intersection at I-25 and Owl Canyon. Is that a good summary?

Chalet: Yes.

Starter: Fair enough, anybody else? If there's nothing else here, Mr. Bird if you'd like to go ahead and reintroduce speaker.

Bird: Yeah, Carolynne White, representing Connell Resources as the applicant and the agent and I will let you do your own background introduction.

White: Thank you, Mr. Chairman, members of the Planning Commission, city staff, town staff, members of the public. My name is Carolynne White and I'm land use Council for the applicant. I'm pleased to be here with you tonight to present the site plan for the proposed asphalt plant in the town of Wellington. Ohh I get to drive my own slides, okay. That's the pointer. I'll get the hang of this here. Okay, there's a delay. Let me start first by introducing the team and introducing Connell to you. I've introduced myself already. With us here this evening, I have Sherry Welch and John Warren representing Connell resources. I have Jill Burrell and Dan Egger, engineers with Ditesco, and many of the documents and information that's in your packet was prepared by them and they'll be available to answer your questions this evening. Also, with us we have Tom Peterson with the Colorado Asphalt Pavement Association to answer general questions about asphalt paving and the industry in general. We also have Stephen Zemba, PhD, PE, who performed a health risk assessment, that is also in your packet, and he's going to be part of our presentation to address your questions related to the health risk and then myself.

Just a little bit of background about Connell, it's on the screen and we also printed some copies recognizing that some of you might not be able to see the screen easily. I won't read all the information on this slide, but a couple of things that are worth pointing out here. This company has been serving the north Northern Colorado community for more than 77 years. This family has successfully operated a plant very similar to the one that is being proposed here, just a little bit south down I-25 in Timnath for the last 20 years and has operated two other plans on sites west of I-25 for 10 years prior to that. So, we're talking about an organization that is local to the Northern Colorado and an organization that has a tremendous amount of experience in this industry doing exactly what they're proposing to do here in the town of Wellington. I also want to mention that there are 265 full-time employees associated with Connell resources and this asphalt plant and those are folks who many of whom already live in the town of Wellington and who will be potentially having shortened commute times once this is approved. And a little technology problem, what's that?

Speaker 6(male): There's a delay on the slide.

White: There is a delay. I'm getting a little ahead of myself here, yeah. So, a little background of sort of why we're here, why are we doing this? Their existing proposed asphalt mixing plant is being relocated from its current location. That at I-25 near Costco in Timnath on the proposed site 3548 East County Road 66, that's where it wants to be. This proposed site has been zoned, as was mentioned by Mr. Bird, industrial and manufacturing heavy in the town of Wellington since at least 2000, and has retained this zoning designation through multiple iterations of

the Town Comprehensive Plan in 2021 and the zoning map and land use Code update subsequent to that in 2022. Meaning that you recently considered the question of exactly what are the right uses for this location, and you kept it industrial heavy just like it has been for the last 20 years. And asphalt mixing plant, that use type, that use category, is as was mentioned and allowed use by right within this zone district. This is just an excerpt from the town's zoning map and an excerpt from the town's zoning code that specifically references the things I just quoted, the zone district, the allowed uses, and where this location is in the purple there that 2000. Before I get into the details of the site plan, I just want to mention a couple of things based on sort of where this project has been and to get to where we are today. What is before you tonight is a site plan approval, and the question is does the site plan as presented meet the criteria in the code that Mr. Bird summarized for you? I'm going to summarize for you. We're going to talk about those criteria probably a lot, but the question before you is not what is the right zoning for this property? That's already been decided. The question is not is an asphalt plant an appropriate use for this location? That has already been decided. Nor is the question what should the setbacks be? That has already been decided by the Board of Adjustment, as was referenced by Mr. Bird and one member of the Board of Adjustment who was actually there when that was determined. All those things are in the rearview mirror; they have already been decided. What we're here to talk about tonight is the site plan and does the site plan conform to the criteria in the town code? And we have a presentation for you that explains all the reasons why it does in fact conform to those criteria. I also want to mention that because there was a tremendous amount of detail presented with this application, especially relative to other types of applications, and there are also a lot of questions that were presented, knowing that we might not have time to go through it all in excruciating detail in this evenings hearing, we wrote down for you, in an FAQ document, Frequently Asked Questions document. All of the big questions that were expressed at the March meeting, and the answers to those questions, and attached to that document the relevant excerpt from the voluminous record that has the technical data that answers that question. And hopefully you all have that at your fingertips in your packet. It's about a 200-page document. I'm not going to read it to you tonight, much as I would like to, but I hope that you have it as a reference material.

Overall, what this site plan does is it provides thoughtful development that adheres to the six conditions approval, of approval imposed by the Board of adjustment. I won't repeat those because again, Cody Bird just summarized those for you. But I do want to highlight one of them and that is compliance with all applicable county and state permits for operation of an asphalt plant. And the reason I'm highlighting that particular condition of approval is that a lot of the questions that arose had to do with health, safety and welfare, all of which are issues that are regulated heavily for asphalt plants at both the state and local level. And we have included for you, in our presentation tonight and in the packet, a great deal of information about all of those other permits that are required and have been obtained, what the standards are and how we meet them. So, I wanna make it very, very clear that all of those permits' standards are met and in fact, we've gone above and beyond and have secured another four or five reports beyond those which are normally required for

this type of application to put in your packet and to present to you tonight to try to answer some of the questions that have been raised. This is a restatement of the site plan criteria that this application should be judged against. So in the course of tonight's hearing, we're going to demonstrate that each of these criteria are met and one of the reasons we gave you this as a printout is so you could, like, make notes on this page as we talk about each of the facts that relate to each of these criteria, if you wanted to. This isn't the complete criteria because they're too long. I just kind of summarized them on this slide. Again, I won't repeat all of them, but one of them, the last one, applicable development standards have been adequately addressed. The development standards is basically the entirety of chapter five of your code. We will not be repeating every single one of those development standards tonight, maybe just highlighting some of the key ones. And I noticed that in the staff report, they also highlighted most of the key ones. Again, I don't want to repeat the conditions of approval since Cody already explained those to you. I do just want to reiterate the condition, the variances that were granted by the Board of Adjustment. Change in the set back from 1,000 feet, as otherwise required to the code, to 800 feet that has already been decided. And a change in the height that can be allowed on the property, only for the silos, and this graphic illustrates what that's going to look like. As you can see the normal maximum height in the industrial zone district is 45 feet. The top of the silo is about 55 fee and what you really what really gets you up to 70 feet is what's called the emission recovery system, which I've recently had occasion to learn a little bit more about and that is the means by which the emissions are recovered.

Starter: Keep the comments down please. We've already asked you to be respectful during presentations. I apologize, Ms. White, please continue.

White: One of the questions that arose was what exactly is going to be happening on this site? And so now I'd like to turn it over to John Warren, who's going to show you this drone video of the existing asphalt plant and then walk you through each of the issues that has been raised and how Connell resources is responding to them and answer some of those questions that we think you and others might have.

Warren: Now this will be the test of the audio-visual system here. To see if we can pause this and alright, go for it, Jill. So, this is, yeah, just a quick drone video of our existing plant in operation from about six weeks ago. And we did this in the morning and we did it on purpose, so that the sun is actually on the east and behind what we have going here, if you'll pause it right here, Jill. I'd appreciate it, if it'll hold. So, what you're seeing there is there's been comments that say we have 70-foot smokestacks, that that is inaccurate. As we've shown, the silos are the only thing that are 70 feet. What you have and it's difficult to see here, but right there is our dryer stack, which comes off of what it's called the bag house, and that is basically our large filter. And you can see with the sun in the background you can see steam coming out of that, but what you can't see is between the dryer stack and the steam there's a gap, right? And So, what that shows you, there's no particulate matter in that, in that emission. So, what we're looking at is 99% steam coming out of that stack, and that's from the drawing of the aggregate. So on the right side are

the feeder bins that feed the aggregate to the plant. And as those come in, they're at about three percent moisture and so we have to heat that aggregate and dry it in order to get the asphalt cement to adhere to it. The asphalt plant process is pretty simple. It's really just mixing two raw materials, it's aggregate and asphalt cement. They're both brought in, or in this case, we mine the aggregate on site and in Wellington it'll be brought in on trucks just like our asphalt cement will be brought in. It's two raw materials combined and that's what as we go through you can. It's a little slow. But again, the conveyors take the asphalt into what the drying drum, which is where it's actually heated and we'll pan down and have a little better look at this. I wish I could kind of point to things. We can pause it there. Jill, if you don't mind. But if you look now, you don't see any emissions coming out of that dryer stack, right? There's no sun behind it again, just being steam it, it literally disappears at this point. Now the process is, to help understand, so this is what's called a counter flow drum. It means the aggregates come in on the top of the drum and goes through to the burner and then literally drops out of that drum into a secondary drum, a counter flow drum. So, there's a two kind of concentric tubes within. So as the aggregates dried then it drops out at the end and that's where the asphalt cement and the recycled asphalt is mixed together so that you don't get any contact from the burner with the asphalt cement or the recycled asphalt. It's very intentional and then that drum spins, it mixes it together, coats the aggregate with the oil. It's the kind of diagonal piece there is what we call a slat conveyor. It's then drops into that slat conveyor and is hoisted up and put into the silos. Again, it's a very simple process, but we had comments that, hey, we'd like to have a tour. We'd like to see what this really looks like. This is the best I could do in this circumstance, so as we play forward, but again there are no 70-foot smokestacks. It's a dryer stack at the end of a bag house. And again 99.9% of it is coming from the heating of the aggregates from the natural gas we burn to do that. And that's really about it.

And the site will look very similar to that. There'll be some updated equipment, but in essence that's what the plant will look like. I guess I can drive the rest of this. So, the additional information and investigations and studies we took all the comments we heard from March 6th, we've taken comments that we've read from the public, we've taken comments from the May 1st, and really tried to put together a comprehensive answer to those questions to really alleviate those concerns and really show what we're doing here. Through studies, through independent studies and all of this being voluntary, it's not required as part of what of the site plan review, but we wanted to make sure that we answered as many questions as possible. And again, in your board packet there's a lot of detail, 1,100 pages, I think it was. But we painstakingly went through each and every one of these to try to come up and have real answers, scientific answers and the data that you guys were asking for from March 6th. Gotta do this right. So just to reiterate a little bit on the site location, we have spent a lot of time meeting with adjacent property owners. And we've gotten the support of all of the adjacent property owners from the west, from the south, the Waldos to the east and to the north. And we made it, you know, we made a commitment to all those folks to be good neighbors, to work with them. There are no development plans in the future for any of those properties, at least

that we were made aware of, but in the future our intent is to work with those folks. And if you look on the set back, are we purposely put the plant as far to the northeast as possible. And from an existing residential zone district, we are 2,800 feet. Now from a future one, will it ever be built? We don't know. Will it stay zoned residential? We don't know. It may become commercial, it may become a transitional zone. Again, not our decision, not our property, but at the at the current time we're over 2,600 feet to the built residential zone district.

Next, won't spend a lot of time on landscaping, but it has been purposeful, it has been thought through. Again 15-foot berms as required by the board of adjustments to the west and then 10-foot layered berms throughout the site in order to mitigate site impacts as well as where we place buildings. So again, a thoughtful process to again to try to make the property as visually, less visual impactful as possible. Traffic planning and impacts. Again, another question that's come up a lot. First of all, the graphic to the right is actually from the comprehensive plan. It shows County Road 7 as your gateway corridor or your community corridor, and it has Owl Canyon in red as the freight corridor. So, we paid attention to that in planning our truck traffic and our traffic routes in and out of the site. Through that planning, we are doing a number of roadway infrastructure improvements, paving County Road 66 from the property line all the way to County Road 7. Improving the railroad crossing at County Road 66 and that's in combination with BNSF and Larimer County, adding a northbound right hand turn on to County Road 7 from County Road 7 to Owl Canyon and then all the pavement west. Again, from Larimer County's request is that they include bike lanes, so mobility again, it's not going to go anywhere to the west at this point in time, but we'll allow some mobility on bikes and safe crossing. So, to reiterate our traffic patterns, I know it's in your packet, we've been through a number, but all incoming and outgoing truck traffic will be routed to County Road 66, north on County Road 7, to Owl Canyon for access to I-25. Now, the only thing that would be is if we have local deliveries right, and then we'd have to see like again, Connell Resources is doing the Wellington overlay program this year. If this were three years from now, we wouldn't go up to 66 or to seven to Owl Canyon and back around to get into town to pave the streets here. We would use local streets, probably work with the Streets Department and figure out what is the appropriate call pattern there. So that would be the only caveat is local deliveries for projects that are here. So, but I want to reiterate no traffic through town, all going north, all going to Owl Canyon and dispersed from there.

Second thing on the transportation of materials, again a question that came up the last time is what is asphalt cement? Asphalt cement is a refined product. It comes in and a tanker load, but it is a non-hazardous material. The placards on, the left-hand picture is one of a truck actually being unloaded at our facility. You can see the emissions capture system above our silos, above it, and the only placard on there is hot and that means elevated temperature, okay. So, it comes in at above 250 degrees, which is what that hot placard means. If you look to the right, it doesn't say poisonous, it doesn't say toxic, it doesn't say toxic gas, it doesn't say explosive, it doesn't say flammable. None of those are required under U.S. DOT classifications and division placards. It's simply hot material. It cools down, it turns

into a rock, a black rock. I mean, it's all that it is. One that I'm not going to spend a lot of time on, but we did and we did do a voluntary wildlife impact study. We had a consultant from Fort Collins look into the property and came up with potential habitat for threatening endangered species and not present on or near the project area. And based on the limited habitat value near the project site, no wildlife mitigation strategies are warranted, so it's it was very simple. This one was pretty quick. It's only a 35-acre site that really doesn't have much to it. Getting on to some of the bigger concerns was the noise and making sure that we were within Larimer County standards for noise assessments. So, we conducted two voluntary noise assessments. One of our existing facility to see what was our loudest point and how did that noise disperse throughout our existing facility. And we did a second noise assessment of the existing site, just to get a baseline of what's out there. So that assessment doesn't have a lot to it but as you can see here, the noise ordinance has maximum sound levels at the receiving property line of 55 decibels. And then below it again, things that we've committed to through neighbors and through the no jake brakes of installing white noise backup alarms on the equipment that we use at the facility. Again, to help with the neighbors, even though it's not loud, they still can be annoying. But to get to the studies a little bit more, here's just a graphic from one of our existing facilities. So, the loudest piece of our facility is our generator. Again, we run two 550 kilowatt generators to run this asphalt plant, it's 83 decibels at the source. So that's one foot away. You can see going to the west at I-25, it actually gets louder. I-25 is in many places is louder than our asphalt plant, which is kind of surprising to me. But if you go north and east away from the interstate, we dissipate sound at about 600 feet where we're underneath that 55 decibels. The other thing to understand with 55 decibels, that's like a normal conversation or your refrigerator running in your kitchen, that's how quiet that is. So, within, again the chart to the right actually shows the dissipation of sound. From a pure mass standpoint, it gets there at about 200 feet, but what we found in the study was about 600 feet with some of the other background noises around, we were below that 55 decibels, which puts us well within the noise ordinance for Larimer County for where the plant will be sitting. And we get into permitting and we'll spend quite a bit on permitting and I believe that Larimer County, Leah is going to speak to this as well. A couple of things from this chart, it's hard to read, but it's in your packet, so I hope you looked at it, but these are the seven existing permits that we have with our asphalt plant, which is through the division of air quality, the division of water quality and then also the oil and Public Safety Commission from CDPH, which monitors storage of our fuel tanks and our SPCC plan, which is spill prevention containment countermeasures. At Wellington, we anticipate having a minimum of four of these permits, at least two air permits, one specifically for the plant. One for the all the operations around the plant, we will have an industrial stormwater permit where we have to monitor, test at least every two weeks in every storm event. So, all the water that's going into our detention ponds will be tested before it leaves or as it leaves. And then obviously spill containment for any fuel storage that we have and that's for diesel fuel for the trucks and those type of things and then any more that come along with that. The two right hand columns actually talked about our inspection frequencies and our testing

frequencies. When it comes to our air permits, we are actually testing, monitoring daily. We have to submit an operation and maintenance plan to CDPHE and they have to approve that through our existing permit we monitor and test and track everything we do every day and they're they can have access to it whenever they like.

The last piece and I want to put special emphasis on this, is the, excuse me, the fine range or enforcement range. Excuse me again. On these permits, we're talking a minimum of $15,000 per day per violation if we violate air quality standards and they go up to $54,000 per day per occurrence. So, they're not minor fines. They're not miniscule. They're significant. When you violate air quality standards. I've got to do a little bit of just reaction to what we've gotten from public comment, from what we've seen from letters from the public, we have one compliance, what CDPHE calls a compliance advisory in our 30 years, we got one in 2001. We are doing a self-performed test on our stack test. We had a mechanical issue at the beginning of that test, had to shut it down. We self-reported it that day to CDPHE. They came back about a month later and said by the way, if you shut down a test, that means you automatically fail that test. We didn't know that, we didn't understand that, we thought we had to fix it, reschedule it and move on. That's not the case. So, they sent us a letter on July 27th. We respond to that, saying that we disagreed with its August 2nd. They granted us the additional time to retest. We also this is also the time we changed our fuel source from what was called waste oil before to a much cleaner natural gas that would been planned for that winter. We decided to expedite it to help with this. That test retook October 21st of 2021 and passed. It was a year less one day later that we got a compliance advisory from them. So, it was, it almost looks like the same day, but it's 22 versus 21. On November 8th, we again contested that letter and without and had a conference with them in regard to that. And on December 5th of 2022, we got the settlement agreement from. CDPHE. We didn't write it, they wrote it. We did pay a $7,000 fine. And going back, I wish I wouldn't have now, but we did it. It was didn't feel like it was worth fighting anymore. But the key language that they put into this settlement, not us, was that entering into this settlement shall not constitute an admission of violation of air quality laws or alleged facts related thereto. You can laugh, but it's true. And of and any third party shall not infer the admission of it in any administrative or just for proceedings. So, a lot of the things from this finding have been taken out of context and we've been blasted on Facebook, our integrity has been questioned through this. And so, I felt like it needed to be answered. I would be happy to answer any more questions regarding this. But anyway, just wanted to clear the air a little bit. With that, I'm going to turn over to Jill for one slide to talk about storm water and drainage because that's her expertise.

Burrell: So at the last proceeding, there were quite a few questions on storm water and water quality. And so, we wanted to address well what's going into this plan and how that's being addressed. So, for any development project, it is required that stormwater detention and treatment are handled per the town of Wellington development standards so that meets all land use code and treatment. And so, what that means is that that property can't have a discharge of stormwater that is greater

than what is currently being operated on that on that site. So, we're matching the historic flow is what that's called. So, what that means is, as we develop the site and we start to change the pervious versus impervious area. So if we if we pave a road that becomes impervious area, we have to offset that by building a detention pond that can capture the additional volume of water that would have previously percolated into the ground. And so, with that, that's that second bullet there, we're detaining the 100-year storm event on the site and we're releasing that at A at a standard rate at about a 10-year event. And so that's matching that historic flow rate that would have previously exited the site. So, there's no change in stormwater conditions. We do that through a detention pond and then the construction of an outlet structure. And so that's one cross section view of the plan of that cross section of that outlet structure. And part of what that is, is it includes a water quality control volume wall, so that it allows settlement of solids. So that was another question that was asked previously. So, it's actually preventing off site debris or solids from leaving the site. It also includes a trash rack, so if there was any debris that happened to be in the site, that would keep the debris from leaving the site as well, and this particular one because it's out letting to a north poudre irrigation canal, it actually has a slide gate. So that gate is actually detaining all water on the site and it will require manual operation in order to open it and relieve stormwater from the site. So that's something that we would have to do as part of that. So, Connell will do that during a storm event. We have had frequent coordination with north poudre irrigation company and have talked through what this looks like for their impact and have their general consensus on this that we'll be working through the details of what the actual design entails through the engineering administrative process with them. And the one final thing that after this is all constructed and built, Connell is required to own and maintain their site to a stormwater discharge permit through CDPHE. So that's another one of those regulatory permits that's required.

Warren: Additional water issues, again, it came up at the March 6th meeting was a request, you know, about groundwater monitoring and the concern of contaminated groundwater. Our facility is very unlikely to ever have any impact to groundwater. Groundwater at this site is 15 foot below grade. It's generally a fairly stiff clay. However, we're happy to do it. So, we put together a groundwater monitoring plan to do that. We'll drill two wells on the site, probably on the south side as that's kind of the gradient of the site. Those wells will be registered with the state Engineer's Office and the records for that monitoring will be kept and available to the town of Wellington or whomever else would like to see it. So again, a voluntary plan simply from the comments and reactions from three months ago, and again we're happy to do it. Odor mitigation. This is something we talked about at the last hearing and the slide is the same. We really feel like we don't have an issue with odor. Again, the primary fuel source being compressed, natural gas puts off very little odor, if any. It's clean burning. Again, our last inspection, the CDPHE field inspector, said no order complaints have been received by the department at the site and no order is noted at the time of inspection. So lastly, we have three employees that are trained. I should have brought a picture of this cause it's pretty entertaining to see, but it's called a, oh, what's it called? It's a nasal ranger, yes and you actually put it to your nose and it's this big horn that actually takes in and tells you if you have

odors at your site. So, if anybody wants to get trained on that, you can too. But we have three individuals that'll do that. We'll be able to react to anybody if there are a complaint or an issue or a question and work through that. But I said it has not been an issue for us ever in the past. Continuing on air studies. Question of what is a major versus a minor source and maybe _____ address this some. The chart to your right is out of a Colorado, an article from a few years ago, those are the five largest emitters in Larimer County. CSU, Anheuser-Busch, Larimer County Landfill, Broadcom and Rawhide. You can see from their CO2 emissions on the right, the numbers that they produce. For us, to be a minor source, we have to be under 100 ton a year of a, got to get my constituent, anyway. For CO for us which is, see we have to be under 100 tons a year to be considered a minor source. Our permit limit is 19.5 our production from 2000 or from 2022 was 10.53. So just trying to give perspective on what a major emitter is and how small an asphalt plant really is. Again, EPA and CDPHE both recognize asphalt plants as minor source emitters. And then just another side note, there's already five, at least five, I counted five quickly, of air permits in Wellington already. And those are fuel stations, commercial light industrials and they have active permits that allow releases of VOC's benzene, hexane, toluene and ethylbenzene and many of them are greater than what we're allowed through our permit. So, we certainly won't be the first. They are active and if you go look most of them are much closer to residential areas.

So, from our voluntary air quality studies, again, trying to react to and do our best to show what our true impact is, we voluntarily completed air dispersion models from a consulting group known as the Antea group and then we asked to a second consultant to come and actually take that data from Antea and look at it and do a health risk assessment and evaluation. And so, both of those have been completed. They're part of your packet. Sanborn Head and Steve Zimba, who is here tonight, is the one who completed the health risk assessment and will speak, but what the results of the study indicate is we'll be compliant with all local, state and federal air quality standards. Our mixing plant will have minimal impact to air quality, local air quality and will have de minimis effect on the public health and de minimis means trivial, almost nothing. With that, I pulled one slide from the air modelling report that we did. So, we, the normal air dispersion models take your highest concentration and map where that concentration falls as it comes out of your emission source. We actually asked them to go a step further. We heard the comments about the Wellington Community Park and Eyestone Elementary being close. So, we actually asked the consultants to map and show what the concentration levels would be at those two places and then we, just feeling that we're close to the Waldo residence to the east, we actually asked them to do it at that resident as well. And so, all of these concentration levels were mapped and put to there and every single one of them is below what the EPA considers a safe screening level and it gets much, much less as you get towards Eyestone being the farthest away. But critical and again, just things we wanted to make sure as we went through to find and make sure that we didn't have an impact on those areas. With that, I'm going to turn it over to Steve Zimba. He has a Ph. D. in mechanical engineering from the Massachusetts Institute of Technology. He has 30 years'

experience in environmental engineering and is actually a professor at the University of Massachusetts, Lowell, and teaches a class in in air quality control.

Zimba: Thank you John, and good evening everybody. I'm going to talk a little bit about the health risk assessment that we formed for the facility. But first of all, I just have a couple of slides explaining who Sanborn Head is because I doubt you've ever heard of us but we do have an office in Denver, a very small office. We are mostly New England based. My particular practice is kind of national in character. I get called by clients in different places, often in situations like this where people are worried about health risks associated with emissions from a particular facility. Our company is about 200 people. We do lots of different environmental types of studies. Some of the services, you guys can review these, but anything doing with environmental radiation, contaminants in the environment are the types of things we focus on. My personal practice has involved about oh, five or six, maybe 12 asphalt plants over time. I should count them right. After 30 years, I've done a lot of these types of projects, so I know, you know a little bit about hot mix asphalt plants and their missions. First of all, all of the work that EPA has done on those, but I also reviewed the air impact study from the Antea group. This again, as John mentioned, is a voluntary study that this didn't have to be done per the requirements of the Colorado Department of Public Health and Environment. The reason you might do this study is just to demonstrate how small those impacts are. This is considered to be by that regulatory standards a minor air pollution source meaning they don't emit 100 tons of any criteria pollutant. As John pointed out, for their permit, the most they could admit is 20 tons per year or 19 tons per year of carbon monoxide. That would be the highest one. Other criteria pollutants like sulfur dioxide, nitrogen oxides, particulate matter all emitted at lower levels than that. And the goal, the Antea wanted to do was to quantify when emissions come out of that dryer stack, they go out into the environment and into the community, what would be the additional concentrations of the pollutants that you would be breathing from those emissions? And so, as John mentioned, the locations of interest, the green button up there is indicating where the dryer stack will be. That's the main source of air pollution at the plant. The residents of the southeast was the nearest residents that also ended up being one of the higher impacted locations and high as a relative term. These are still very low impacts as you'll see, but that's for the highest concentrations predicted by the model study basically were over the long term. They also looked at the Wellington Community Park. And also, the Eyestone Elementary school as what we call "special receptors" of interest that got mentioned. And these were the pollutants were looked at in the study. They, it separates into the left side being criteria pollutants, which they're called criteria pollutants because EPA developed criteria to look at them a long time ago. They developed national ambient air quality standards are enforceable by the state regulatory agency but they're federal standards and those the pollutants that are subject to the national ambient air quality standard, those would be particulate matter, both PM 2.5 and PM 10. These are particles smaller in aerodynamic diameter than 10 microns in 2 1/2 microns, so tiny particles in the atmosphere, once they can get deep into your lungs.

They also looked at nitrogen oxides, nitrogen dioxide, there's an ambient standard for that, sulfur dioxide, and also carbon monoxide are all subject to national ambient air quality standards. In addition to that, the county asked that study look at key some key air toxics they're emitted by hot mix asphalt plants, also emitted by any combustion, our cars and the other sources that John had mentioned. They would include things like the acid, aldehyde, hexane, some of the ones you've probably heard of more so formaldehyde, benzene, and the list is there. And those were all looked at in the report and I encourage you to read Antea's report. It looked at both short-term and long-term effects. I'm going to focus mainly on the long-term effects associated with pollution emissions because that's kind of the focus of where health _____ go. We're also going to look at those key air toxics, that's what I'm going to focus on tonight. But before I do that, I want to talk about some of the inputs and I'll talk a little bit about Antea's results for the criteria balloons. One of the things that serves as an input to an air dispersion modeling study are winds and winds go from every which direction. This was the data, or these were the data that were looked at by Antea, obtained from the car CDPHE. And what they demonstrate is that most of the winds, most of the time, come from the north to the south. The way you read a wind rose is you look at the length of those petals and meteorologists think when the winds coming from. So, the largest petal to that goes at the top there, our winds coming from the north to the south. But as you can see from this, winds go every which direction some hours. Sometimes you get those west sloping winds in addition a smaller percentage of the time. What the modeling study is going to do is, over the long-term effects, predict the long-term average impacts of pollutants using these wind data as one input. Another input that will be used will be emissions and those emissions are estimated that information generally from the US EPA and other regulatory agencies. Lots of stack testing has been done for hot mix asphalt plants, hundreds of stack tests have been compiled and if you go to section 11.1 of EPA's AP42 document, you will see basically the description of all those tests. Those were some of the inputs that the Antea used in estimating both the short term and the long-term emissions. These were the results, this is one table from the report, looking at Antea's predictions for criteria pollutants. And these aren't the ones I'm going to focus on but there's some importance here because criteria pollutants look at both long term effects and short-term effects. In particularly, if you look at the Knox and the Sox, SO2 and nitrogen oxides, they both have one-hour standards and if you were worried about health effects such as asthma, those would be caused by short term stimulus, could cause an asthma attack, as an example. That's where you want to see that you're well below those national and bigger quality standards and that's generally what the report shows.

The third column over shows the largest impact that would come from this plant for any hour in that year that they modeled. And the highest ones being 7.1 and 7.5 over a one-hour period for the nitrogen oxides and the sulfur dioxide. You can compare those to the national ambient air quality standards, which are those safe levels that EPA derives to protect the public with an adequate margin of safety, I think is the right language that goes in there. And those are up to roughly about 200 micrograms per kilometer each. So, the percentages of the impacts of those

national ambient air quality standards that the facility could contribute to, you happen to be at a level near the max but you're not in this area, would be only 4% at most of the national ambient air quality standards. One other thing I wanted to talk about was ozone because you're near a non-attainment area for ozone in this region. If you do have one air quality issue of concern, it would be ozone. The ozone isn't actually emitted by sources, it's created in the atmosphere from photochemical reactions. But two of the pollutants that will be released in small levels by this plant will be nitrogen oxides and all lower organic compounds. I think they're on the order of ten tons per year each, if I'm remembering the numbers right, but you should check the report for that. Those chemicals will participate in form ozone. The thing about ozone though, is it's a regional issue and it counts all the emissions from all the cars, all the other sources that were mentioned by John, all contribute to ozone formation of these same precursor pollutants. Ozone really will not change substantially by this plant moving because it's already emitting in the air shed that it's in. So, you're not going to increase in Knox and the box emissions regionally. So, it'll be really not much of an effect at all on ozone.

This is one of the maps that appears one of many maps that appears in Antea's report. Many of them look very similar to this. This is showing the long-term impacts for one of the air toxics and the colors are, you know, what they are. The red rings are the highest concentrations and you can see why we're focusing on that residence to the southeast. That is one of the two peaks and notice that the peak isn't into the south, it's actually to the north. Because when you do air dispersion modeling, stability classes count and emissions at various different times of the day, so it might not always be those northerly winds that lead to the highest concentrations on long term averages. With the residents being there, it's an appropriate thing to think about in terms of what the highest impacts are. We looked further to the south, we drew the picture out. The impacts at the community center and at the Eyestone Elementary School were all about ten times lower than the peak levels. This one showing toluene, one of the air toxics and the key to the peak level there, I think if I could read it is .005. Is that right? My eyes are failing me, micrograms per cubic meter, the standard or the safe level for toluene is 40, so even the peak level is still hundreds and thousands of times lower for toluene than the level that would lead to some long-term health effect. So, from this toluene is not going to be a problem and neither will most of the other are toxics. But let me talk about why I think that's the case. My health risk assessment is going to focus on two things, as health risk assessments standard we do. They look at the risk of getting cancer, extra risk of getting cancer. We all have a high chance of getting cancer in our lifetime. For men, it's 41 chances and 100. For women, it's 39 chances and 100. And it's not good news but cancer is caused by lots of different things, genetic factors, a lot of us will get cancer. And it won't be due to any environmental source. Sometimes it's just bad luck. Things you know go wrong with our development and things of that sort. But if you put that on a per million basis, my chance of getting cancer, your chance of getting cancer is 410,000 in a million. For women, it's 390,000 in a million very large risks. If we look at an environmental project like Connells plant, the allowable risk would typically be 1 to 100 per million extra risk of getting cancer. So, if I took a one in a million risk and I added

it to 410,000 in a million, my total cancer risk from just other sources and the emissions in this plant would increase from 410,000 in a million to 410,001 in a million. You couldn't measure that difference or notice that difference.

So we get to something drawing called de minimis risk and de minimis risk and risk assessment circles is this magical one in a million extra cancer risk. If you're at or below that, usually you say this is an acceptable risk, it's very small, it's not going to add to someone's cancer risk. No, just putting that in words again, if you take that one in a million, you add it to the 410,000, you get 410,001 per million, there's very little differentiation between those two risks, adding a one in a million risk. Ohh, here come the calculations in the math and I sort of apologize for this a little bit, but the way you cause or calculate a cancer risk is that you multiply the air ollutant concentration times the unit risk factor. And what the unit risk factor is a value derived by EPA and other regulatory agencies. It estimates how much cancer would exposure to a particular chemical cost. It's different for every chemical, as you can see in the third column, the different the inhalation unit risk factors, the most potent carcinogen there at the bottom with the highest inhalation unit risk are the PAH's or benzoate _____. If you take the highest model concentration at the residence of southeast and you assume seven years of exposure and you multiply by the unit risk, you get the cancer risks converted to per million basis and that final column. Those add up to a total of .036 per million. So you would add to that 410,000 of value of .036 to get the new cancer estimate. That's far and way below the one in a million-risk level that we consider to be de minimis. So, from this, I would conclude that there really aren't any what we would call significant increases in the risk of getting cancer. If we looked at the park and the school or residences near those locations, those risks would be eight to ten times lower than these incremental risks.

Second type of risk we look at or any other chronic health effects that are other than cancer and the way we do those is we compare what you're exposed to, to safe concentrations. Safe concentrations would be things called reference concentrations. There's a little report and some notes and a memo that went along with this, if you want to see the references to it and see where you get some of those data. Check out the references there but the safe concentration is a reference concentrations. Again, they come from EPA and other regulatory authorities that have developed safe levels that you can be exposed to. It's an acceptable hazard quotient if the value is one or smaller, meaning that what you're exposed to is less than safe concentration, if you take that ratio. So, what we're looking to see, hopefully, is it has a quotient are less than one. And if we add them all together, if we assume that all the chemicals could cause the same types of health effects, which isn't quite true, but as a screening criterion, you can add them all together to get an overall hazard index. If that overall hazard index comes out less than one, we as risk assessors, would conclude that that's an acceptable level of exposure. And if we go through that exercise, we take the highest concentrations for all the aero toxic we had, take those safe reference concentrations, divide the second column by the third column, you get hazard indices that you can compare to one and you can see that all the values are quite a bit lower than one. If you add them all together at the

bottom, you get .0012. That's about an 800-fold safety factor in what would be, you know, allowable exposure. And again, the hazard indices at the park and the school are again about nine and ten times lower, respectively, if you go through the calculations.

So, what I conclude from oh, one slide and I just went by it. Another thing to think about is we did mention other sources of air pollution. There's a study that's been done by EPA called the National Air Toxics Assessment and what they've done nationwide is this estimated how much formaldehyde, how much benzene are we all exposed to from sources like gas station, other industries, just general background concentrations. Those are the values that are estimated for the Wellington census tract, in the third column and I'll take an example here, formaldehyde, the average background level that we would be exposed to here would be about .73 micrograms per cubic meter. Again, it's not a large risk but what you would do is then you would compare that to the formaldehyde you'd be exposed to from emissions from the asphalt plant. You can see that would be a .2% increase in that ambient level. So, these risks that are de minimis are also contributing to just a small amount of one's overall exposure. The highest one comes out for ethylbenzene at that worst-case residence, it would increase exposure to ethylbenzene by about 11%. Take it to the park and to the elementary school, about a 1% increase in, as a worst case for ethylbenzene. With that, the conclusions are that there really aren't going to be any significant health risks associated with the emissions in this plant and the incremental concentrations are going to be smaller than existing background levels for the air toxics. I think that's all I have.

Starter: Keep the background noise down. We are not done with the presentations yet, please.

White: Thank you, Mr. Chairman, Planning Commissioners, Carolynne White, once again. I'm going to head us towards our conclusion here and I want to do that by talking about the site plan and the site plan criteria, since after all, this is a site plan hearing and I want to bring us back to a little bit of how some of these things that you've heard about relate to the criteria for site plan and specifically what are some of the things that have been done on the site plan to try to mitigate and address potential impacts and concerns. So, we've summarized here on this slide. Again, we talked about the BOA conditions of approval, the fact that any and all emissions are monitored by the state and subject to all this extensive regulatory permitting, some of them are measured daily and reported daily. The 15-foot landscaped berm, the way that the components of this project are arranged on the site, that was described earlier, with the most impactful being located to the farthest northeast and everything else being separated with maximum buffering and landscaping. There also are some improvements that are going to be made to local infrastructure, which John summarized for you a little while ago. We didn't really talk so much about it, but also there is a plan to use Zurich, low water use landscaping and also there will be no town water used in either the plant processes or the landscaping. So, turning now to these criteria of approval that were initially introduced by Cody Bird at the beginning, in section 2.12.3 of the code, I just want to talk a little bit about each of

these. The first one being the future land use map. Well, the first criterion is it's consistent with the comprehensive plan and the intent stated in the land use code, and there are a couple of different ways that you measure consistency with the comprehensive plan. One you look at the use itself, the future land use map and what is the intended use of the property, which we really already talked about and that is industrial and it is consistent with that in the future land use map. And in fact, this is actually the only real parcel within the town that could accommodate a use like this within the town of Wellington. And that's probably one of the reasons why you decided several times to keep it zoned industrial over the last several years. Because of the proximity to the railroad, it really is suboptimal for a variety of other types of uses. The other way you look at consistency with the comprehensive plan is you look at some of the goals that you've set forth in the comprehensive plan. And I know that you all have probably worked extensively with your staff on this issue in the past about how the comprehensive plan expresses the vision for the town, and the code expresses the specific criteria and standards by which that vision will be measured. So, when we're talking about the comprehensive plan, we're talking about goals. When we talk about the land use code, we're talking about standards. So, as it relates to the comprehensive plan, some of the goals that that are applicable here diversify the town economic base to attract key businesses to the area, develop a supportive…

Starter: Alright guys, we're gonna call recess. Ten minutes. I asked, I tried to ask politely. We're trying to get through presentations here, you guys. Ten minutes.

Alright, we will start again, Ms. White. I apologize for the interruption. Go ahead and continue where you left off.

White: All right, thank you. Once again, Mr. Chair, members of the commission, we we're just heading towards our conclusion and I'm talking about how all the information you've just heard applies to the criteria in your code for approval and consideration of a site plan. We were talking about the goals and the comprehensive plan. I was focused on some of the economic development goals. Another one is develop a supportive business environment that aids in creating a thriving local economy. This site plan meets this goal by providing commercial land uses that provide job opportunities and needed services. So, the site plan does meet this criterion of approval about consistency with the comprehensive plan. The next one has to do with the size and lot dimensions being consistent with the final plat. In this case, it just so happens that the site plan is being considered before the final plat, so you'll actually do that reverse. You'll measure the final plat against the site plan, so that's sort of not applicable here. This next one is infringement on easements as was verified in the staff report. There will there's no infringement on any easements and any easements that are required for the town will be dedicated along with the time of the final plat. Site grading consistent with requirements of applicable storm drainage criteria or master drainage criteria. You heard a little bit of a presentation about the drainage, the stormwater management that's going to be put into place along with this site plan. There is a detention pond located at the southwest corner of the site. It's a little bit small to see on this drawing, but hopefully you can see it

on your print out there. The detention pond is sized to account for the additional impervious area that's being constructed as part of this project, and all the stormwater runoff from the site will be routed to that detention pond prior to discharge into a downstream waterway, and it will meet the required off stream off site discharge flow rate. So, all of that is going to be in compliance. The structure is designed in compliance with water quality management techniques as well and will be part of a stormwater management plan. And staff also noted, in its staff report, based on its comprehensive review, that this criterion is met.

The next criterion is density and dimensions conform with article four of the code or approved PUD, if you have a PUD, which we don't. Mainly, in a case like this, in terms of density and dimensions, we're talking about setbacks, which we've already talked about. I won't repeat that again. There's really not a density issue when we're talking about a use like this that applies more in the context of residential or floor area ratio which is not applicable here. And then the last one, it's a little deceiving because it's only one criterion, but it actually references all of section five of your code, so there's actually about 50 criteria in there. I, again, won't go through all of them but it has to do with landscaping, screening and buffering, parking, making sure that we meet the parking requirements, architecture and building design, transportation and connectivity. This site plan provides for safe and efficient transportation in and around the site and connections to the roadways and properties outside the site. And the staff has found that all of these are met and that this criterion is met overall. If there are any specific issues in Chapter 5 that you want to talk about, we'd be happy to come back and address them during the question and answer portion. Oh, I had a separate slide for comprehensive plan that has your whole economy goals quoted right up on there. So, I'll just kind of cruise through these cause I already talked about them. Consistency with the final plat, easements, site grading, density dimensions, Article 5. And then here on this slide is the conclusion.

In conclusion, this application for a site plan meets all of the town of Wellington's criteria for approval of a site plan. This applicant has listened to the comments, to the concerns, to the feedback, both from all the referral agencies, from staff and from members of the public, and has addressed them very thoroughly. We've done that in a variety of ways. One, by making changes, another one is to just providing additional information and perhaps most notably, as you've seen tonight with these additional studies that have been performed and provided to staff and to you for your review. And that includes the wildlife study, the noise assessments, the air dispersion modeling, and the community health risk assessment, all of which are above and beyond what's really required, especially for a site plan. But understanding that this commission takes very seriously its mission to protect the public health, safety and welfare of the town of Wellington, as expressed through the town code. We wanted to make sure that you had all the information that you needed in order to make that determination. The scientific data that has been provided through all of these studies demonstrates that the asphalt plant will have a de minimis effect on air quality, on health and on these other considerations that have been raised. This applicant is committed to meeting all the state, local and

federal standards that are applicable to the project, to performing ongoing voluntary groundwater monitoring, as was described, and continuing to be good neighbors in the Colorado, northern Colorado community. So, with that, we'd like to ask for your approval of the site plan, that concludes our formal presentation. As I mentioned, we have all these members of the team here available to answer your questions, either now or at a later time in the presentation, in the proceedings and thank you for your time and attention to this matter.

Starter: Thank you, Ms. white. We've got a presentation from Laramie County Health as well and then we'll open up to the Board questions. So, let's get through one more and then we may call you back up as needed. Mr. Bird, do you want to do the introduction.

Bird: Yeah, I certainly can. I also wanted to throw out there that there were a few slides from the staff presentation that I wanted to circle back to as well. After Larimer County Health, so I hate to prolong the presentations but there's just a couple. I'd like to introduce Lea Schneider, Larimer County Health and Environment, and Lea was here at the March. 6th meeting. We really appreciate her review and for coming back to be with us again this evening. Leah, thank you and I'm going to pull your slides up for you in just a moment.

Schneider: Thank you and I will say I'll have a hard time seeing the slides, I forgot my glasses, so I have it printed off in front of me, so I apologize if you see me looking down a lot at my own notes and I'm trying to read my own slides from my paper. So I'm here primarily to talk about air quality. Our agency is one of the regulatory agencies involved in a lot of this air quality protection. So the overarching of course is the Environmental Protection Agency. They're the ones that actually set the national ambient air quality standards, the NAAQS, that we'll refer to that they set those. There's six criteria pollutants that we'll go over on the next page and then these are known to have significant health impacts to not only people but also adverse impacts on the environment. And these are national standards that are applied to all states. We also have the Colorado Air Pollution Control Division. This is our local State Regulatory agency that oversees compliance to make sure we are within those NAAQS criteria. They issue the permits for sources of air pollution, they conduct inspections they also conduct the compliance and enforcement actions when our sources of pollution are out of compliance. And then Larimer County, we are contracted by the Colorado Air Pollution Control Division. We have a contract, an annual contract, where we actually inspect a designated list of sources but we also investigate complaints that are driven by our community members. This could include things like odor, maybe if somebody saw visible emissions and we're concerned about it an event that, you know, could be impacting their community, we will go out and investigate and work with operators. We also conduct routine inspections and our inspections provide information to air pollution control divisions, compliance and enforcement programs so that they can initiate those enforcement actions on our behalf.

Next slide, please. So, these are some of the emission thresholds. I just wanted to kind of bring about this table. This is the table that air pollution control division uses to evaluate permits for our air pollution sources. The column on the left includes a couple of our volatile or our criteria pollutants, that I mentioned that the EPA sets standards for and you'll see that we have particulate matter in there, carbon monoxide, sulfur dioxide and oxides of nitrogen. VOC's are not technically a criteria pollutant, but they're an ingredient for one of our criteria pollutants, which is ozone, so it is highly regulated because it can impact the ozone criteria pollutants. So, you'll see, like so we have and I'm using an attainment area, the area north of Wellington that Connell's future location could be is actually in an attainment area north of Wellington. You guys are in attainment for everything, particulate matter, carbon monoxide, sulfur dioxide, oxides of nitrogen. So, the, because it's an attainment area, our permit thresholds are a little higher. So, if you were in a non-attainment area, say for the ozone, instead of VOC's being at five tons, you'd actually be at two tons limit for an air pollution permit. And then I also wanted to point out though on this far end column, these are the EPA and air pollution control thresholds for major sources of pollution, and these include in this non, this attainment area north of Wellington, Platte River Power Authority is one of your major sources. So, they actually emit things like carbon monoxide, nitrous oxide, the sulphur dioxide and things like that. They are over 100 tons per year. And the big thing I wanted to highlight too, we have the non-criteria pollutants section, which this is separate from national ambient air quality standards, the NAAQS. These include halves, these are our hazardous air pollutants aka air toxics. So a single source is regulated as a major source threshold when it hits ten tons per single sort of single emission and then or 25 tons combined and you'll see as we go into Connell's permit thresholds, that they are well below this and they're within the a little over 250 pounds. And at that point, they're not considered a major source, but they are overseen by air pollution control division to keep an eye on to make sure that as they make modifications at their facility that they're not making it into these major source thresholds that can contribute significantly to the environment and human health. These major sources that are in this far right column do have significant controls. They have to do active emissions monitoring, they have to do several reporting. EPA has maximum achievable control technology that they're required to follow and they're also under national emissions standards for hazardous air pollutants.

Next slide. This is just a demonstration from Connells 2021 permit from air pollution control division. You'll see they have, the one thing that they do look at, we do look at a lot more than just particulate matter, which I think that was, there might have been some confusion in some public comment in the past. We do look at more than just particulate matter, particulate matter is a very serious national ambient air quality standard due to a lot of the health impacts when it is exceeded. But you also see that they are evaluating an Knox Sox VOC's, things like that. And we also want to make note, so this is their operating, these are their thresholds, this is what they're limited to for the year. These also include operating with controls like the vapor recovery devices, their blue smoke recovery devices, bag house and cyclone to collect a lot of the emissions. Additional controls that people don't even

think about how much tonnage of material are you processing hours of operation are also factored into this. You know, several different things go into this to create these standards for emissions. And then you'll see again, we have some of the non-criteria hazardous air pollutants which again, the air toxics listed below. These are some of the more common ones known to be emitted from asphalt plants. There's no specific EPA controls for these individual haps, again because they're not over the ten ton per individual or combined over 25 ton per year. Okay, let's go to the next slide.

Alright, so we did propose UM, because you know there is a risk because you do start talking about hazardous air pollutants and it is an emission from asphalt plants. So, one of the things we have suggested in our in our health department comments is that a risk assessment just to kind of see, you know, find out where these pollutants are, you know, where these concentrations are going to be based on, you know, the meteorology, the site conditions, things like that. It helps understand a little bit more of the community exposure. So, Connell contracted a consultant. They did some air dispersion modeling. This is using air mod, which is an EPA approved modeling software technique, and they modeled the criteria and non-criteria pollutants. Which the non-criteria pollutants again are the half, so the air toxics and this is and then in addition to the air modeling, they also did some risk assessment to determine if the plan controls would be adequate to protect the community health. Data for the modeling and the risk assessment included the maximum pollutant emission rates from Connells current 2021 permit, just as an example. And then we also did the control strategies, like again, the operating hours, so things like meteorology, some of the control equipment that they'll have in place. And then from the Larimer County, then brought in, Colorado Department of Public Health and Environments Toxicology program to help us evaluate the modeling just to see kind of what thresholds the consultant was using to see if it was complying with the federal and local state guidelines for, you know, screening values and health guideline values to determine if these were below acute and chronic levels known to cause harm to the general public.

Next slide. And actually, you can skip this one too just because Steve went over this and his so we'll just go, we're going to go right into some of these assessments. so, this is the risk assessment for the acute exposures air mod, the air mod modeling was used for this and we looked at the primary haps from asphalt, such as like the formaldehyde, toluene, benzene, ethylene, benzene, xylene. These are the most primary or most common hazards or pollutants, and then we added a couple of others just that are also known to be emitted, but also at much lower concentrations in some cases, and then in my in the second, the first column is the acute screening value levels that the consultant used. And then I brought in CDPHE'S recommended screening levels. So and again, this is the acute. So, the acute levels, the screening levels that are CDPHE recommended are more protective and conservative than the EPA screening levels that the consultant used. CDPHE referred to many of the, and I'm going to use the acronym, but I'll explain it ATSDR MRL levels and this is the Agency of Toxic Substances and Disease Registry and it's their max minimal risk levels for adverse effects for one to 14 day exposures.

So, that's the reasoning for why they are so much lower than some of the screening levels used by the consultant, but the EPA risk screening levels are primarily there just to evaluate if something is significantly troubling with the data, and then you'd want to go in and further evaluate and do we add more in controls, things like that. But all the model values were below the levels known to cause harmful health impacts in the acute. So, then we go into the chronic. So, this is more cancer risk, non-cancer risk for long term exposure and long-term exposure. Several days, several years long, long lifetime type exposure. So again, the consultant used the EPA chronic screening values. That's their column. And then CDPHE I have a couple of I added their primary recommendations. This column is the non-cancer chronic screening. So, you'll see that the values are a lot higher than the EPA's chronic screening levels, but then CDPHE agreed with the EPA screening values for the one in a million risk for cancer. The consultant did use in that second chronic screening column, and again all model chronic values were below the levels known to cause harmful health impacts. Next slide, and I just want to use this picture to kind of diagram our risks. It's a lot of these the thresholds for screening guidelines and these screening levels, these guidelines, they're all health protective values. And they fall more in this green area on this map or on this, I don't know. Is it a thermometer? I don't know. It's like a thermometer. But on this chart and in this green area, we would not expect health effects. A lot of these screening levels are designed so that you're not like the idea not being that, oh my gosh, if you hit that threshold, this is it, you're getting cancer. No matter what the, as we get higher into that red hazard zone with some emissions, that's where we would have to further evaluate and study the actual impacts on the human and things like that. They're the screening levels we're using are more in this lower level of the good just to it's before of true risk really. So even with the results of this, though, we understand there's going to be significant concern in the area. We've got residents nearby, there's there could be odors, there could be unexpected events where we could see, you know, equipment malfunction or something along those natures. So we understand. But we want to be a contact and we are a local contact. For your residents, that can respond. So anytime they see visible emissions such as dust, smoke, steam, if there's odors of concern, you know we're going to be here.

Next slide, I provided some agency contact information. I do want residents to reach out, though. If they do have concerns, we always say reach out to the operator as well, just in case it's something they can fix quickly, but we'll still investigate. So, I want people to know that. So, we're your local contact and we do have a complaint system online and you can call us directly at our front desk, the Colorado Department of Public Health and Environment. Their toxicology department has a tox call line, too. That's available and an e-mail address. This is primarily related to odors, but still a good consulting group to talk to if you have concern. The Colorado Environmental Incident reporting line we that's the 24-hour line and you have the one 800 number. They also have an online complaint form, so if anything happens after hours, residents can get in touch with these agencies we get a lot of still reports with through this, a lot of it ends up being like a car in the _____ River or something? But we also get dispatch 911 calls, so if it's a significant after-hours event, we are part of the dispatch response. So, we actually get calls like if a

facility, if there's air quality concerns because the facility is on fire. Or if you know there's a spill that occurred and it doesn't look like anybody's on site, things like that. So we are part of that dispatch with the sheriff and police system know that the health department, your local health department. But yeah, I think that's kind of what I have for now. And I'll take questions later.

Starter: Thank you, Miss Snyder. Cody, before you get started real quick, everyone, just a reminder, I'll just interject this again, if you plan on speaking tonight, hit the sign-up sheet please, if you haven't already, you can come up and fill that in while Mr. Bird is giving his last few slides here. All you Cody.

Bird: Thanks, chairman. Let me switch in slides here. To the other presentation. And there it is. So, I wanted to just take a moment. It's been a, a pretty lengthy night of presentations. I appreciate. So, I appreciate everyone's patience. I wanted to come back to kind of where I left off. A lot of what you've heard in the presentations were intended to answer questions that were heard, respond to concerns that were expressed, provide the information requested by the Planning Commission to answer these questions, satisfy the concerns and. I thought it was important to also bring you back to the findings for approval for site plan criteria. A lot of the information, while it's good information we're thankful for the folks that put it together and presented it, a lot of that information is outside of the Planning Commission's typical site plan review criteria. So, I thought it would be helpful to kind of just bring it back to your procedures, your findings for approval are A through F, these are the criteria identified in your land use code that you look at and evaluating the site plan. And I thought it would be helpful to go through a couple of these. We went through a lot more detail in the staff report, not appropriate to put all that information in the slides.

So, I know you've read the reports. And I wanted to highlight just a couple of key components of that staff report. So one of the findings is consistency with the comprehensive plan. When staff took a look at this, we started very basic. What does the future land use map say for the town of Wellington for this site? It identifies the site as industrial. There's a large area of the future portions outside of the town identified as industrial. This property happens to be inside the town limits and is also zoned. Industrial has been zoned industrial for quite some time. The star on the map of the right shows the location. The inset map shows a little bit closer, and I also highlighted these are in the staff report as well, but the comprehensive plan includes goals and strategies for achieving the vision of the of the Community, and comprehensive plan was community. Effort with a heavy amount of public involvement to help craft it, and these goals and strategies were identified in the 2021 Comprehensive Plan update, so they're not that old. These were direct feedback from the community. The first goal was ensure new industrial developments are consistent with the town's infrastructure master plans and the town's water efficiency plan. We thought this was an important factor because of the town's infrastructure projects that are underway. Currently. We do have new master plans recently adopted. For water distribution, wastewater collection, stormwater infrastructure and we're trying to kick off a plan for transportation

master plans, I'll come back to the Transportation master plan and. Just a moment, but this the site has been evaluated through the lens of all the towns recently adopted infrastructure, master plans and comments from staff to the applicant have been you must comply with the town's requirements for infrastructure and their site plans were changed a couple of times with staff. To get to the version that was presented to the Planning Commission to reflect those infrastructure master plans. And the water efficiency plan, I'll, I'll note real quickly the water use for This site is primarily for town treated water, just the office building and the associated outbuildings. We from what we've looked at as a staff, limited water demand, there is a lot of water required for dust mitigation. They'll need landscaping, irrigation, water and those are being provided by non-potable sources from off site, so those additional water needs wouldn't be affecting the towns water supply, which supports the town's water efficiency plan.

I also highlighted golf TE 4.1 for the balanced residential with commercial land uses to promote local job opportunities and needed services for residents. This is the only industrial zoned. Property in town. It's laid undeveloped for decades since it was first annexed in 2001, and so it is aptly zoned for the types of uses that are being proposed, and it does create that balance where there has been no industrial development in the town in the past. There we go. So, on the right here, this is where I said I'd circle back to the transportation master plan. The map on the right is the street master plan from the comprehensive plan that identifies County Road 66 as an arterial roadway. In evaluating the site and I'll come back to this. A little bit more on transportation, but in evaluating the site, the applicant was instructed by town staff to design the adjacent roadway in accordance with the street master plan for an arterial Rd. section and their public improvement plans will be designed. To that town standard adjacent to the site. Portions of County Road 66 not adjacent to the site are under the county land use standards or, excuse me, town. The county St. standards and are being designed as such to meet the county requirements. There will be transitions and tapers to accommodate that to make sure that this section of County Road 66 within the towns, St. Master plan meets that arterial standard in the future. That improvement project includes paving County Road 66 from County Road 9 to County Road 7, including the railroad crossing improvements. So that's a significant transportation investment to our community to achieve that arterial standard.

We also identified goals for identifying partners and resources to build a campaign to promote air quality in and around Wellington to ensure air quality is maintained as Wellington. The N Front Range continues to grow. You've heard a lot about air quality. Wellington doesn't have specific standards for air quality. We rely on other agencies for the promulgation of those regulations and the enforcement of those regulations. But in terms of promoting air quality, requiring new developments to satisfy all of the criteria of those standards. Is far better than no mitigation for those things. I think this one could be viewed both ways, but in Staff’s opinion part of the town's role in the Planning Commission's role in achieving this vision is to ensure that all the applicable permit requirements for air quality and emissions are satisfied. I also identified comprehensive plan goal. 2.3 under F&P. That's for

requiring new development to demonstrate how they will connect to and improve the existing networks for active transportation, vehicular traffic, open space and parks, and essential infrastructure for water, wastewater, storm water. It's a mouthful, but that's essentially what this what the site plan process looks at. You probably saw in the staff report they're quite a few comments about. The site layout the roadways that are proposed to be private roadways have to be aligned with the support the future road network infrastructure, the arterial standards the applicant alluded to the counties requirement for the County Road 66 corridor to have a paved. Folder for bike lanes or not for bike lanes, but to support bicycles. And this is also a bicycle corridor identified in the town's transportation master plan for bicycle movements, so that supports the town's goals as well. Also, one of the questions that was asked and I wanted to specifically address the question from a town staff perspective. We've heard comments at the prior meetings we've seen written comments that was presented to the Planning Commission in your packets. The question was really looking at. What are the setbacks required specifically for the producing and curating toxic chemicals language that's identified in the land use code? And in that land use code, there's not a definition for producing and curating, and there's not a definition for toxic chemicals. A lot of the information that was presented to you tonight on behalf of. Antia group Mr. Zemba, from Sanborn head, Leah Schneider from Larimer. Many health we're trying to answer that question on what are the toxic limits. But I also wanted to share this image with you and look at what staff evaluated prior to that.

All that new information being presented and what we looked at initially was this property is owned industrial. The materials identified in the hot mix asphalt. Plant production process include aggregate materials for sand, gravel, recycled asphalt and asphaltic cement. And looking at the interpretation for what is toxic chemicals, that same language category includes animal slaughter and those raw materials don't have anything to do with animal slaughter. But in order of magnitude from a land use perspective, they're really not even in the same category. Considering toxic chemicals, the thoughts that come to Staffs mind are pesticides, Roundup paint, solvents, thinners, explosive manufacturer. None of those things are the criteria that we thought were the intent of that additional setback, and so the aggregate materials involved in asphalt. Didn't trigger any concern for staff for the toxic chemicals. Looking at the setbacks, we were we did identify early on with the board of adjustments process, the 1,000-foot setback for residential and we've included this graphic, the 1,000-foot buffer for residential. So, you can see what that looks like from the source of the emissions. We've also included the 800-foot set back, which was the variance approved by the board of adjust. And we went a step further and we wanted to at least highlight what that 26,140-foot setback looks like on the map and show you where that is impacted in the staff report. We also included additional bulleted information for the other. Circumstances that that 26140 feet applied to, which included schools, religious land uses medical facilities and none of those types of facilities are within any of the identified setbacks, including the 26,140-foot setback. And a couple of the key indicator locations are identified here with dimensions to them to illustrate what that area looks like. So in in this evaluation, what staff was really trying to help answer the question? Why isn't this greater

setback distance being looked at for all those reasons I just explained. And highlighted in the staff report, staff doesn't feel that the toxic chemicals is a factor here. In our initial evaluation and subsequent to that initial evaluation, the information prepared and presented by the different presenters tonight with review by Larimer County Health and Colorado Department of Health and Environment, identified that all of those emissions levels are significantly below the threshold levels that require. Additional evaluation, which staff feels confirms the appropriate setbacks were considered by the Board of adjustment in that particular application. This has been touched on a little bit more by the applicants' presentation. So just to highlight it real quickly, staff did work very diligently with the applicants to address the site layout to try to make sense of their operational needs in context. The adjacent land uses and one of our very first indications was, you need to locate the highest intensity operations as far away from adjoining land uses as you can and the site next to the railroad in County Road 66 was identified as the best location for higher intensity operations. As you can see here, there's additional site elements, including building massing scales, the building massing and scale excuse me to along the West side of the site that helps to mitigate from a visual impact the elements of the and more intense site operations. So this was the. The general layout with input from staff on best layout to accomplish those desires. No, there's the labels, sorry. We'll give that just a pause for a moment.

And the areas here identified are the proposed locations of the earth and landscape berms. Those locations were specifically identified. One is along the West side, the board of adjustments required a 15-foot Earth berm with landscaping. You also see there's a kind of a diagonal northwest to southeast. That's a little closer to the intensity of the operations there. That was an inclusion to further create some separation from the more intense uses. It'll have a more immediate impact on the sound attenuation and the appearance on. The site. It includes an earth berm and landscaping along County Road 66 to help with visual impacts and sound north of the site. East of the site. Along the railroad, it doesn't show on this plan, but the railroad is elevated significantly above the finished floor elevation of the operational. Right. And so, the railroad itself actually provides a significant buffer. To the east. And there's the landscaping graphically that this landscaping is illustrative. The landscape plan in the site plans is more specific as to tree location quantities and species. It was also touched on by the applicants, but we wanted to also highlight some information about the traffic impacts. This is a site plan element because it addresses the impact of traffic as well as the site circulation and routing plans. The image on the screen here is with some overlays on it to help illustrate the red lines we put the arrows on there to help draw attention to it, but this this map was specifically from the traffic impact study that looks at the truck routing plan that as was mentioned earlier includes. Utilizing County Road 66 and arterial roadway N on County Road 7, which is a community corridor and an arterial roadway to Owl Canyon County Road 70 and then to I-25. That truck routing plan was evaluated by C dot Larimer County Road Bridge and town of Wellington staff and engineering staff, and was agreed upon as this was the appropriate route according to that plan. That is all the traffic from the site except for like employee vehicles. It was mentioned that a number of employees. Live in town, so there will

be personal passenger vehicles that do drive from town to the site and vice versa. The truck traffic would be limited to this truck routing. Plan with the exception as the applicant pointed out, there may be local deliveries for a parking lot or driveway that would have to utilize down streets. We did hear the concerns from the public at the prior meetings that this could create traffic impacts to our intersection with I-25 in Cleveland and impacts to Eyestone Elementary School campus. And the truck routing plan will specifically be enforced to keep those trucks off of those roadways.

And on site this doesn't show it particularly well, but the highlight here is the main entrance was specifically identified as the area on the farthest West side. This was identified by staff. The roadway creates a. A distance buffering of itself, where site operations can't be located closer to the property line because of the existence of the road, then includes the. The burning and landscaping and all their site circulation on site is within the Burman and landscaping to help mitigate there's a security fence and gate enclosure proposed by the applicant that's shown on the site plans and all their truck traffic is designed initially on this site. See if we've got labels there. The primary access is getting from their from the County Road 66 onto the site to the most intense operations by the silos and minimal access by the aggregate piles and their maintenance shop, such that the truck plan can be enforced and one of the county's suggestions, or one of the counties questions was. How are we going to limit truck traffic from going West off the site to County Road 9? And the response from the applicant town staff was we think this would be best designed as a left in right out. To reinforce, the trucks are not intended to make that westbound turn towards County Road 9. So that's part of the.

Well, that actually was the last couple of slides. Sounds like we might be getting back. I'm not back. On though. Well, that's interesting. I'll try and get back in while I continue to speak the. There's only a couple slides left for me and the next slide was on architecture. That was one of the questions that came up with the last meeting the applicant is proposing buildings. That are reminiscent of industrial light industrial design buildings. They're primarily stenosing metal clad buildings. There was a desire express for four-sided architecture through the site design and site layout. Town staff made the recommendation that. All of the requirements of the Board of Adjustment and the intent of our landscape and screening requirements is to mitigate those. Views from public view. So put them behind Earth and berms and landscaping. But we specifically said you still have your main office headquarters here and we don't want that hidden behind the berm. So we specifically asked them the berms and landscape to be modified to make the main office visible from County Road 66 and that building would have a higher degree of architectural standards applied to it, because it's the main office and visible from the roadways. The other structures are intended to be hidden from public view. So the slides just had some they're in your packet as well, but the slides had the example architecture included on those for your site plan reference.

So, the last slide following the building architecture was staff assessment and conclusions and to be brief and summarized that the staff assessment is that the

proposed site plans follow the criteria findings. For approval Staffs, evaluation supports that the findings are sad. Side and the site plan review, although we haven't spent a lot of time talking about the details of the use standards and design standards staff has gone over that in great detail with the applicant and they've addressed all the Staffs, comments and concerns and so Staff's recommendation is that the proposed site plan. Satisfies the criteria and staff is in support of approval for the site plan based on those criteria. I'm happy to answer any questions from a staff perspective and I think this might also be a good time if you have questions regarding the other materials that were presented tonight.

Starter: Thank you, Mr. Bird. It is, there's going to be some board discussion up here. Question and answer if any of the presenters, if it falls to you to answer any of the questions, please just come back up to the podium, speak clearly in the mic for recording purposes. And so, the audience can hear you. But we'll, I'm sure we have some questions ready. So just kind of be prepared to come up and answer if it falls to you. We'll go ahead and open it up to board questions. Who wants to go first? Go ahead, Lisa.

Chalet: Okay. First question, Cody. Is this an elevation?

Bird: Yes.

Chalet: What is the height of this building?

Bird: I will see if I can answer that, your question is what's the height of the office building?

Chalet: I'm assuming that's the elevation here, yes? I mean it's not a typical like architectural elevation but…

Bird: Seventeen and a half feet I think is what the label says. It is a little blurry. My apologies for that.

Chalet: It's tiny, I'm old.

Bird: My apologies to the rest of those details are in the site plan packet I don't have that one in front of me, but. I believe it says 17 and a half feet.

Chalet: And that's from the highest peak

Bird: Finish Florida parapet is where you would typically see those dimension labels.

Chalet: Okay, because I'm looking at this. And so that's as one of the demonstrative plans this, okay.

Bird: And to if it helps with the question, I'm sorry I don't have the specific dimension for that, but the what the applicant had expressed previously was it's a big lift to do full architectural plans for buildings that haven't been approved yet from a site plan

perspective. So, we would expect to see full building plans and renderings for building permit. It was staff's recommendation that in the absence of full architectural plans, that exemplary photos would be would suffice because we understand what a sanding sheet metal building would look like.

Chalet: Okay, well respectfully, it is actually a requirement for a site plan review for elevations and renderings. So just. I just want to state that for the record, so I'm not trying to beat a dead horse, but the reason one of the main reasons is the height of the building, which is a requirement for approval on a site plan. Is that it has to conform to this land use code for HI, right? That's one of the development architectural requirements. So, my question would be. On these other buildings. Well, I don't is the fueling station is in a building, I assume, right, your maintenance shop is that height going to be consistent with your administration building or is it a little higher?

Lee: Thank you, the maintenance shop would be slightly higher as 16-foot doors and then above that, so it's about. 22 feet.

Chalet: Okay, so you now, do you understand why I kept asking?

Lee: Totally understand.

Chalet: And material storage?

Lee: The lean two is just 16 feet.

Chalet: Okay, so well within the height requirements in the in the land use code. Yeah, 45 feet.

Bird: Five is the height limit for industrial.

Chalet: Okay, well, 70 for the silo, that's another building. So, here's my question. So, I haven't driven out to this site, but you said that the railroad tracks are significantly higher. Excuse me, I'm talking to the applicant. Thank you. My question is does the railroad then provide somewhat of a natural berm?

Lee: Correct, what you have from the site at the railroad. So the railroad is not elevated, it's cut through, but there is a 22 foot elevation difference from what would be the existing ground up to the top of the berm, and then that drops down for the railroad tracks. But it is 22 feet in elevation difference. From what is basically the flat ground of the site to the top property line adjacent to the railroad, does that make sense?

Chalet: Yeah, so then the material storage building in essence would be hidden if you were on the other side of that looking dead straight across, right?

Lee: Correct.

Chalet: Okay, somebody else has a question you can you can come back to me.

Carmen: I've got a clarifying question. Cody, you said the administrative building would not be behind a berm, but I've just got a question because on page 13, it shows it's behind a berm. Page 13 of the applicant's presentation.

Lee: That there's a five-foot berm that's landscaped. Which is what was requested. So, if I wish I could pull it up and point.

Carmen: But it does have a small landscape berm around it.

Lee: Yeah it shows…

Carmen: Is it a 10 foot? Okay, that's correct, okay.

Bird: And, the intent was to and thanks for the clarifying question. As I mentioned before, Staff's request was to not hide the main facility entrance with the offices and the part that we would typically want to be attractive and visible from a roadway. There would be still be some permanent and staff recommended that to kind of follow the natural. Or create a natural land form pattern so it's not just a flat site. So to mimic the undulation of the other berms on site and still provide some aesthetic quality and landscaping.

Carmen: That makes sense. And then question on the storm water. And this may be for Jill. On the stormwater report out that you made was that taking into consideration the effect that those burns would have on channeling water on the property?

Jill: Yes, that's correct. So, all stormwater is routed to the detention pond from the site. So anything we, we channelize it, it's conveyed across the property, it's conveyed in ditches on site, it's conveyed in pipes and all of it routes over to the detention pond.

Carmen: And then what about the effect of the berms outside of the actual site? Like towards the street?

Jill: So, all of the ditches on the north side of the site are conveyed to the West and then they conveyed down to the South side of the site. So all of that is still matching the existing flow. That's a requirement.

Carmen: So that will be collected even at the street side of the berm that will be collected in your detention pond.

Jill: Correct. Yes, because it's all conveyed it. It all matches the historic flow. So, the road this the private road that runs North-South conveys the conveys water. I believe it may be crowned. And I we haven't worked out all of those details yet with the engineering department, but that is one of the criteria that any impact from the site would be conveyed to that detention pond if it matched historic flow rates to go in different direction, it would still do that. So, we can't change the historic flow.

Starter: Thank you.

Moyer: This would be for staff on page 36 of the whole packet setback separation exhibit. Can you tell me, confirm and then tell me why we're measuring setbacks from I understand this is the highest point of activity on the site and where the chemicals would be, just the process would be taking place as far as the Red Square. But, it appears to me that we're measuring from that spot for both the 800, the 1,000. And then for your. For the school and the park and everything else, including the 2,640 foot radius. So A is that true, B, why? I mean, we don't measure the setbacks for a marijuana store by the counter, where the goods are stored so…

Bird: You do.

Moyer: You do?

Bird: Yeah.

Moyer: It's not from the property line.

Bird: To answer the questions the what was looked at was what is the industrial land use and that's the operational element of an asphalt plant. The office is the buildings. That's not the intense use. That's why we specifically asked the applicant to locate those on the West side of the site. To help mitigate the and buffer down from the most intense uses to offices, mechanical shops, landscaping and screening to help transition that down back to the adjacent land uses. Your other question on it's a little off topic, but marijuana setbacks are measured from the front wall or nearest wall of the building to the other protected use.

Chalet: And that was built specifically into the ordinance for marijuana, which is why it differs a little bit from this.

Bird: The yeah, the marijuana regulation was specifically written and adopted via referendum vote, so that language was very specific to that use. It's not necessarily the standard, so that was the just trying to address the question for Ms. Moyer.

Moyer: So to clarify or I guess an additional question then, are there other? Instances where you do measure from the property line.

Bird: Typically you measure from the property line of the. I'll call it the protected use the use that you're trying to shelter from a more intense use. For an example, the board of adjustments has heard a couple of other variances for the setbacks, and they looked at what is the protected buffer. Property that needs the buffer. Led to it. And where was the closest intensity of that use so they weren't looking at parking lots and landscape and other things? Because that's generally not considered to be offensive to that would require screening, buffering and separation.

Chalet: Okay, can I go back to stormwater for a second? Okay so on page 15 of the packet, which would be part of the staff report. It indicates town engineering may or may

not have determined the stormwater plan compliance with the stormwater master plan. It says town engineering has commented that the site design is or will be made to comply with the applicable town stormwater drainage criteria in the town's adopted stormwater master plan. And then on page 18 under drainage. It says the drainage report proposes surface flows across the property to a detention basin located in the southwest corner. The basin location in the lowest area of the property conflicts with the required earth berm, which must be relocated. And then on page 24 under letter D for findings of approval, it says the proposed site grading is consistent with the requirements of any applicable adopted storm drainage criteria or master drainage plans. So my question is or my statement. It's unclear if we're definitely at a point where an adequate and final stormwater plan has been identified and approved by town engineering. So, I want to know if this is approved by engineering. This is the plan and it's not going to move.

Bird: It will move. That's part of the site plan process. The town engineers are the reviewing agency and authority for the town's engineering standards. And a site plan review. The applicant presents a site plan that shows all the massing, all the grading and the stormwater improvements. And there's a cycle of review and response for comments and what you're seeing is the engineering department has reviewed the site plans that that, that the town standards can be satisfied. There are some still. Some coordinations that need to take place too. You saw the second bullet you pointed out. Was the planning comma. That we require berms along these areas and there's not a berm shown. Currently, it's where a stormwater pond is located, so there needs to be resolution between the burning and the stormwater pond that will result in adjustments to the stormwater design and the town engineering staff will review that with the applicant to ensure it continues to meet the town engineering. Standards, but both the town engineering department and the planning department identified that the town standards can be satisfied. That's really more of a design element to make sure that the final adjustments meet correct elevations. The outflow structures are designed properly, or if this plates meet the correct design size the slide gate. That's proposed for water quality control meets all the optical engineering standards, so you're seeing the you're seeing the cycle of review and comment, but the all the engineering and planning departments agree that the that the stormwater criteria will be satisfied.

Carmen: And with respect to the berm? Around that detention pond area and the maintenance shop it, it seems to me that that actually produces a higher the maintenance shop anyway produces a higher barrier than the berm would anyway. Right.

Bird: Yeah.

Chalet: So, do you foresee these buildings being moved?

Bird: Not significantly. Even the even your site plan procedures allow for an administrative adjustment to of a minimal degree to adjust to unforeseen circumstances on the site. So, there are still instances where things can change, but they would be insignificant changes in the scheme of the overall site plan and

anything that exceeds an administrative level review would be reported back to the Planning Commission for consideration.

Chalet: Okay.

Starter: Anybody else?

Chalet: I don't want to hog all the time, you know, I have lots of questions.

Starter: Well, now is the time, if you've got more let's do them now.

Chalet: So, I know that you in the staff report on page 17, you indicated that the sign process would be done under a different application. Is there any particular reason because we did the sign issues for the smoking cowboy at the same time.

Bird: The you're talking about the like insurance, fines and monument signage and the Planning Commission has to approve the locations of monument signs, even for the other example you expressed, we don't have the final sign package a lot of times in development, the applicants will adjust to the sign plans. Until the day they pull the permit for them because they're. Looking at lines are expensive. Hate to say it, but they're expensive and a lot of times the applicants realize what we've shown on the plans. We need just squeeze that size down because it's costly to do it that way. And so, a lot of those adjustments are made by the applicants and staff. Does an administrative review of all sign permits to make sure that it complies with the applicable signed standards? Planning Commission review is generally looking at size, scale, massing, placement for free standing signs. And so, for this particular application, one of the primary sign concerns was to not put any signage on the silos, which was a requirement of the board of adjustments. Additional signs for the buildings haven't been discussed by the applicant. At this time.

Chalet: On page 44 from Detesko. In the packet, but it's a letter to you under photometrics it says the bash plant and site will not have night operations and therefore all lighting will be limited to employee safety and site security. Now I recollect that in an earlier packet there was an indication that there would be occasion for night operations. Sorry to make you get back up.

Lee: There will be limited night operations only for specific projects that require it, so C dot again won't allow paving on the Interstate during the day. Those type of things, very rare, but it will. Be project specific night operations last year at our plant we operated for six nights. If to give you an example.

Chalet: But the lighting. Stays substantially the same?

Lee: Correct.

Chalet: Okay, Cody, so you might be able to answer this one for me. On Pages 89 and 91. This is regarding item 4. Potential material spills as a result of trucks traveling to, from and on the property will be sufficiently mitigated and then this would be from

Ms. White, so it identifies Colorado revised statute 42-4-1407 as under state law, now would be required to provide clean-up for state highways that, and I'm unclear, but I read the statute like I looked it up if and I'm assuming state highways is not the same as county roads and town roads. So, the statute doesn't actually cover county roads and town roads, am I right?

Lee: What's your question?

Chalet: The question I had posed before at a previous meeting was about what happens if, for whatever reason, I mean somebody spilled pigs out of their trailer today by my house. So things happen but if for some reason the concrete with an asphalt concrete. Is that the right word? Got spilled on County Road 66 and I understand it dries and then it can be cleaned up. Who's responsible for that, and how do we know that it's going to be taken care of because it isn't covered under this statute? That's quoted here by Ms. White about state highways. So, I want to know is now responsible for cleaning that up? Is the town responsible for cleaning that up? And how are we sure that that, like, what's the plan?

Bird: Are you talking about on the site or off? It sounds like you're.

Chalet: Off site, adjacent roads, not state or federal highways.

Bird: It is a different concern because we're talking about a site plan review and I don't know that any of the site plan criteria are affected by offsite roads.

Chalet: Well, I would like the opportunity to address the information that was given to us, yeah?

Bird: I think it would be the responsibility of the if the town spilled equipment off of one of our vehicles, it would be our responsibility to bring it up. Otherwise we'd be littering, I believe. I don't. I'm that's not a statement of fact from a law enforcement standpoint, but I think common sense would tell us that if we, if we spill something and leave, it would be littering or dumping. And so, it is the responsibility of the spilling party to clean it up.

Lee: I'm happy to take that one if we're responsible for it. We'll clean it up.

Chalet: Okay.

Lee: I mean…

Chalet: I just needed some clarification because it was provided in the information that's all.

Lee: Right. We, that's our obligation, that's all.

Chalet: Okay.

Chalet: Okay, so on page 12. For the noise modeling. That's like way back, sorry. And I saw this on subsequent the report from the person that performed that. It recommends. Adequate earthworms to contain the noise, and I understand that. It doesn't sound like it's really going to be all that loud, however, in the spirit of upholding my duties as a planning Commissioner, my question is, did they at any point indicate what that adequate height would be? Because I did see in other places where you're proposing 10 to 15-foot berms, but the requirement is 15 by the board of adjustments. I guess I'm a little confused on that.

Lee: The board of adjustments was a 15-foot berm along the West side of the property where there wasn't a structure impeding that. So that's why there's a 15 foot on the West side. Throughout the noise studies, they measured on opposite sides of our berms and our existing facility, which are in the magnitude of 5 to 12 feet and saw a significant drop in. Sound from one side to the other, especially along the I-25 quarter. If you really go look at some of those maps and look at those designations, you'll see significant changes in decibel levels from one side of the berm to the other, especially along I-25. So, I would say they are sufficient. And that's the intent.

Chalet: Okay, but they weren't specific about a height. They were just saying. Okay, correct. And. Is the intention to put so when I was looking at the map or the detention? Is that what it's called? Detention basin is. I know that it shows a berm that goes around that maintenance shop. Would it be? Redundant or pose a problem for there it to actually go down and curve on the outside of that detention pond. That way if you're. Southwest of the facility, say at the northern point of the Community park, you would see the berm, not a maintenance facility, or is that property dropped down so much such that you wouldn't see it anyway?

Lee: I think it has to deal with the drainage issue through there and Jill, you may have to correct me if I'm wrong of putting a berm there, but it's also there's an existing emergency access Rd. that comes through the site and that's going to be changed to the outside of the site and allow there's multiple reasons for that. The North put irrigation Ditch Rider uses that road. For his act. Access its emergency access to the Piper Industrial Park below, so fire would access through that and then it'll be a that's also the easement for water and sewer lines coming into the site and through the site. And you don't generally want your water lines buried any deeper than you have to for operation and maintenance reasons, so. There's multiple, but that's why we added the diagonal burning on the other side of the maintenance facility to help kind of layer that screening and offset the view of the plant.

Chalet: Okay

Lee: Other than that, the lean to yeah, the lean two and the shop buildings are help do that. And again, metal buildings with Wayne. Coat trying to make them attractive so and landscaping.

Chalet: I get it. No, okay, that answers my question on that, thank you.

Bird: Mr. Lee, just to add to that, I think that was one of the things that we had also highlighted was the diagonal berm kind of from northwest to southeast in the middle of the site was added because there were some areas that didn't have that full mitigation. More sights and sounds so that middle brim was added to help address the same concern that you were identifying with that selfish.

Chalet: Okay, well and without having driven there, I wasn't sure I understood it to be a little bit lower, but I wasn't sure what that actual differential was, so. Might actually be almost done.

Lee: Okay

Chalet: Okay, traffic impact study question. Way to 934 page 934. Which is this table. That addresses the comments both from CEDA and Larimer County Engineering. As far as the bicycle lanes, which I do appreciate. It being 4 lanes. What is so my concern is and I think there was a concern written about it in one of the traffic studies from Larimer County or something. Is that that's a heavy truck route, right? Obviously, that's the intended purpose and four-foot lanes are nice. But I know that. Both the federal and State Department of Transportation goals are Vision 0, which is 0 deaths and zero significant injuries, and I'm wondering, would it be possible to do the white pole thing along that line? Like not this close, but you know. Just to really designate that this is not a place for trucks to pull over, do any of those things so that we can keep the bicycle as safe. Since Larimer County identified that route as a bicycle use route, I don't think. It's cost prohibitive. It's just that is something that I would want to know.

Bird: And Mr. Lee, I don't know the answer to whether or not that meets a specified standard for. I know there's not a town standard for that type of application. We'll check with Larimer County to see if they have something along those lines, but that that's not a typical application, so we'll have to look into it and see what alternatives are.

Chalet: Available just looking for the bigger picture. Right down the road or God forbid, somebody gets hurt. Then we think to do something to mitigate that. We'd like to just prevent that.

Bird: I understand the intent. We'll certainly take a look at it and have those discussions. Is the Planning Commission acceptable if town staff evaluates those options and finds that there's not a standard that can be applied to that particular? Scenario that we follow best engineering judgment and standards. OK, we'll ask those questions and see what we can come up with. Thank you.

Chalet: Okay, I think that's all I have for the moment.

Starter: Anybody else on the board? Any questions for any? Of the presenters.

Carmen: Alright, I did. Again, there's one quest. So, you're going to be trucking in water. You don't have an Ag well on that property. The water did not come with the land obviously. It's you'd use it if you had it.

Lee: I wish it did, but it does not. But we do have adjudicated well specifically for that that we do own and can draw that water from in two different locations.

Carmen: Okay.

Lee: So we do possess the water.

Carmen: And I added just against not more of curiosities. What is your timeline for? Obviously have a current plan and I didn't. I don't. Not sure if I heard at any point what the time frame. Is for.

Lee: This is taking a little longer than we had anticipated, which is OK, but our goal is to be under construction in in late 24 and be operational by April or May of 25.

Carmen: Thank you. And I guess this is a question for the Larimer County Department of Health. Is that again some of the stuff is the air modeling and you know? All that I mean, it seems like they were using the EPA best practices for. I mean you've looked at these much. Or well then, I never have. So, I mean, did you support their study methodology, their analysis and conclusions? Is it pretty again, typical to what you see and it's sufficient to answer the questions.

Speaker 6: Yeah, because it's we're looking at this as like a preliminary analysis because things may change when they go to the plant, but. The same emission thresholds are expected for the same operating permit. They're going to have the same material they're actually going to some of their things they're proposing will actually improve the emissions. So overall, the emissions will change and improve when we see the new plant come in. But yes, EPA screening levels are standard for doing a preliminary risk assessment. For community members.

Carmen: Thank you.

Starter: Okay, if we don't have any other questions from the board. Assuming we don't alright guys, Lisa.

Chalet: Okay, one more question. I sorry, last one. Okay, noise modeling and I'm not sure who can answer this, but one of the comments was. The geographical and natural sound profile differences weren't taken into account between Tim and Wellington, and so I'm wondering, so how does the sound pressure theory factor in doing that modeling change because of the difference in geographical and natural sound profile differences?

Lee: That that's a technical question, but I think what I can answer though is what we saw from the two different studies is the background sound in Wellington was actually higher. And so that that was where it was a bit of a challenge. It was above

55 decibels with no activity on the site at the Wellington location, which made it difficult for those. To incorporate the sound levels from the Timnath site to Wellington, because it's actually louder in Wellington. Does that answer your question?

Chalet: I mean, I guess sort of. So, the expectation is that if it's louder here, it's because sound travels differently here, it's crazy, I know.

Lee: It's just more background sound from whatever that is, whether that was wind during that day or other things in the environment. But it was just it wasn't that. It was that it was just above the 55 decibel where their background sound. And Tim, with was less so they couldn't necessarily bring everything over and say this is what's going to happen. So, we just looked at the sound carrying at Tim to and we're able to see what we lost over those. Over a distance with from our loudest piece of machinery.

Chalet: But you're still confident, even with the different sound profile, that the berms will mitigate.

Lee: Correct.

Chalet: Okay, thank you.

Starter: All right, let's do a 5-minute recess, guys, before we come back. For public comment.

Starter: Has everybody signed in that wishes to make public comment tonight? Okay, if you get to the end and decide later you want to, we'll still allow it. It's not a problem. I have the sign in sheets. We are just going to be fair and go right down the list as everybody checked in. We're going to limit it to three minutes. At three minutes, if you feel need an extension, I'll ask we'll discuss extensions as we go. So first one up is Jared Cordell. Jared Cordell, you out there? Okay, must not had been important. Matt Keppel.

Goepel: Hey, guys. Thank you for taking my comment. Matt Goepel 9015 Raging Bull Lane in Wellington. I guess I just have a bunch of questions. I don't have any real set speech. So, it's my understanding this is right to use Connell has fulfilled all the gone through all the regulatory measures. So, if it this isn't passed, they're going to sue the town of Wellington. That's my understanding. Is that true? Can anyone answer that for me?

Starter: Public comment period is not a question answer session. I'm sorry to tell you this is comments only.

Goepel: Okay, thank you. Okay, Mr. Bird, you were talking about the vision of this town and what goes in line with the vision of this town. I live in Buffalo Creek. Do asphalt plants near your neighborhood increase property values? Is that in line with the vision of the town? Is that in line with the vision of the director of the Planning

Board? So, Connell brought their heavy hitters. I mean, there was a lot of data about how clean asphalt plants are. You know. I don't. I don't have a whole lot of faith in governmental regulatory bodies, so that doesn't really mean anything to me. I mean, look at what the FDA approves the cancer causing crap in our food. Want to talk about photometrics light pollution traffic carbon monoxide was thrown out there, so 250 trucks just for the landfill semi-trucks. I can't remember what Mr. Warren said on March 6th. How many trucks would be coming down out Canyon Rd. down County Road 7. Maybe you can answer that in a bit. That is a lot of semi diesel pollution. Warren mentioned earlier that he had gone to the neighboring properties, where the site proposal is. I asked him if he talked with Harvest Farm. He said no. He made it seem like Harvest Farm was miles away. No, it's probably a half mile away. Owned by the Denver Rescue Mission, it's a Christian organization that is sober, living and has homeless people there. It's essentially a residential area. Miss Moyer. On the March 6th meeting you mentioned. A charter of this body, a mission statement. I would ask that you repeat that because it's really good. And that's all I really have. Thank you, guys, for your time. Appreciate it.

Starter: Thank you Matt. Okay, next up is Erin Lines and then on deck. I'll go ahead and call on decks too, so y'all can get ready. It's Andrea and I apologize. I can't make out the last name, but the address is 6527 cranesbill you're on deck.

Lines: Hi, my name is Erin Lines. I live at 330. Mammoth court. Thank you, guys, for letting me speak. I wanted to go back to somebody's claim that there is no definition for toxic chemicals and the land use code. You've spent a lot of majority of this time presenting to us. Toxic chemicals and using EPA as your source for regulatory body as a source of your the regulatory body. So also, I found it interesting that you said there's no significant health risk or almost nothing for health effects multiple times in your speeches when you're presenting these chemicals to us, which I found interesting verbiage. So, I'm going to use the EPA as a source as well. The EPA recognizes these asphalt chemicals as toxic. So, these are chemicals that are. Produced in the manufacturing of asphalt, formaldehyde, hexane, phenol, polycyclic organic matter, and choline, to name a few per the EPA. Exposure to these toxins may cause cancer. Central nervous system problems, liver damage, respiratory problems, and skin irritation. OSHA and similar regulatory bodies in Europe and Australia recognize these components of hot, hot batch asphalt it's having the following health effects when exposed, skin rash, fatigue, throat, eye irritation, respiratory disease, cancer, insomnia, etcetera. OSHA has a quantitative risk assessment that estimates significant risk of lung cancer among workers, providing suggested exposure limits proving that exposure does equal risk. The EPA determines the toxicity of a substance referring to its potential harm in living organisms. The above side effects and disease would obviously be defined as harmful. You've acknowledged these substances. Being used, produced and emitted in your slides over and over again. Going to some studies appealing to the property values and farm to health and communities. A study entitled Environmental Health Risks and housing values, evidence from 1600 toxic plant openings and Closings. In summary, plant openings led to 11% declines in housing values within a half mile or a loss of about 4.25 million for these households and the plants operation is

associated with an increase in the probability of low birth rate. In one mile, the toxins studied are the same toxins you have brought up in these slides. Benzene, cumine nickel lead Tulane, which are toxic chemicals the EPA recognizes are produced by asphalt plants. Take note, these studies found the deleterious effects when communities farther than the proposed setbacks were studied, proving the setbacks that you've proposed to us are not even adequate to protect us. In conclusion, we must follow the science and land code use to guide us in my research. Any of these setbacks are not sufficient to protect us. Therefore, I stringently support Wells County ability to accommodate Connells. Connell, in the one to three industrial Zone District, please put this plant far away from communities. There's sufficient data to prove that this would be in violation of the land use code based on the science, the asphalt production does produce and curate toxic chemicals. And one other thing I would like to mention that was brought up in a previous meeting in May was the how a fire would be handled. It's happened on canal property.

Starter: Thank you, Erin. Hey, Andrea, up on deck, Richard Clarke.

Tax: Thank you, Commission. My name is Andrea Tax, 6527 Cranesville St. and I noticed in the slides that you showed the site plan showed discharge to the north. Pooter irrigation lateral and I just wanted to make a comment about whether that water was actually being shepherded. To the natural waterway, or whether that would be diverted by north through irrigation and whether the source water. There was. I know you had mentioned coming from an adjudicated source. If that adjudicated source was in fact adjudicated for use at the proposed site. Thank you.

Starter: Thank you, Andrea. Okay, Richard Clark. Okay. Thank you. Matthew Mullett, next and on deck, Donna Rodriguez.

Mullett: I'm Matthew Mullett, 3925 Water Lily. I own business businesses in this town. I care about this town. I think that one of the things that we're overlooking is this is good business opportunity. This is not sacrificing the town. This is good for the town. It's going to bring other businesses. And we're not giving up any health related stuff for this, but better yet, our home values are gonna be good because of other business streets and everything that comes from a good company that trying to pour into this place. My concern is I care about the town as in the growth. We want businesses. People want nice restaurants, they want different things. This is one way it starts and of course I would not sacrifice any health reason for that. Fairly close to this location, so. I'm not. I'm not opposed to it. I think it's great and I appreciate the applicant’s effort, what they've done to. Just try to go beyond and make sure that this is good.

Starter: Thank you, Matt. Donna Rodriguez up Risa Connery on deck.

Rodriguez: Hi, my name is Donna Rodriguez. I live at 7351 Viewpoint circle. I have called Wellington my home for 23 years. When I moved into Wellington County Road 64, which is. What I live off of. Was not paid. I had to drive on a road dirt Rd. with

hundreds of debits every day. And then I decided I better just drive through town so I could drive. On a paved Rd. And then then I was hoping that one day they would pave that road and they did eventually and that. Was called growth. I have also worked for Conal Resources for 27 years. Ten of those years were right next door to an asphalt plant. I have not heard of one person getting sick in my 27 plus years with the company. Because of working by an asphalt plant, I have never heard of any health problems. I have never had any myself. We have heard several people talk about being experts in the field and. Concerns with the environment and stuff. But a lot of that information seems to be misinformation. When I googled the fact. Of diesel trains which go through our town at least twice a day. It had a lot of the same. Things mentioned the toxins and emissions from that. But are we going to stop the trains coming through the town? The Buffalo Creek neighbors say that they're worried about the smells and emissions. Yet they weren't worried about those things when they built their homes right next to a dairy farm. Well, have said that, Colonel Resources has a history of non-compliant with the rules and regulations. They have had exactly one. Non-compliance in 30 plus years and that was. For stopping a test, which was. Which was failing due to a mechanical malfunction and it was self-reported. People are worried about the emissions from the trucks. I was told by our truck boss. That all but six of the 22 trucks that haul. Are classified as low emitting vehicles by the state of Colorado. Several people have said the board. Has made-up their minds already. Without listening to the people and what the people of the town want. Well, the majority of the people. Who are against successful plan done the exact same thing. They're not listening to any of the facts or studies that have been presented. They've made-up their minds already. Connell is a family employee owned company. It's not a corporate company that doesn't not care about the people in the town and the employees that work for them. You will not find a more reputable company to have in your neighborhood. Thank you.

Starter: Thank you, Donna. Okay, Risa Connery up, Lisa Clay on deck.

Connery: All right, can you guys hear me in the back? Okay, great. So just starting with something nice. Thank you to Connell for commissioning the studies and to the town for listening to public comment and to some of the Commissioners whose questions made it clear that they reviewed the packet and all the information. Really, really careful. So, one question I have is why a heavy industrial zone is directly adjacent to a residential zone? Why there's no transitional zone in between seems like odd planning. I also had a question about the setback of 1000 feet, why it's 1000 and then was reduced to 800. Rather than the 2640, so Mr. Bird indicated that the town didn't have any definition of a lot of toxic chemical was and staff didn't feel that the chemicals emitted were toxic, which? Seems somewhat unacceptably vague to me. And they voted on those variances back in October 2022 before. I've before there was any communication. I mean the only reason I even knew this was happening is because somebody put a flyer on my door before the March meeting. So I feel like the communication to the Community could have been better. This is a comment from Megan Mullen, who according to the town website, is on the Board of adjustment. She asked in her comment why there was

no environmental impact study or remediation plan. She stated that these are normally a part of the required plant planning process for other municipalities, but not for Wellington. Regarding some of the data that went into the studies, the Sanborn slide had a windrows chart. That didn't really make sense to me. It looked like there was no wind coming from the West or very little, and there were no winds higher than 15 mph. If I interpreted it correctly, so I'm wondering where those data came from, because they seem to be inaccurate and if all the assessments that followed were based on faulty data, then I would assume that those analysis. It might also be faulty. Similarly for the noise study. Maybe I misunderstood but. Was it said that that those data came from just a single day and that maybe that was a windy day? Maybe I misinterpreted that. I'm wondering if there was an economic study looking at the projected impact on residential property values. I think that would be. Really helpful. UM. And I'm curious as to whether there's other third-party expert review of these reports and studies, aside from Larimer County Department of Health and Environment, I think that could be really helpful. And just to conclude, I think that the packet shows that the majority of Wellington residents don't want the Connell plant located next to our park in neighborhood. I'm not opposed to asphalt plants or Connell. I have nothing bad to say about the company. I just don't think that this is a good location for it. And I also wish that there was better communication. By the town. To residents.

Starter: Thank you, Risa. Lisa Clay up. Nancy McKay deck.

Clay: Good evening. Thank you for giving me some time to talk. My name is Lisa Clay. I was here three months ago and I am the owner of the property. So today, many of you have talked about why now and I say well. We've owned the property since before Buffalo Creek was there. It was, it was zoned industrial since before Buffalo Creek was there. We haven't changed. When I spoke last time I after I spoke, I sat down and somebody behind me said oh. She just cares about the money. Honestly, we haven't even had the property up for sale. If I cared about the money, I'd have tried to sell it. 5-6 years ago, when property values and industrial land was really important. Connell came to us and asked. They happened to have a need and they happened to be one of the best. I would say family owned companies in Larimer County. Looked at the zoning fits everything that they wanted. Went through the process. So, I'm not here about the money. I'm here about the principal at this point. We've been in, we've been in Wellington for 40 years. We were there when that road was dirt. We were there when we, you know, had to literally sometimes take a crane to bring a trailer in because it gets stuck in. And we actually bought the land from County Road 64 to 66 in order to build that buffer. From residential to industrial. And then. After we bought it after it was zoned. Buffalo Creek king. You guys, had you read your stuff? Had you looked into it, you could have found out what the zoning was and what the allowable uses are. So now to look at us and say that we're doing something wrong. Doesn't make a lot of sense to me. Doesn't seem fair. OK now. Your choice. You guys have that choice, but they have presented a bang-up plan and have presented you the facts to show that what they will do will not be harmful to that Community park. We have quite a few employees that live in Buffalo Creek. The last thing we would want to do is harm them. The last thing.

We would want to do is harm them. So when we look at this. Our whole comment is. If you had an issue, why did you buy your house in Buffalo Creek? Seriously, think about it. Because you wanted to live there. You wanted to live there, which I understand. It's a nice neighborhood. But it was zoned industrial next year, next to your place. The whole time you bought your house. Thank you.

Starter: Thank you, Lisa. Nancy McKay up Jerry Brown on deck.

McKay: I'm Nancy McKay. I live at 3808 Roosevelt Ave. I want I had a lot of things written here. I've learned a lot tonight. I appreciate a lot of maybe he's letting me speak. One thing I did want to say to the first gentleman that spoke, they're not going to sue this town because they're in a simple real estate agreement with the contingency we've all been in them. I was in on an assessor's board in in a real estate for a long time. If this falls through, they're not going to sue the town. We have enough on the Adjustment Board and I'll tell you tonight we have secured a lawyer. We will be filing against Adjustment Board through the town of Wellington and they will be notified by the end of next week. I know that there was a dress, there was a woman I didn't get to sit up front. I'm not with Connor. I had to sit in the back. I am a resident of Wellington. There was a lady here, so I couldn't see. She said that, and I think I wrote this down. I think that she said that the question is not. The zoning that's already been decided. The question is not whether asphalt plants is the right for this site that's already been decided. It has not been decided. You are a toxic emitting company and when your seller and when all of you come up here and you're paid people that you have brought here tonight, congratulations on doing your own studies. I mean, really, that's good job. Excellent, excellent. I I like that move. I like that move. I actually like being in court, so I'm OK with this. But when you know you have, you have brought up things. We have a situation with your variance through this adjustment board, and there's gonna be 100 things this lawyer is gonna do. In this, when you have a setback, and in this town. It includes it says that all permanent fixtures and in our town set back requirement. It states that the nearest projection of a structure from the property line look at it. People in the package part of their structure, part of their set back is inside of the structure. Which one of us would be able to go to our HOA and say, well, I want to put on a new bathroom and they say no because it comes to the property line and it doesn't meet the setback I said, well, I'm gonna measure that, but let's measure it from the inside of where I want my toilet bowl to the property line and we'll be able to work it out and that. Is exactly what this adjustment board has done. I don't and another. Thing I don't want to hear another word about 15-foot berms, 15-foot berms and whatever. Why would they be given an A high height adjustment? That's what I would like to ask. Why would you do that to this town? Hold these people's feet to the fire. They are not your friends. That condescending letter that was sent by that seller. To this town, everyone needs to take. A look at that. Ohh, we need an asphalt plant because Wellington can't even pay their bills. Check out the letter that was written by the owner of that property. This company, he, you know, they stood here tonight and this gentleman said he was. Well, he said he was not.

Starter: Nancy, you can request an extension.

McKay: He was. He's been in touch with the developer that he is adjacent. To believe it. Made offer.

Starter: I would just like to remind everybody that this is not the board of adjustments, in case you missed out on the everything we presented tonight. Jerry Brown, Jerry Brown next, Melissa Whitehouse on deck. Your public comment time is over Nancy, be respectful. Jerry, is there a Jerry Brown? Gary Brown. No comment. Thank you, Jerry.

McKay: It hasn't even been three blocks to look at that site. You're actually gentlemen.

Starter: Please sit down and be respectful. It's at some point you'll be allowed Melissa. I don't know what to tell you. Go ahead, Melissa.

Whitehouse: Waiting for her to sit down. This is Melissa White House at 3922 Grant Ave. I live next to the middle school. I'm not here to discuss the site plan. I'm not here to discuss the environmental projections. I'm here to discuss the growth management area. I'm here to discuss the growth management areas. It's on page 34 because I couldn't figure out what it was that was disturbing me about that big star. In the center of the Growth management area. In the center of the Growth management area, not on the outer limits of the growth management area as has been current practice by Connell. And Timnath. And a four columns. The outer limit of the growth management area has been their practice. Since the beginning for the last 20 and 10 years. The outer limits of the growth management area of Timnath. For the last 20 years. And the outer limits of the growth management area of Fort Collins for the 10 years before that. Now what I'm proposing here is that Channel is violating its own precedent. Is in deep conflict with its own precedent. That is a legal term. It is actionable in a court of law. To be in violation of a precedent. The town of 10 that didn't set the town of Fort Collins didn't set Connell set that precedent. And no one else. And you're now in direct violation of that. By choosing to locate in the center of Growth Management area instead of on the outer limit. And as you can see on page 38. You're describing at 95% of the trips will go north to Owl Canyon Rd. Directly north to Owl Canyon Rd. which is Owl Canyon Rd. Is the outer limit of our growth management area. So why do you? Why do you suppose such a bad strategy all of a sudden occurs? For this particular site location, why wouldn't you continue to the hair to your outer limit of the growth management area as you had done your entire history? So, what I'm proposing here, because that particular interchange that 25 and Owl Canyon Rd. is now at a tipping point, it's at a tipping point. As far as I understand. For transit model hub. For Bustang. Busting is a product of C dot as well. C dot is receiving millions of dollars and so is Larimer County, receiving millions of dollars. From the infrastructure bill. And the millions of those dollars is going directly to Connor. So, these are all taxpayer dollars. I would propose that there is going to be a legal precedent argument in a court of law as to why you have changed from the outer limits of a growth management area to the center. Thank you.

Starter: Thank you, Melissa. Next, Don Birch, I apologize for not calling you on deck. You're you, pat. OK. Thank you. Don Kayla Burgett. On deck as Tom Peterson.

Burgett All right. Hi, everybody. I'm Kayla. I'm going to preface this by saying public speaking is definitely not my Forte, so bear with me. But I'm a master's level pediatric and adult cancer nurse. I also have eight years of research experience. And I'm a Burlington resident. I would like to discuss the applicable health factors that come with this plan. Unfortunately, I will not be able to do this in 3 minutes, so I've decided to instead speak really fast and read off what I have. On page 98, the last sentence of paragraph two states the AT DSR which is, which is a study commissioned by the CDC, concluded that in communities surrounding asphalt plants, there does not appear to be any chemical or compounds to pose a public. This quote is. True regarding VOC's, but is not true. Regarding other toxins such as sulfur dioxide and carbon monoxide or metals. This report goes on to say that, based on both emission rates and toxicities of the 159 chemicals reportedly admitted from asphalt plants, the compounds. Most capable of posing a health hazard in communities or sulfur, sulfur dioxide and nitrogen oxides. And carbon monoxide. Under some circumstances, aldehyde, such as acrolein particle particulates such as quartz dust and some metals, might also pose some concern. Chemicals such as sulfur dioxide and aldehydes are highly reactive and at sufficiently high levels can cause irritation to the eyes and upper respiratory system. Particulates such as quartz are released by HMA pants, penetrate the lungs and cause inflammation and fibrosis if inhaled at sufficiently high levels. Additionally, this study looked into clustered community complaints of headaches to determine if asphalt plants could have an effect on the headache trends in the community. They concluded that the emission they concluded that the emissions factors a typical batch plant produces 6.5 tons of carbon monoxide and 1650 tons of carbon dioxide. Using these output rates and modeling conditions, it is possible that people may experience headaches from carbon monoxide for a little more than one half a mile from the facility and up to four miles from the facility. So that was all from the CDC sanction, a STD R study that was on page 98 of the report. OK, so going back to Wellington, the carbon monoxide released was 19.5 tons per year. That's on page 294 of the report going back to the study 6.5 tons was capable of causing headaches in communities up to 4 miles away. Doctor Zimba and our health and environmental health and Environment Representative told us that are these plants fall far below the regulatory levels, so our safety is top concern. If this is true, then explain to me the headache clusters. Additionally, how can we consider the air quality study valid when considering key variables such as differences?

Starter Can you wrap Kayla, can you wrap it up quickly?

Burgett Ok, Differences in temperature of March compared to July or August. And chemical chemicals that reach a vapor point. Faster and higher temperatures. This also increases motility. Wind speed was also not discussed well in the report. I think most of us Wellington residents can agree that the wind in March of this year was significantly less than previous years. I'm not questioning the expertise of the specialists, I'm just asking that we at least understand the variables.

Starter Thank you, Kayla. Tom Peterson up Jason Waldo on deck.

Peterson Well, thank you, Mr. Chairman, members of the board. My name is Tom Peterson and I'm the director of the Colorado Asphalt Pavement Association. We're the statewide trade association representing the asphalt industry of Colorado. I've grew up in the industry, spent 35-year career in the industry and I'm our point person with our industry liaison. With the Department of Public Health, Air Pollution Control division. The stationary sources branch, and specifically the enforcement and compliance unit. 3 quick comments in the time that I have one comment have been raised with respect to toxins, cancer causing pollutants hazardous, it's quantified and defined in your. That's, where it is stipulated and restricted and measured and monitored and required by the operator. When you heard earlier tonight, minor sources why minor sources if you go back years to what you see today Connells plant state-of-the-art and best management practices the. BIG4 and they have all four counter float arounds, emission recovery system, natural gas fuel. Big house systems. It's an excellent facility operating in an excellent manner and Connell is an industry leader committed to being a good neighbor. That's point one. Number two is the issue of our industry as a heavily regulated industry, every permit is to do 2 things. One is to ensure clean air. And to protect public health and as an industry, we get a scorecard every year on how many inspections, inspections can be spot random scheduled or complained. And we get a scorecard. How we have done as an industry and if this is your permit requirement on each of those formaldehyde, benzene, whatever it is most if not all. We're operating within a fraction of that. As an as an industry, because of the technologies that are being used real quickly, there are 65 asphalt plants in 42 counties all around the state of Colorado. We help build the American dream where with ready mix operations stone, sand and gravel to allow affordable high-quality construction. Of homes and. Developments the setback there are nearly every plant in Colorado is neither near a school, a subdivision, a home or a stream, or a Creek or a river, and all of them to ensure public health. For example, we provided a letter. That included three examples. The Martin Marietta plant in Colorado Springs, the Schmidt plant in Castle. The wholesome plant in Denver within 700 feet, 500 feet, 400 feet of subdivisions. Look at the keen plant Simon on County Road 5, right across the street from a school. So again, the permits are set to protect public health and asphalt. Plants are operating at a fraction of that. It's including the Connell plant here and was proposed. So thank you for your time and appreciate your attention.

Starter Thank you, Tom. Jason Waldo up Ben Trabing deck. Ben trading on deck. I think it's trading. I apologize, I batched it.

Waldo Thank you. Planning Commission for coming for such an enjoyable evening. So, this is. Our family farm right here. Right next to this. And so, the teenage boy I helped farm this land. And it was our family's desire to keep this in a nice open field to raise crops for perpetuity. But 22 years ago, that ship sailed. It became zoned industrial. So, from that point on, our family wondered what was going to happen. And a year ago, we found out about the possibility of the Connor plant coming. At that point, we did our research and we started having meetings and

started talking to people. We've had six different meetings with this man. To describe exactly what he's going to do. We've addressed all of the issues, so what comes into quality of life since we're right next door? Dust mitigation is there going to be dust in the air? Well, it's going to be watered so there's no dust. Sound mitigation of the Jake breaks one way first, then agreed to the second way. Landscape berms. Trees planted. The most important. Thing that I don't think people concentrate on enough is the hours of operation compared to what could come into this industrial area. So, this is mainly a Monday through Friday, company day shift, non-weekends, not evenings. And by the way this doesn't operate for several months. Of the year. So that being said. I've watched this company through all the proposals, bend over backwards for the neighborhood. Even to the point where they've taken down the name on the side. Of the silo, which commercial branding? No one ever does that. But they've said we'll do it. We'll do whatever it takes in order to blend in. So, my family could not be happier and could not support more. This good neighbor coming in to the neighborhood. We are in complete support. Thank you. I still got a.

Speaker 9 Can you restate your name for us?

Waldo Jason Waldo, thank.

Starter You thank you, Jason.

Waldo Right next door.

Starter Ben Trabing, I apologize if I botched that one. The handwriting is a little fuzzy. Jade Cohen on deck.

Trabing So I would first like to make a request to get an extension of the time. I'm a meteorologist and an atmospheric scientist, so I'm a little bit more qualified to talk about some of these air mission studies. How much additional?

Starter Time. Are you requesting for?

Trabing Maybe four or five minutes and then that person next to me won't have to talk.

Starter I can give you three additional minutes.

Trabing Okay, I'll go for it. So my name is Ben Trabing. I live at 3147 Alibar drive in Wellington. I spoke briefly at the last meeting. I'm an expert in atmospheric science at both a Masters and a Ph. D. in atmospheric science from Colorado State University and 1st off in the staff comments on page 11 of the packet, there seems to still be questions regarding whether or not asphalt plants should trigger the lane. There's lane code use for the production and curation of toxic chemicals. From the staff comments it was stated that all the ingredients, the liquid asphalt as well as the aggregates that go into making the hot asphalt are not considered dangerous or harmful. And that is true, but you could also make that same statement for any of the ingredients that go into making a Molotov cocktail or any other explosive

device. That is not necessarily a true statement, and it doesn't make those devices any less dangerous. It was also stated the asphalt could really only be considered dangerous because it is heated to very hot temperatures. But then again that is wrong. It's like saying that fire is only dangerous because it's really hot. It misses the point, just like fire emits smoke, which is the most dangerous part of fire, hot asphalt releases harmful compounds such as benzene, formaldehyde, sulphates, just to name a few, into the atmosphere. These emissions, let's be clear, they do not come from the burning of the natural gas. That is mostly the carbon monoxide, the steam that was reported before. What is actually being emitted from the asphalt itself are these harmful compounds and that is an important distinction because the asphalt releases the toxic compounds when it is heated. The hotter it gets, the more it emits. So, you can't treat the cooled asphalt that's outside the same as you can the hot asphalt. Therefore, the production of heated asphalt should be treated as the production and curation of toxic chemicals and the land use code. 40321 B needs to be applied in order to be approved this plan. In addition, the land use code 3042 C also states that dust, fumes, odors, smoke vapor and noise shall be confined to the site. Now the current proposal has the asphalt plant buildings, the main pollutant areas, into the northeast part of the lot. And if you look at the air dispersion modeling study, despite all the flaws and limitations, which if I have time, I'll talk about this. If you actually take a look at it, it shows that the site is not large enough to contain all of the fumes produced by the plant. This statement is true regardless with which emission compound you actually look at. For example, PM 10 on. Page 3 or 4 of your packet all of the contours for PM 10 are on the neighboring properties. And what about other product? Other compounds like formaldehyde, formaldehyde, is water soluble, mean it's gonna collect in the rain. It's gonna fall out if you look at that dispersion model. All of that is coming to the properties next door. So, the water testing that they're doing on site does not matter. All the formaldehyde is going to be away from the site. So based on the limitations of this site plan with the batch plant confined to the northeast corner of the property, the proposal cannot be accepted because it does not actually meet that land use code. But all the fumes and toxins remain on site. So, I also want to talk about the air dispersion model study if I can get another 3 minutes. So the study uses the average pollutants over one year to insert into the model, and that does not address the reasonable worst case scenario that it actually says it does because the plant does not operate 24/7. It does not operate during the winter time. It's only five days a week. It doesn't operate at night. So those values are actually going to be substantially higher during the time where it is actually emitting any pollution. So, a reasonable worst-case scenario, considering the maximum hourly emissions, was not actually produced within that modeling dispersement study, and as such all the values there are going to be biased too low. Second, the results are presented as yearly averages for the park, the school and the residential areas to the West. This does not adequately assess our risk for airborne toxins. For example, let's consider the residential area to the West. The winds are only going to be blowing the missions there about 10% of the time. When we do have an easterly wind blowing to the West. Wellington that's based on Wellington's climatology and this means that during those times when the winds are actually blowing that direction, the

values of toxins in the air are going to be 10 to 100 times larger than what is actually listed in that report. Put another way, this report is like saying it's okay to go to the beach today if you're on vacation in Florida, because the average number of hurricanes in the Atlantic is about 6 per year. It misses the point. It only takes that one hurricane when it's headed directly for you. And that's what this report is missing. In addition, this the data that this study actually used was from 2006. That was the atmosphere data used. The atmosphere data that we have now is a lot better than what was available in 2006. And to prove this point, actually look at that Windows diagram. Someone else mentioned this as well on slide 34 of the packet, so the last couple of days we've actually had easterly to southeasterly winds at 8 to 11 mph. Those are never accounted for in that study. I don't know what data they use, but they are not representative of the actual conditions that we face in Wellington. And the maximum easterly SE winds they did test. The always we're less than 5 mph, and that's a problem. We have a common saying in the atmospheric community when test when testing models and looking at the data. Garbage in means garbage out, and the health assessment study actually uses this inaccurate data from the air dispersion modeling studies to say that there's no health risk actually on page 257, they use the average concentrations as listed them as the highest modeled concentrations. Again, that's a flaw in the study, and it is going to essentially buy us all of those results too low. The air disperser study says that it cannot be used to justify the construction of this plant because it does not say that there's no risk. There's a number of limitations to the study. I don't even have time to talk about all of them. The only thing this emission study truly proves is that hazardous airborne pollution is produced. It is emitted and goes off site to the property and that's in violation of the Land Use Code. One of the conditions for the Bo, a setback reduction to 800 feet, is that this planning committee actually approves the site plan. But you need to reject the site plan because it is directly in contrast to the Land Use Code. It is too close to the residential areas given the toxicity and the emissions are not going to be confined to the site itself, which it says.

Speaker 1 Jade Cowen up. Jade Cowen. You're good. Awesome. Thank you. Sarah Mitchell. And then Chad Marshawndeck.

Mitchell Hi, my name is Sarah Mitchell and I live at 6915 Grassy Range Drive in Sage Meadows. I live in Sage Meadows and I work here in our town as a teacher. I also have two children. I think Wellington is a developing community that has become a very desirable place to live. However, an asphalt plant does not help our community to grow the asphalt plant being next to a park next to our school, releasing toxins into the air does not help our community. It does not help the value of our homes. Tinmouth resources currently operates have 10 meth. If you follow the news, they have had a pretty hard time with the residents there wanting them to leave for obvious reasons. An asphalt plant is not desirable. Tinmouth residents in the town have greater financial means of. To make operating there more difficult, so Connell thought they could pull a fast one on the town of Wellington and get it approved here. We'll shame on you Connell Resources for asking for a variance to be closer to family. Closer to schools, closer to children. In a comment letter

submitted by Advanced Tank and construction signed by the CEO Lisa Clay. Apparently, they're selling the property to Kano and based on the letter, it sounds like the sale is contingent, contingent upon Connell getting a permit from the town of Wellington. The letter also lays out numerous items that Connell would do if permitted. If you look into what ATC does as a business, you'll likely see that they will benefit financially from the sale to channel as well. There are better uses for this land and I can't believe that it is still zoned heavy industrial. I have spoken with a couple people that live in town and have worked at asphalt plants and other states. They warned of the vastly negative impacts the plant would have on our community. Expand the Greenway up through this property. Bring in a recreation business to this property. Bring a store that we need. Bring something that would attract visitors and attract residents to our town. Approving the asphalt plan will make Wellington a dump. The landfill is already moving up here. The town has water quality issues, don't bring another Health and Human Safety issue to our town. There are better places for the asphalt plant to be located away from residential areas. The aggregate is already coming from Carr. Open the plant up that way. Why are they not looking at Carr to open their plant? Let's not let large corporations steamroll us. Will Connell be okay, if they have to locate someplace else? Yeah, they will be. Will Advanced Tank construction be okay if they don't make this sale. Yes, they will be okay. Will the residents of Wellington will our community be okay? No, we will not.

Speaker 3 Okay. Chad's up. Apologies again. Grim Rambler on deck.

Mixture Evening board. My name is Chad Mixture. I live in sage meadows. I have a master's degree in hydrology science and have worked. Spent the past 15 years working as a hydrologist and engineer, analyzing environment impacts and water resource impacts in relation to land use authorization similar to this. Based on the land use code section 101.1 subpart A, it states that the zoning regulations are designed to promote the health safety values in general welfare of town residents. Asphalt plant does not meet that goal. Additionally, land use code. Section 4321 titled Industrial Heavy Subpart a facility shall be located at least 1000 feet from any residential district. This sub part was not adhered to and a variance was granted. Word analysis and decision making went into this. Subpar B of that same section states heavy industrial facilities producing and curating toxic chemicals shall be located 2640 feet from residential districts as currently zoned to. The key language in that section is to produce and curate toxic chemicals, nothing more. The Conell asphalt plant curates toxic chemicals that altering and adding them to produce asphalt. The plant also produces toxic chemicals and emits them into the air. No additional analysis is needed. It produces and curates toxic chemicals. All these air studies are not needed. It seems from the beginning of this process there's been a lack of transparency. I live in town. I haven't gotten any mailings about zoning changes. I haven't received any notifications to attend a meeting. From the town. Power resources back in October 27th, 2022 went in front of the. Board to request a variance for this property. On that board was a gentleman named White Knutson. White Knutson not only works, but is a vice president and regional manager for CTL Thompson. CTL Thompson was then retained and hired by Connell Resources

in the site plan. How is that not a conflict of interest? White Knutson and his company directly financially benefited from granting that variance. And Mr. Carmen, you're on the board of adjustments too. Is that correct? So, you're on the board of adjustments approving the variance. Now you're here in front of us, potentially voting to approve this too. That doesn't seem right. I would suggest this goes back to the board of adjustments and redone without that member in place.

Speaker 1 Thank you, Chad. I'm sorry if I botched your name. Is it grim? It is not grim. I didn't think so. Aaron got you. Aaron, I apologize.

Rambler No, no.

Speaker 1 Aaron's up Brittany Cohen. You're next.

Rambler Hello, my name is Aaron Rambler and thank you for the opportunity to speak my address, 3763 River Birch St. I'm here to implore you to deny this site plan based on the land use code set back of 2640 feet minimum for business admitting toxic chemicals. Connell tonight has said that they produce minor levels of majorly toxic chemicals, minor meaning that they have less emissions, thus less regulations. But lucky for us, our land use code does not stipulate the difference between minor and major levels. All toxic chemical emissions require the set back. I find it shocking that the board of adjustments pushed issues of 15-foot berms for 70-foot stacks and signage requirements, but pass the buck to you on the issues of toxic chemicals producing setbacks. The information that we have gathered and confirmed with the lawyer supporting a number of concerned citizens in this room, is that you have the legal obligation to uphold the land use code setbacks pertaining to toxic chemicals. You say you're not the adjustment board, but you do have the power to turn this application back to that board. Send this site plan back and deny the pending approvals that Mister Bird mentioned initially, based on the proper setbacks for a business that emits atomic chemicals, as Mr. Bird says, there is no definition for toxic chemical in the setback land use code. No definition means legally anything that's toxic. The Conell lawyer says this adjustment is already approved, but again, Mr. Bird clearly stated that the codes that were bent for Connell are still pending this committees approval. Again, you have the power. Please send this back. I've read the packet and among many of the concerning misrepresentations, a standout. Is the threat letter from the existing property owner where they mentioned the town’s budget shortages and then threaten legal action if there's any hindrances to their sale. Please do not underestimate the resolve of the concerned citizens of this community. We do have legal recourse if the land use code setbacks are not properly adhered to and we are prepared to see this legal battle through. Whatever is required to protect this community. I will add since Connor lawyer so nicely mentioned, adhering to the town's vision for the comprehensive plan. The town's 2022 to 2024 Strategic Plan vision statement states. That this town strive to make Wellington one of the best small towns in America, to live, work and raise a family, and nobody wants to raise their family in a toxic town. Thank you for your time.

Speaker 1 Brittany Cohen up Ala lettuce scout here next.

Cowen Good evening. My name is Brittany Cowen. I live at 3857 Mount Hope St.. Connells proposed plan site plan does not meet the adopted land use code. The very first point of the code states to promote the health, safety values and general welfare of town residents, as shown in the many pages of public comment. This proposed site plan will not promote the health, safety values or general welfare of town residents. The Board of Adjustment, Minutes State, and I quote. Negative granting the variance would reduce the requirements for setbacks and heights that are intended to protect the public health, safety and welfare. This is a direct violation of the land use code and this proposed site application should be denied. Second, as stated in section 304.2 of the land use code for the Industrial District Section C states any use in this district shall conform to the following requirements. Dust fumes, odors, smoke, vapor and noise shall be confined to the site. As shown in the air dispersion, and noise models provided by Connell fumes, odors, favors and noise will not be confined to their site. Remember when Mr. Warren shared the photo of the vapor coming out of the stack, again, this is a direct violation of the land use code. As stated many times, the byproducts of this plant are indeed toxic chemicals. The definition of toxic is one word poisonous. Please refer to the many pages of proof showing that the proposed asphalt plant does in fact produce toxic chemicals as a byproduct of asphalt production. Additionally, you'll find Connells own comments as quoted data provided through studies and assessments demonstrate that assault plant will have a diminished effect on public health. So from their own statement, it will in fact have an impact on public health and likely much greater than they claim. Again, this is a direct violation of the land use code. Lastly, and most importantly is the fact that the board of adjustments has not granted approval of the two requested variances by Connell. The variances are conditionally approved based on 6 requirements. The most important condition as that the variances will only be granted based upon your approval of the proposed site plan. You do have the power and the legal authority to deny the site plan. You have the responsibility to uphold the land use code in which this proposed site does not comply with. By declining this site plan, you will stop the approval of the variances and save the health, safety values and general welfare of town residents. Connell know that we, the residents of Wellington, will not back down from this, no matter what it takes. This is our town. This is where our children grow up. This is our livelihood. Please, members of the Planning Commission. Remember what you're here for. To promote the health, safety, values and general welfare of town residents, not corporations, do not approve this site plan. Thank you for your time.

Speaker 1 Thank you, Brittany. Haley, you're up. Ben, let us go next.

Leistiko My name is Alo Leistiko. I'm at 8605 Citation Court. At the March 6th meeting, this board saw emails from the Colorado Department of Public Health and Environment stating the main hazardous air pollutants that this plant emits. Emit is a very powerful word that they use. It means produce and discharge. March at the May 1st meeting, this board received a document from the Colorado Department of Public Health that states hazardous air pollutants are also known as toxic air pollutants or air toxics. You also saw the Caron article, where the Landmark County Health Department stated this plant does produce air toxics. Now at this meeting,

the applicant themselves submitted documents proving they produce toxic chemicals on page 250 of the packet, the applicants document states key air toxics and names every single one this plant produces. It doesn't matter how safe the concentrations are, our land use code says it must simply produce and curate toxic chemicals. The land use code does not state developed residential zoning. It simply states residential zoning. This plant can also go to uncorroborated landmark county and it should include the county never said they don't have the resources. Greeley also has an industrial site with room for an asphalt plant, a heavy industrial plant that produces toxic chemicals has no business being 800 feet from residential zoning. In the paperwork for the board of adjustments, you can see that Connell requested a variance for the wrong set back. Connell chose to not be honest about their toxic chemicals. The variances were also conditional. The variances have not been approved and will not be until the site plan is approved. This planning board has the power to apply any condition to this site plan. You need to right this wrong and apply the correct set back. The staff recommendation is telling this board to ignore the Colorado Department of Public Health and Environment, Larimer County Health Department and our land use code. As a resident, that is unacceptable. This board needs to deny the site plan due to the multiple land use code violations, or at least approve with a condition that the correct setback of 2640 feet applies. I do also have one question just to put out there. For the thresholds for the toxic air dispersion studies are those for healthy adults, elderly children or infants.

Speaker 10 Okay. Thanks.

Speaker 1 Hey, Ben. Rachel Hayes, you're on deck.

Lysenko My name is Ben Lysenko. I'm at 8605 Citation Court and I'd like to thank you all for your time and staying with us tonight. The first thing I had is an observation. The two people that got up and spoke saying that they've been around asphalt plants all their lives over 20 years of their life, had an audible wheeze, which I thought was interesting. For my for my comments, this board participated in the town's comprehensive plan and I thought the Community cohesion part was outstanding and it states we take pride in our Community by providing safe and attractive neighborhoods oriented around parks, trails, amenities and public spaces, and by offering for our community to shop, gather and celebrate. A key call out from that comprehensive plan was to promote air quality in and around Wellington to ensure air quality is maintained and we continue to grow the data from this air dispersion study is over 10 years old and this does not seem to be indicative of a good partner for air quality, especially as they've been in the news with timmus and proposed. Plant there. Finally, Connell at Best is a push in the comprehensive plan and at worst fails to meet the goals. The only way to truly help the town is for Connell to be required to get the right variances. This planning board should add a condition requiring Connell to seek a variance for producing and curating toxic chemicals. Thank you for your time.

Speaker 1 Thanks man. Rachel Hayes. Rachel, you out there? Hey, last one on the sign-up ship sheet is Debbie Condos. If anyone decided, while we're doing public comment, they want to speak, come up to the podium, I'll just have you sign in real quick, but we'll go ahead and allow it if there's any stragglers. Debbie Condos.

Condos My name is Debbie Condos, my husband and I live at 8994 Raging Bull Lane and this is to Mr. Warren and to your very disrespectful employees in the back section there. Obviously, it doesn't matter how many permits you have or tests that you run each day. Stuff happens. Train accidents happen, spewing toxic chemicals. The fact remains that you were out of compliance, emissions compliance, for four solid months. Four months. You're shaking your head no, that's exactly what the cash settlement that you signed said. My husband and I purchased our dream home. It was our final investment for our retirement. So now to Mr. Bird. Someone else mentioned this too, but why didn't you notify all of Wellington residents. Send out a flyer via e-mail or Postal Service to let all Wellington residents know my husband and I believes that 75 to 80% of Wellington residents still don't even know that an asphalt plant is going to possibly, possibly be placed north of town in town limits. Which is going to affect the entire town. Why did Fred and I, citizens of Wellington for 15 years, have to find out about the plant from a note placed under our doormat? Thank you, Ayla. And then you wonder why in these meetings, why emotions run high. Because we didn't know. It was, you know, it was horrible to find out that way. How can we possibly trust our town fathers, people that are working for us and protecting us? To not even let us know something this big is going to happen. The air that we breathe. Our quality of life and our backyards, there was a dentist in Fort Collins who has an asphalt plant that moved in without he and his neighbors knowing about it and he said they can no longer enjoy their backyards in the summer time because the odor from the plant is so wretched. If any of you want to purchase signs, I have some no asphalt plants in our neighborhood signs for sale. Thank you very much.

Speaker 1 Thank you, Debbie. Anyone else? Going once, going twice. No takers. Okay. We'll go ahead and close the public comment portion and bring it back to the board. Commissioner Moyer had asked about questions versus comments earlier, so if you have remaining questions after the public comment, I think now’s the time.

Speaker 9 I have comments versus questions. So, you let me know when you want. This no, no, okay.

Speaker 1 I think now.

Speaker 9 Let me go back and I'll just start with what Matt. Can you hear me back there? So, Matt had asked for me to repeat what I shared at the March meeting. So, I'll start with that. The role of the Planning Commission is to form recommendations based on the promotion of the communities, health, safety and welfare in the future. Consider all research and information when forming a recommendation or making a decision. Respect all views and treat everyone equally. Give citizens a meaningful opportunity to participate. Focus on the bigger picture. Goal setting for the

Commission. In order to achieve long term accomplishments. So that's what I shared. What I'm hearing from all of you is that you don't feel like you've been given an opportunity to participate in enough time. I also wanted to share something that's in our Planning Commission booklet in terms of recommended findings of fact, and I'll just share the ones that I'm not sure we can really say we comply with at this time. Zoning and uses of properties nearby. I feel like this possibly goes against that. Gain to the public health, safety and welfare. By the possible. Diminution in value of applicant's property as compared to the hardship imposed on the applicant if the request is denied. Opposition or support of neighborhood residents. Conformance of the requested change to the town's master comprehensive plan. So, as I was going through the packet today, I'll try to go through these quickly, I made some notes for myself. Definitely looking at the land use code and zoning regulations in accordance with 4O321B. We've heard a lot about toxic chemicals. This is what it boils down to. Several times and I can cite page numbers here. In both the reports and the summaries from professionals, it has been acknowledged that toxic chemicals are produced or procured. That to me, period. So if that is the case, we need to look at the setbacks and I would question still why they are not from the property line. So, I'll go to my notes, page 93. The fact that the government regulates emissions acknowledges that they produce toxins. Which should figure additional setbacks. Page 94 of the packet recognized. By the EPA as minor sources of air pollution again recognize the fact. Their caveat cited several times in the reports. That talk about the time frame in reference to different factors for said reports, a lot of the comparisons, for instance, the stove comparisons were to vintage wood stoves, not our current stoves. So to me, these reports, many of them seem relevant to what we're talking about today in 2023, based on the outdated information or the outdated sources of information. Page 183 toxins are produced. Period, page 199, symptoms in Salisbury, NC, which is very close to where I'm from and this I have and someone mentioned it in public comment. What about our most vulnerable? How far were these communities? Again, setbacks. Page 201, potential health risks. If I'm going to smoke a cigarette. I'm not comfortable giving that cigarette to a child. The risks for you are not mine to take page 208, greater risk for children, and that's a quote we're talking about parks. We're talking about neighborhoods we're talking about an elementary school. Page 209, it says the data is not well understood, so it's prudent to reduce levels where possible. So why would we take any action to increase them by any amount? Page 239 headaches experience little more than half mile from the facility. Again, someone mentioned the clustered headaches. Page 263 the wind blows from the plant to the highest populated areas, and that's a quote. Again, thank you to our, forget what you called yourself there, atmospheric scientist for the additional information on wind. And then page 334 is a list of literally all of the pollutants, toxics and hazardous chemicals produced. So, I would just ask my fellow Commissioners to consider all of that information, and if you need me to elaborate on any of my thoughts, I'm happy to do so.

Speaker 8 I'm sorry.

Speaker 1 We're also going to give the Applicant and Lerman County Health a chance to respond to any of the public comment if they wish to do so. Mr. Warren, we'll go ahead and start with you. If you want to make any rebuttals to that, the podium's yours or any of your staff as well.

White Actually, as the applicant, I think due process requires that we go last. Could I invite the Larimer County Health representative to speak ahead of us?

Speaker 1 Absolutely. Thank you, Ms. White. Only if you won't feel the need to respond to any of the public comments. Some of the public had questions.

Speaker 10 Yeah, they do.

Speaker 15 Well, and I will be, I will be clear, the modeling is not required for this level of permit through air pollution control division. So, asphalt plants were delisted from major sources of hazardous air pollutants back in 2002. So, they don't require these extensive air dispersion modeling. And when the state does require this air dispersion modeling, they will include historical data for meteorology, and they also include historical background levels for emissions in this area. But in this case, because of the controls and the thresholds that will be, I'm trying to think how to, because of the limited amount of emissions coming from this plant, air pollution control will most likely not require air dispersion modeling for this permit. There is a chance because of the location, 2 communities that they would take public comment, but they have specific criteria to address. So, I just want you guys, I want to be honest about that upfront. And then, I don't know all of the studies. We have to be honest, we don't know all of the studies about asphalt plants. There are a lot of older ones out there. There are a lot that don't have modern technology used. There's a lot that do use modern technology. I don't know all of them that have been quoted tonight, so unfortunately, I can't talk to it. But yes, benzene, toluene, ethylene, xylene, they're BTEX compounds that are known to be carcinogens, and you have to control them, or else they could get to levels that could cause cancer. That could cause short term health impacts, such as the irritation, the lung, respiratory damage, things like that. We have worker, we don't use worker exposure in these community assessments. I do want you guys know that's a time weighted average more. It's more for an 8-hour work day on site versus community exposures which are less time in that environment and concentrated. So, I appreciate OSHA and NIOSH and all those relevant standards, but they are more related to worker emissions and then some of the best data for some of these modeling dispersions is to use the lowest wind concentrations. Just you want more stagnant conditions, higher wind would dilute the emissions, so we wouldn't get an accurate reading. We prefer to actually see some of the worst meteorology like that would cause concentrations, so that more stagnant, the five mph, and you know, maybe the less common wind patterns. Because if it's always coming from the West then it wouldn't show some of these impacts that we're looking for. So, and I don't know if that helps at all, but CDPH's air pollution control division and the toxicology program did help us evaluate this air dispersion modeling. And yes, if they were requiring this, they would require a couple of additional factors, use like the

background, and that they would be the ones to approve the modeling, the meteorology numbers and things like that, if they were requiring modeling, but they won't be.

Speaker 8 And can you clarify that your work is independent of Connell?

Speaker 15 Oh, yeah.

Speaker 8 Yes. Thank you. Thank you.

Speaker 15 Sorry. And I am sitting up front because they reserved me a seat. So, it's, I just, I want people to know that I'm not, yeah, we're, it's all part of, we work with Connell as an inspector. We're on behalf of the state. We have to follow up with all odor complaints and things of that nature. And we do evaluate things like upsets, and like these noncompliance issues, the one that was issued by air pollution control. division in 2022. So, we're part of all those.

Speaker 8 Thank you.

White Have a second to get organized. It'll go faster that way, I promise. Mr. Chairman, members of the Commission, once again, Carolyn White, on behalf of the applicant, Connell Resources. I want to bring everything back to the criteria that we're talking about, the site plan criteria. And I know that a lot of the conversation has focused on the air quality issues and the linkage to the general concept of public health, safety and welfare, which certainly is stated in the land use code. It's at the very beginning of the land use code. And it says, these zoning regulations are designed to promote the health, safety, values and general welfare of the town residents. The idea being that when the town as a whole adopted this code, they adopted the code and made the choices of what standards to incorporate in the code with those considerations in mind, and they did so according to the town's police power to regulate, which is what the phrase health, safety and welfare refers to, it's the town's municipal police power that gives the town the authority to adopt these regulations. But the regulations, once adopted, in and of themselves, stand for the standards that the town has decided best promote the public health, safety and welfare of the regulations. So that's the first comment I want to make. It's not an independent standard in and of itself. It's the standard from which all, it's the goal from which and the power from which all the other standards in the code flow. And when I think to all the public comments that were made tonight, those that relate specifically to the land use criteria for a site plan that I want to focus on are those that are arguing that some alternative setback must be applied because there's been discussion of toxic chemicals, curating toxic chemicals. One of the things that gets lost in the discussion of all the definitions and hazardous and what's the standard level and so on is the fact that the regulations themselves, which rely on the state system for issuing permits for this use and other similar uses by setting the levels at the standard, at the levels that they set when they issue those permits, that determines what is being considered hazardous for purposes of those uses. And so, if you think back to the chart, for example, that was presented by the Larimer

County Health Department, which is using data that was in our charts, and they're all the same, she had the two columns that showed what the EPA standard is, and then what a more maybe modest CDPH standard would have been, or a more safe standard would have been, and then on the right-hand column were the three actual projected numbers based on the study that was produced by the air dispersion study. And one thing that might not have been brought out in that is that across the board, all of the numbers in the air dispersion modeling study were way lower than the maximum safe recommended level, depending on whether it's EPA or CDPHE or some other recommended safe level. So low, in fact, that we're talking tiny fractions of a percent. And that's what Steve was talking about when he presented the results of his report to you. And so what we're talking about here, and there's several letters, and I'll try to find the page numbers if it's important, that were submitted that specifically talk about how the levels of air emissions of the chemicals in question here, toluene, benzene, etc. are comparable to those emitted by a gas station or a fast food use, all of which you already have within the town. And so, if they are toxic enough that their presence in and of itself, even if it's at minuscule, barely measurable levels, which are well below the minimum or the maximum required exposure that a 2640 setback should be applied, then it should be applied uniformly to all uses which potentially emit any amount, no matter how immeasurable, of those chemicals. And so, the point being that if you're gonna apply the land use code here, you need to apply it uniformly to all potential sources, no matter how small. And I don't think that's how you have been doing it and that's certainly not how it's been approached here. Rather, we went along with the actual definition in the code of what the type of use is, and that's what resulted in the setback that was determined by the board of adjustment. So that was the first land use code issue that I wanted to mention. And then I guess lastly, just reminding the members of the Planning Commission, you know, what's, unlike a court of law, where us lawyers sometimes think we like to operate, in this proceeding, anyone can say anything they want. Anyone can introduce anything that they want to as evidence. There's no restriction on what comes in. Rather, you all get to weigh the credibility of all the evidence that's presented to you and decide whether it weighs in favor of the finding that the criteria are met versus not finding that the criteria are met. And you get to decide how much weight to give credentialed experts who have provided data and reports and have presented themselves to answer questions and the equivalent of Google research on the internet. And some of the. information presented that falls into the category of the latter is about irrelevant sites because they're in China, or they might be bigger, or they might be smaller, or they might be totally different. We have presented actual data about this actual site in this location based on actual studies presented by experts in the last two months. So, very, very current data. So, I just wanted to provide that sort of contrast about the data that's been presented to you and the information that's presented to you. All of which is well above and beyond the standards that are actually required for your decision making in terms of the site plan. So, we thank you for that opportunity to present this information to you and for your consideration of this matter, and again ask for your approval of the site plan.

Speaker 1 Thank you, Ms. White. We're to closing comments from staff. Body, I'll turn it back over to you, and maybe we'll do one last round of questions if there's anything up here that anybody needs to get off.

Speaker 5 I'm not going to go back over ground that some of the others have already responded to, but there were a couple of questions that I highlighted that were more applicable to the Planning Commissioner process. One of the questions I noted was the question as to why there is an industrial zoning next to residential. And in this particular location the property in question is zoned industrial, has been zoned industrial since annexed and zoned in 2001. The adjacent residential zoning was applied for after, and annexed and zoned in, I believe it was 2006-time frame. And at the time those decisions were being made, there was no separation standard in the town's codes. And so, having not been here myself, probably none of the current commissioners have been involved in those processes, I can't say why those things happened. But we did hear loud and clear during our comprehensive planning and land use could update process that there was a desire to create separation for future developments. So that hopefully was an attempt to answer the why; those are existing conditions based on past approval. There was another question or comment made to some prior written public comments, I believe, as to why there's not an environmental assessment and remediation plan for this type of a proposed use. Wellington's town standards don't have requirements for environmental assessments or remediation plans for any of our defined uses. That's certainly something we can think about in the future. That is, the reason they weren't required is because we don't have that requirement for anything in our town currently. And I think it's also noteworthy to the term remediation plan, I know that that term came up a couple of times in other public comments as well, and remediation is typically identified with contamination. And on a site that doesn't have any prior uses on it except for agricultural and some outdoor storage, it's not our belief that there is any contamination that needs to be remediated. I think possibly a better term might have been reclamation plan, which is more commonly associated with mining and extraction activities. So, I think there's maybe some terminology there that wasn't clear. And I wanted to point out too, I think it was stated in the applicant's presentation, I know it's in the staff report, that there's no extraction operations proposed on this site and that would not be allowed. So, I just wanted to make sure that that point was made clear. And I think those were the couple highlights that didn't get answered before. There was a question to staff as to why all of town isn't notified of potential applications and the town's land use code and public hearing procedures are defined. In the land use code, it states that notices are provided in a number of ways, including publishing an article in the town's official newspaper, which is the Fort Collins Coloradoan, and that's published 15 days prior to a public hearing date. Signs are posted on site prior to a public hearing, and notices are sent to owners of property within 500 feet of the application site and the town continuously posts our meeting agendas on the town's website when those become available. So those are the defined ways in which public hearings are advertised. I would point out that those procedures were followed for the Board of Adjustment. Public hearing process and other public hearings have been advertised since then.

And I think it might create some confusion, but I want to point out that the site plan review procedures are not a public hearing process.

Speaker 1 Down, please.

Speaker 5 It is conducted in a public meeting. But it's not a public hearing, and so there were no notices sent for the site plan application. I think that might have created some confusion as well. So those were my responses, and I'm happy to answer any questions.

Speaker 9 Can you clarify for everyone what exactly we are allowed to do? What options we have as the Planning Commission in terms of sending back to the Board of Adjustments? Can you just reiterate those? I know they're in the packet and you stated them at the beginning, but can we just go over those one more time?

Speaker 5 I'll attempt to answer that. So, your land use code which defines the procedures, sorry if that, can't hear well, your land use code defines applications and procedures for processing those applications. The site plan review process identified in your land use code identifies findings for approval that the Planning Commission considers. We've talked about those and we've put them in the packet. They've been on the presentation slides tonight. And the options for the Planning Commission in considering a site plan request include that you can approve an application, you can approve an application with conditions, and you can deny an application. Those are really the three options that the Planning Commission has. In considering conditions, your conditions are generally to further the intent or spirit of the regulations, and from a site plan perspective, you would want to look at elements that a site plan can address. So that's the guidance that I can offer you from your land use code provisions and what the actions that the Planning Commission can take include. And those motion options are outlined in your staff report for reference to.

Speaker 1 I've got one. Can you can you speak to the intent of the portion of the land use code that several members of the community tonight addressed regarding pollutants, vapors, chemicals, whatever it is, having to be dust having to be maintained on site? And the reason I ask this, this is straight from the packet, reviewing a site plan application, the Planning Commission considers the findings of approval Section 2.12.3, the site plan and is consistent with the comprehensive plan and the intent stated in this land use code. I would really appreciate you speaking to the intent of that line. Because obviously it's not feasible that every business that every home maintains their own dust and their own emissions. So why, why is this different? What is the intent behind that line in the land use code? Why do we need to be focusing on that right now?

Speaker 5 I think it's a great question and I think it's great that the topic was brought up by members of the public as well. In my experience in in planning, you typically design sites to mitigate adverse impacts as best you can. We it was been brought up that it might be impossible to mitigate every single emission from every single

source in town and how that standard might be applied town wide, consistently and fairly. Intent can be interpreted in large part that can be the role of the Planning Commission and considering the site application, but the intent from Staffs perspective would be to provide controls and mechanisms and mitigation measures to address the concerns. That if an operation involved heavy smoke and it's unmitigated, hat would obviously not meet the intent of the of that language in the in the land use code. If an operation generates smoker vapors and the majority of is mitigated except for worst case days, I think that arguably would meet the intent. There I I recognize that a lot of what's being looked at is pretty black and white. Right. And an application or site in real world activities, it's not always practical to eliminate 100% of the mitigating or the circumstances which might need mitigation if the standard is all or nothing. I'm not sure how we apply that to all of our land. These applications, all everywhere in town. So my. Position would be that the intent would be to mitigate all that can be mitigated through site plan controls.

Speaker OK.

Speaker 1 I thought that. Word was important. Thank you. Yeah, go ahead. Anybody else? I have a question. Yes, Sir.

Speaker 4 Someone brought this up-and. Train track runs right beside this place. Asphalt sitting in a tank waiting to go into the system. What happens is the train loses leaves the track. It's something I'm just. I'm just curious. I mean, what? What's the potential issues there and how can? It be solved? The train hits the tank.

Speaker 6 I was out to the site today. I drove by, take a look and there. Was an embankment. As they pointed out, and to keep the grade consistent for the railroad tracks, they've actually shows a new bank that goes like this. And they've cut down and made the railroad grade. So, I don't know how wide that embankment is, and I don't know if that would stop. A train if it would.

Speaker 4 That's I don't.

Speaker 6 I don't know, but I don't just. I don't know.

Speaker 5 Is the train carrying nitroglycerin or something else? Because I I don't know that I don't know how to. Answer the question.

Speaker 4 What if it hits the tank that's holding the assault? I mean, that's explosive.

Speaker 5 Sure, I don't.

Speaker 4 It's not OK.

Speaker 5 I don't I.

Speaker 4 OK.

Speaker 12 Thank you.

Speaker 5 I don't have the answer to that, but it sounded. Like maybe someone else that's kind.

Speaker 4 Of the question. I asked. Then go ahead, that'd be good.

Warren So I addressed it in in the placarding of the transportation of the of the.

Speaker 4 Yeah, I remember that.

Warren It's just hot, it is not.

Speaker 4 But it just still didn't. Still did sound like it could be.

Warren It is not explosive. It is not flammable. It is not designated as that. I mean, again, it's heated to. It's at a temperature of 250 degrees. The flash point is very high and it does not. It is not explosive or also would be placard that way in transportation.

Speaker 8 In in, in the silos are. Just holding that material correct. So, it's the same material that's in the truck, absolutely correct.

Warren Temperature 100%. Yeah, yeah. Again, the process is very simpler. It's. Mixing 2 raw materials together and they both come to the site. Hot asphalt cement aggregate.

Speaker 7 I have a question while you're still standing up there. This is based off a comment from I didn't write down the name, but it did. I wanted clarification so the asphalt. Is not heated on site correct?

Warren No, it comes in hot and it it's stored in tanks that are insulated.

Speaker 7 OK. And the point by the commenter had been that when the asphalt is heated, it releases? That whole list, right? Whatever was read off. Are the chemicals released during the heating process only? I know it's just, it's.

Speaker 1 A weird question. I think the comment was that it's more volatile at a higher temperature than it would be at room temperature.

Warren I would say that's right, but it's kept at a temperature where it's not volatile. You would have to get to a much higher temperature in order to release those chemicals.

Speaker 7 That is exactly what I wanted.

Speaker 1 Mr. White House.

Speaker 6 Go ahead. I had a question. This would be following up on, I think what, Commissioner. Moyer said there are a couple of suggestions this would be somehow sent back to the board of adjustments. Can you know about redoing a redo on the setbacks? Could you explain what the process is, because I think the board of adjustments has ruled and I don't know if there's any. Redo on this. Can

you clarify that? Because that was asked a couple times. Yeah, well, I just, I didn't think that was the answer earlier, so I was.

Speaker 5 So the question is, what is the process for going back to the board of adjustments?

Speaker 9 So several people during public comment mentioned. We have the ability to send this back to the board of adjustments and so I just wanted everyone to have clarification from you that that was not one of the three options that you mentioned.

Speaker 5 I think I follow your kind of thought.

Speaker 11 Feasibility, I think is maybe more the question of the feasibility or is that right?

Speaker 7 I think the question here's the question is, so they don't like the. The determination of the board of adjustments, the legal process, then, is that you appeal it in a court of law. It's not appealed to us and it's not appealed to the board of Trustees, correct. What they're proposing is that we have the ability to say the board of adjustments got it wrong with the setbacks. Therefore, this needs to be returned back to the board of adjustments and the question is, is that? True or false?

Speaker 5 And it's an interesting question. I'm not sure it's a true or false answer, but I don't think that this Planning Commission has the ability to say that the board of adjustments did things right or wrong. That's their purview, and only their purview. And if a decision by the board of adjustments. Wants to be looked at. Is correct or incorrect. That is appealed to District Court. Not this Planning Commission.

Speaker 7 So therefore you're saying.

Speaker 1 For clarification, one of the board, one of the. One of the conditions that the board of approvals. Put forth was that. If we deny the site plan tonight, all of their other, all of their other conditions are null and void because one of the conditions for their set of conditions was that it approves tonight. Maybe I'm.

Speaker 5 I think the condition was that it required review by the Planning Commission. Review and approval of site bans by the Planning Commission to improve. I don't think it had a.

Speaker 1 So the denial here essentially null and voids all of the other board of adjustment.

Speaker 5 Date tied to.

Speaker 1 Approvals or item conditions.

Speaker 5 I don't know that that would be true, the.

Speaker 1 Maybe that's question.

Speaker 5 Because the question could become does the Planning Commission deny an application on one date but approve an application at a later? Date I don't think. That they've. I don't I.

Speaker 9 The date I think it's the year on this.

Speaker 7 When a variance is granted. Is it typical for one of the conditions to be that there it's a the site plan is approved? I mean nobody approves the site plans but us. So, it seems like an odd condition. So is it in there purposefully?

Speaker 8 So history is it OK if I speak? To this, since I was on that board. When this first came, before the board of adjustments. It was disclosed that there were plans to bring a site plan to the Planning Commission and there was discussion on the board about why not go there first, right? So, there was conversation about. What's the right order? Is the right order board of adjustments and Planning Commission is the right order, Planning Commission and board of adjustments. And there was not a clear demarcation to say that there was a right order. And so, we were presented with. The information and the board and I am not the board, I am a member or what's the Member, right and the board made a. Decision came to a decision on. But because it had not come to the Planning Commission, that's why that condition was put in there because we knew that it needed to go to the Planning Commission. But we took it very seriously. We had our conversations, we. Talk to the applicant. We made a decision.

Speaker 5 Yeah, and thank you, Mr. The other, the other piece of that, that I'll throw in there was staff recommended that condition to the board of adjustments because there was concern that if that approval was given that we didn't want the site to just then begin operation that we knew that there were additional steps that needed to take place for approvals. And so, we alluded to those. And the recommendations and encourage the board of adjustments to consider that there's other actions that still have to take place with other reviewing agencies and authorities and your one board doesn't circumvent the power of the other. So, it was an acknowledgement that there's still other things have to happen before that site can operate.

Speaker 6 So I think I asked this question of. You at some point that. The board of adjustments has ruled, and there's a time period for. Feeling that. Ruling correct. That's correct. And that time period has passed, correct. That's correct. So, there's. I don't know what that's done right.

Speaker 5 From town staff is that that decision has been made in. The appeal period has passed, but the appeal.

Speaker 8 Would be from the applicant, not from. Anyone else all right.

Speaker 5 From the board of adjustments and any aggrieved party that feels the need, they can go to District Court or that it's not an appeal process by the town. It's if someone challenges a decision by the board of adjustments, the only venue in which that can be considered is District Court.

Speaker 7 I make a comment now really so. You're, you know, I have to be argumentative with you on the remediation plan because I'm the one that brought it up at the March 6th. And for a point of clarification. Remediation plans in my experience. Of over 30 years also exists for potential future contamination of a site. In the event that the. Person or the property owner picks up and leaves, takes their stack and goes home in this case. Initially when I wrote my notes, I was going to reiterate that I would like to see a remediation plan as a condition of approval. Based on everything that I've heard tonight. I'm not even sure what that would look like so but. If the site plan were to be approved. I know you don't plan to leave.

Warren Since we do gravel extraction, we do have reclamation plans. What is held on us is a financial guarantee by the state of Colorado and the Division of Reclamation. The only thing I could think of, since we haven't introduced anything, would be to have a reclamation bond that you would hold from us. In in perpetuity. Basically, that says we wouldn't contaminate all the permits that we have through our SPCC and those we are if we generate it, we own it. Forever anyway. As a condition, a possibility would be to put a a financial guarantee or a bond in place that we would hold while we own the property and have to have that the town would be the obligee of that. If something were to happen. That's the only thing that I know of that's. Could be thought of.

Speaker 7 OK, well, I've never had to deal with an asphalt plant in this sense, but other. Other different types of manufacturing businesses and such, and so I appreciate. You offering that up and? Were this if the site plan is approved. I like to think positive that you would be. A good steward of the land that you're occupying. I guess that's I. I mean I just struggle with that one just a little bit and a point of context and I think I said this to you before, it isn't you. It's the other. Properties that I see in this town that are currently vacant because they have issues. They can't just pop a building up on them. They have a bunch of stuff that has to happen because of prior owners, right? And so, I'm trying to be a little future thinking on those types of things. UM. I just have a couple more things, and then I'm gonna stop talking. I promise. First and foremost, I wanted to thank Cornell, the experts, Larimer County in particular, for taking the time out to come and help us understand things, town staff, and most importantly, community members choosing to be involved. I know it's a hot button issue. The last time I saw this place this full was when there was a book. Planning hearing for the Board of trustees. I think it's important. And please don't take what I'm saying out of context. It's important to be informed, as a resident two years ago, I would have had no idea what was going on in this town. It is. The responsibility of the town to inform you based on certain laws, guidelines and everything else, but ultimately, we're all adults in the room and it's important that we keep ourselves informed. We care about our community, not just when it's an asphalt plant, but when it's everything and anything. And I thank you all for being here and I hope that you'll continue. To choose to be involved in other aspects of the town as well. UM. I hope that we can resolve this in a way that doesn't force more legal action, because suing the board of adjustments or suing us or suing whoever is really suing ourselves because the town has to take that burden and that has been a rallying cry of why I got involved in this town in the first place. Was to.

Try to make sure we're always doing things right here. And I would just ask that moving forward, no matter what happens tonight, that y'all will please, please show respect to one another's, even with different views and to us, I know that everyone doesn't see this eye to eye and on the same level, but. We're all Wellington residents. We all care about this community business owners, land owners and all of you, and it is disheartening. To see the level of disrespect that has happened tonight. And I just think that Wellington is better than that and we are all trying to make the best decision. We are just like you. We're we are not paid. We are volunteers. We are given a set of guidelines. We have read 1500 pages over the course of four days to be well informed, to make the best decisions. In the right way, and that's all I have to say.

Speaker 4 I have one last question. On the road, when going to Owl Canyon says you're going to put a right turn lane in there. Is there going to be an acceleration lane heading towards Interstate?

Speaker 1 That's a yes for everybody. Not seeing John, not his head. If you've got more to elaborate, John, you can.

Warren So it'll be a right-hand turn lane. It will be an acceleration lane going eastbound and that'll be when the new County Road 7 gets aligned correctly. So and we are the contractor doing that work, so.

Speaker OK.

Speaker 6 And just one final question or not quite most of the comment that I mean so. We have a town Rd. a County Road and a state highway, and that's all overlapping and in each case these. Different entities have weighed in regarding. Is the on-ramp long enough to accelerate a truck to whatever the speed limit is so they look at all this stuff is it long enough to slow the vehicle down so those are all standards applied by either the state seat dot or Larimer County or the town so there's multiple entities they have to work through and? Uh, this is. They're not just pulling it out. Of thin air.

Speaker 1 All right. Any more comments? Any more questions?

Speaker 11 I guess I just want to make a comment. I haven't said much tonight absorbing it all in. It was a lot of reading to do and. This is probably one of the hardest decisions I think I've encountered with our town and just saying that I am a Wellington native and have farmed land that encompasses that as well and. Have heard every side of the story and you know, I'm gonna go with Lisa too, that. This is so difficult and figuring out you know where we land on this. Listening to I appreciate the the experts, everybody who has come in and our residents that have shared with us. So just know that this is nothing any of us have taken lately.

Speaker 1 Also, thank you Linda. Alright guys, we. Gotta get to a vote. As long as everybody's done and said their. Piece, as Cody mentioned, we've got. A couple options on them.

As far as voting approvals and denying an approval with conditions. Is anybody ready to make a motion on one? Of the three options.

Speaker 6 I make a motion that we approve the site plan for Connell Resources subject to conditions identified in the staff report, which is in paragraph 15 on page 20 of the board packet.

Speaker 1 I have a second.

Speaker 11 I will second that.

Speaker 1 That's motions been seconded. It's the roll call.

Speaker 7 Can we amend the motion?

Speaker 1 Cody, procedural advice please.

Speaker 5 So you have a motion on the table and it's been seconded. It allows discussion. You cannot amend the motion through the discussion. It would require a motion to amend the motion.

Speaker 1 Procedural procedures. Fun, huh?

Speaker 7 Ohh no. It's a very technical reason why I'm interested.

Speaker 1 So we can open for discussion, OK, leave to go.

Speaker 7 The proposed conditions of approval, the board of adjustments put forth. Several requirements and one suggestion. And so, do you do. Are you reading where my brain is?

Speaker 6 Going here? Are you talking about the non-pot water, that one?

Speaker 7 Yes, that we make sure that we include in there. Suggestion that wasn't a. Require it wasn't a conviction. Because water is a hot topic around here it.

Speaker 5 I can speak to that a little bit. One of the reasons why the non-pot water was identified as a recommendation instead of a condition was because the board of adjustments and Mr. Carmen correct me if you remember differently. But part of the challenge was trying to identify. Tap size or how much water and those questions haven't yet been answered because we've been working on these other different types of applications. And so, the amount of water needed for a site. It is usually tied to the water demand analysis provided by the applicant for their operational plan, and so we don't yet have those answers. And so, the. Conditioning it on all or nothing deal was difficult to identify, and so the recommendation became or the recommendation was guidance that. We encourage the use of non-pot for your outdoor irrigation and other things, but not trying to define the specific amount that could be used on the site.

Speaker 7 OK, I'm not sure that that's. The point being, like in all the documents and my understanding of what I read was that horrible water from the town of Wellington, which then would also use the wastewater part, would only be for the administration building all outdoor use operational use. There won't be any truck washing. All of that is water trucked in, and that was the gist of what I was trying to get at was that to make sure that that was part of the. Approval. Does that make sense?

Speaker 5 I think I follow. In in looking at your, your typical site plan review criteria, conditioning whether water is allowed to be used on site or not is not one of your typical criteria is another way of looking at it to require that. I think from an operational standpoint, the dust mitigation process, water I think makes a lot of sense. Irrigation water. You have a standard for your landscape design and irrigation standards that could be adhered to for using native plants and species and drip irrigation instead of spray irrigation and some things like that. That would be more typical of your site plan review conditions of criteria as opposed to you can only use water or. Just I'm trying to tie it back to something that has a measurable standard, I understand, but this entire packet consistently says that that's how the uses are going to be, and that the there won't be. I know this is a harpy thing, but that there won't be any truck washing on site, right? Because we didn't address any of that. If there was going to be. I just want to make sure that those commitments are binding on an approval. You have to ask him at this point, but refer to the chairman if you want to allow comment to come back up and address that question. I my point was trying to just tie it back to measurable standards that we have a precedent for is, but I think. I would defer to the applicant if that's what they're willing to agree to as a binding condition.

Speaker 6 So with that.

Speaker 1 No, I was going to, if we're going to elaborate on that further, I think it's prudent that Mister Warren come up and explain.

Warren Based off of the board of adjustments that has been our plan 100% of the time that we'd only use Wellington water for potable uses, being offices, bathrooms, those type of things, all irrigation, all processed water would not be used a potable source. We'll bring that in. That's absolutely our understanding and what we planned on the whole.

Speaker 1 OK. Thank you, Mr. Warren.

Speaker 6 Thank you. So question does that mean do we need to state that explicitly or is do we need to amend the motion is what?

Speaker 1 I'm asking because that was just a suggestion by the board of adjustments. If we create a condition. In our motion tonight that checks the box to make it binding.

Speaker 5 I think if the Planning Commission wanted to require that as a condition of approval, you could amend the motion to state that. I understand what the applicant is saying and I think that's OK for you to do that, I'd, it wouldn't be Staffs first

recommendation based on the unknown amounts and availability of water, but. That's certainly something you can condition.

Speaker 1 That the use of non-potable water. Complies with the original recommendations from the board of adjustments. Something along those lines. As far as the condition verbiage.

Speaker 5 Yeah, if you if you want to condition the approval upon using non-potable water for outdoor purposes and process purposes, I think that's a condition you can impose. It wasn't Staff's recommendation initially. That's kind of what I'm trying to highlight and trying to tie it back to standards that we have documented and enforceable under our normal processes instead of a one-off unique circumstance. But I think it's, it's certainly the condition that you can impose as part. Of an approval.

Speaker 1 What's the procedure to amend? Do you it? Does it go back to the original motion?

Speaker 6 The question I have would be is that the would that be the will of? This board to add that we're having a discussion. I don't think we've come to a conclusion about whether we believe that's so. It's unclear what the way forward is currently.

Speaker 11 So what? When you said Cody, that wasn't staff's recommendation because of norms. So, are we saying that we're adding another level of policing something in the future? That wouldn't be. We wouldn't be policing the same thing for another business because is that what? I'm hearing then.

Speaker 5 That's part of it and trying to tie things back to our typical standards or standards that are predictable and known to anyone going through an application process, it does get challenging to track those. Those requirements over time and enforcement procedures aren't clear. Whereas we do have clear enforcement procedures in our land use code municipal code. We don't have clear procedures for how to enforce that for one off different types of arrangements that are made development by development.

Speaker 4 But the recommendation isn't enforceable.

Speaker 6 I think. I would be comfortable with the motion as it not imposing a particular one-off condition on one particular user that I think that gets confusing. So that would be. That is my belief, but I don't. I'm only one person, so.

Speaker 11 I can still stand behind that second because I don't want. I wouldn't want to add that on to it.

Speaker 7 I recognize that it isn't enforceable, but in a community that has and I don't know when you'll be up and running, but in a community that has a burden of $80 million in infrastructure directly tied to water and wastewater. Where our newer development neighborhood developments are required to have non-potable for irrigation. We require that of our residents. Where it would be cost prohibitive for

you to use potable water all over that. Site I just think you should know that. I happen to sit on the water sewer rate board too. It will hurt you.

Speaker 1 I think that's a self-policing mechanism right there. Cost prohibition.

Speaker 7 Yeah, I'm trying to just make sure that we're being responsible with a finite resource that. Don't muck it up. Is what I'm trying to say. Don't make mad.

Speaker 1 Post discussion, original motion and second are still active then so. Is it roll call?

Speaker 5 You're still in the discussion phase, if that's the will of the of the Commission, if there's no more discussion, then we can move on.

Speaker 1 To the local vote. Is there any? More discussion on the. Amendment potential amendment.

Speaker 8 Can we hear the motion again, please?

Speaker 5 Can we? You can, I can restate at least as. I heard it. I heard it the motion was to approve the site plan subject to the recommendations of the staff report outlined on page 15. 2020, I'm sorry, I'm sorry. Thank you. Page 20, paragraph 15.

Speaker 1 That was motion by Commissioner Whitehouse, seconded by Commissioner Canada. OK, Patty, roll call.

Speaker 3 Commissioner Carmen Whitehouse McCaffrey. Yes, where no Cholet. Neck yes starter.

Speaker 1 OK, motion passes. Voting give me a second to get back. To the agenda.

Speaker Do you have the agenda?

Speaker 1 Yes, Sir. Thank you. OK. After that, do you want to give everybody a minute to clear out? Bird, you want to give everybody a minute to clear out.

Speaker 5 I it would be hard to conduct business. If we don't.

Speaker 8 OK. Thanks Tony.

Speaker 19 How are you?

Speaker 1 Wait for people to file out. I don't think so. I don't have anything.

Speaker 18 I don't have anything not close to voting no.

Speaker 1 Vote your heart, man. You gotta do what you gotta do. Yeah, guys, we're not done. Still more. OK. Just so you know, I know. Give us a minute to clear out. Cody, do you have any announcements?

Speaker 5 I was going to make one about the minutes, but it's not.

Speaker 1 It's not permanent. OK? No announcements.

TRANSCRIBER'S AFFIDAVIT

I, Samuel Grace, state as follows:

1. I am employed by Integreon as a Workflow Coordinator.

2. I was requested to transcribe the audio and video recording of the June 5, 2023 Wellington Planning Commission hearing posted to the Wellington Planning Commission website at http://www.townofwellington.com/160/Planning-Commission.

3. I transcribed the audio recording using Express Scribe, Infinity Pedal V3.

4. I certify that the foregoing transcript excerpt constitutes a true, correct, and impartial transcript to the best of my ability to hear and understand the audio recording from the June 5, 2023 Wellington Planning Commission hearing.

5. Where the speakers in the audio recording were unidentifiable or the comments inaudible, I have so indicated.

Dated this 16th day of August, 2023.

Samuel Grace

Name: Samuel Grace
Title: Workflow Coordinator
Company: Integreon

TRANSCRIBER'S AFFIDAVIT

I, Steven Rovetto, state as follows:

1. I am employed by Integreon as a Word Processor.

2. I was requested to transcribe the audio and video recording of the June 5, 2023 Wellington Planning Commission hearing posted to the Wellington Planning Commission website at http://www.townofwellington.com/160/Planning-Commission.

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Dated this 16th day of August, 2023.

Steven Rovetto

Name: Steven Rovetto
Title: Word processor
Company: Integreon

TRANSCRIBER'S AFFIDAVIT

I, Emily Erickson, state as follows:

1. I am employed by Integreon as a Workflow Coordinator.

2. I was requested to transcribe the audio and video recording of the June 5, 2023 Wellington Planning Commission hearing posted to the Wellington Planning Commission website at http://www.townofwellington.com/160/Planning-Commission.

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5. Where the speakers in the audio recording were unidentifiable or the comments inaudible, I have so indicated.

Dated this 16th day of August, 2023.

Emily Erickson

Name: Emily Erickson
Title: Workflow Coordinator
Company: Integreon

Site Plan Appeal

PRESENTED BY JEFFREY CULLERS, ATTORNEY FOR AYLA AND BEN LEISTIKOW

AUGUST 23, 2023

Presentation Outline

I. Criteria for Approval
II. “Toxic chemicals” Setback
III. “Light Industrial” Setback
IV. 800-ft Setback
V. Lack of Elevations
VI. Wrap-up and Conclusion

Criteria for Approval

A. The site plan is consistent with the Comprehensive Plan and the intent stated in this Land Use Code.
B. The lot size and lot dimensions are consistent with what is shown on the approved final plat.
C. No buildings or structures infringe on any easements.
D. The proposed site grading is consistent with the requirements of any applicable adopted storm drainage criteria or master drainage plans.
E. The density and dimensions shown conform with Article 4 of this Code or the approved PUD requirements.
F. The applicable Development Standards have been adequately addressed and the proposed improvements conform with Article 5 of this Code.

(Code Section 15-2-120(c))

“Toxic chemicals” Setback

The setbacks have been treated by staff as part of meeting Criteria F (or Criteria 6), which is: The applicable Development Standards have been adequately addressed and the proposed improvements conform with Article 5 of this Code.

Code Section 15-4-30(v):

2. Any Industrial and Manufacturing, Heavy use producing and curating toxic chemicals or conducting animal slaughtering shall be located at least:
    1. Two thousand six hundred forty (2,640) feet from any residential district, religious land use, medical care facility, or school.

Question: **Does this setback apply?**

“Toxic chemicals” Setback

- Key phrase: an industrial use “producing and curating toxic chemicals”.
- Does this apply to the planned asphalt plant?
  - Applies to the production process, not just the finished product.

“Toxic chemicals” Setback

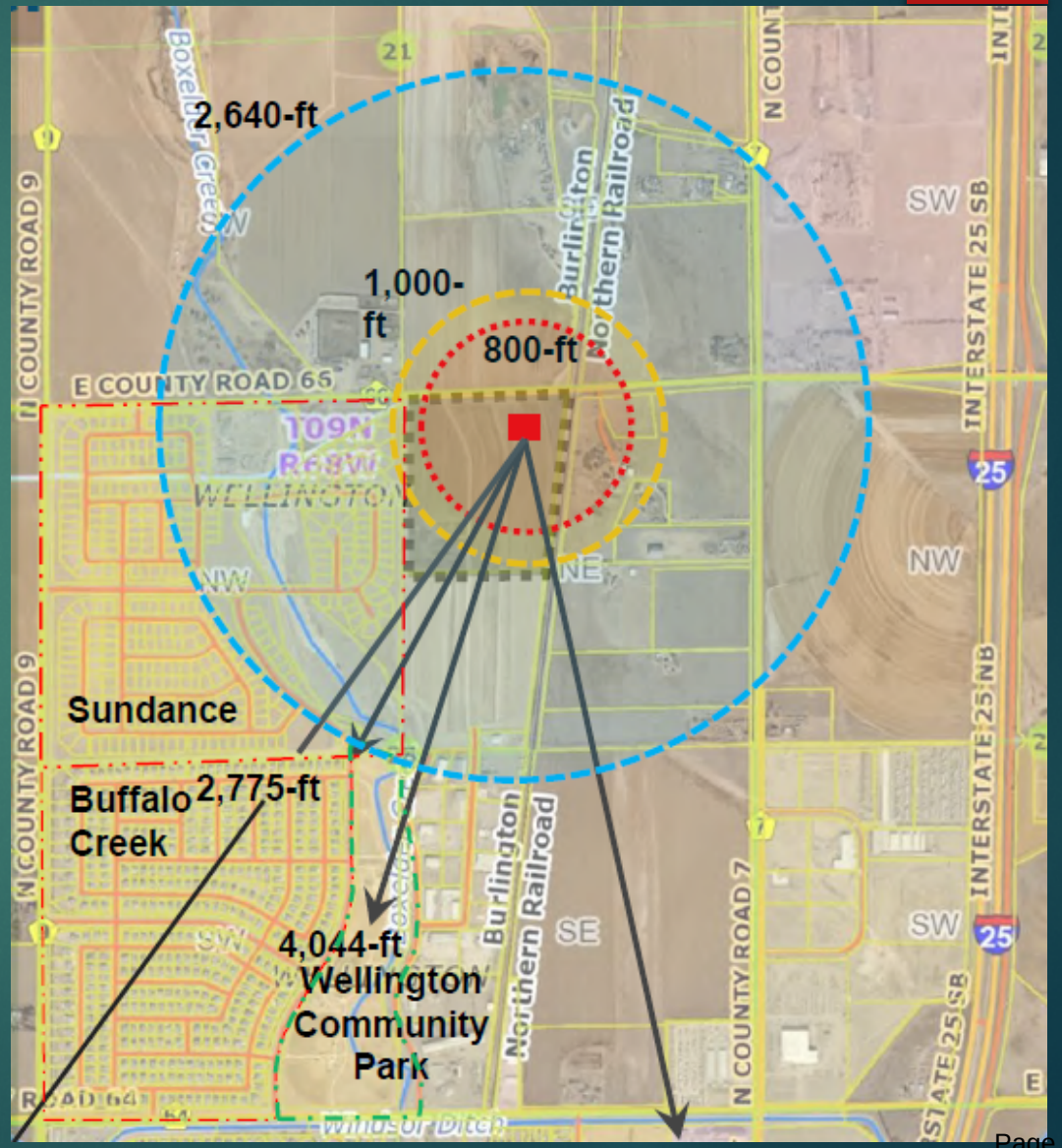
HAP Pollutant	Emission Factor (lb/ton asphalt produced	Emission Factor Reference	Actual (lbs/hr)	Potential (lbs/hr)	Actual (lbs/yr)	Potential (lbs/yr)	Permit Limits (lbs/yr)
Acetaldehyde	0.0013	AP-42, Table 11.1-10 *(p. 11.1-26)*	0.338	0.520	390	390	390
Hexane	0.00092	AP-42, Table 11.1-10 *(p. 11.1-21)*	0.2392	0.368	276	276	285.9
Formaldehyde	0.000689	Michigan Department of Environmental Quality [1]	0.179	0.276	206.7	206.7	930
Toluene (NG)	0.00015	AP-42, Table 11.1-10 *(p. 11.1-21)*	0.039	0.060	45	45	870
Toluene (WO)	0.0029	AP-42, Table 11.1-10 *(p. 11.1-26)*	0.754	1.160	870	870	
Quinone (NG)	0.00027	AP-42, Table 11.1-9 *(p. 11.1-19)*	0.0702	0.108	81	81	
Quinone (WO)	0.00016	AP-42, Table 11.1-10 *(p. 11.1-26)*	0.0416	0.064	48	48	
Benzene (WO), (NG)	0.00028	AP-42, Table 11.1-9 *(p. 11.1-20)*	0.0728	0.112	84	84	
Ethylbenzene (WO), (NG)	0.0022	AP-42, Table 11.1-9 *(p. 11.1-19)*	0.572	0.880	660	660	
Xylene (WO), (NG)	0.0027	AP-42, Table 11.1-9 *(p. 11.1-19)*	0.702	1.080	810	810	
Total PAH (NG)	0.00011	AP-42, Table 11.1-10 *(p. 11.1-19)*	0.0286	0.044	33	33	
Total PAH (WO)	0.00023	AP-42, Table 11.1-9 *(p. 11.1-20)*	0.0598	0.092	69	69	
HCl (WO - Only)., NG - ND)	0.00021	AP-42, Table 11.1-8 *(p. 11.1-18)*	0.0546	0.084	63	63	

Record, page 1240, Addendum to Refined Modeling Report. There are also charts for the criterial pollutants and VOCs.

Asphalt production does release “toxic chemicals” into the air. That is not debatable.

“Toxic Chemicals” Setback

- From the traffic study (Record page 437)
- Blue Circle is the 2,640 setback.
- Includes about half of “Sundance” subdivision.



“Light Industrial” Setback

- Code Section 15-4-30(w):

(w) Industrial and Manufacturing, Light.

(1). Industrial Zones.

a. An Industrial and Manufacturing, Light use shall be located at least two hundred fifty (250) feet from any residential district or use.

“Light Industrial” Setback

What is “Light industrial?”

Code definition:

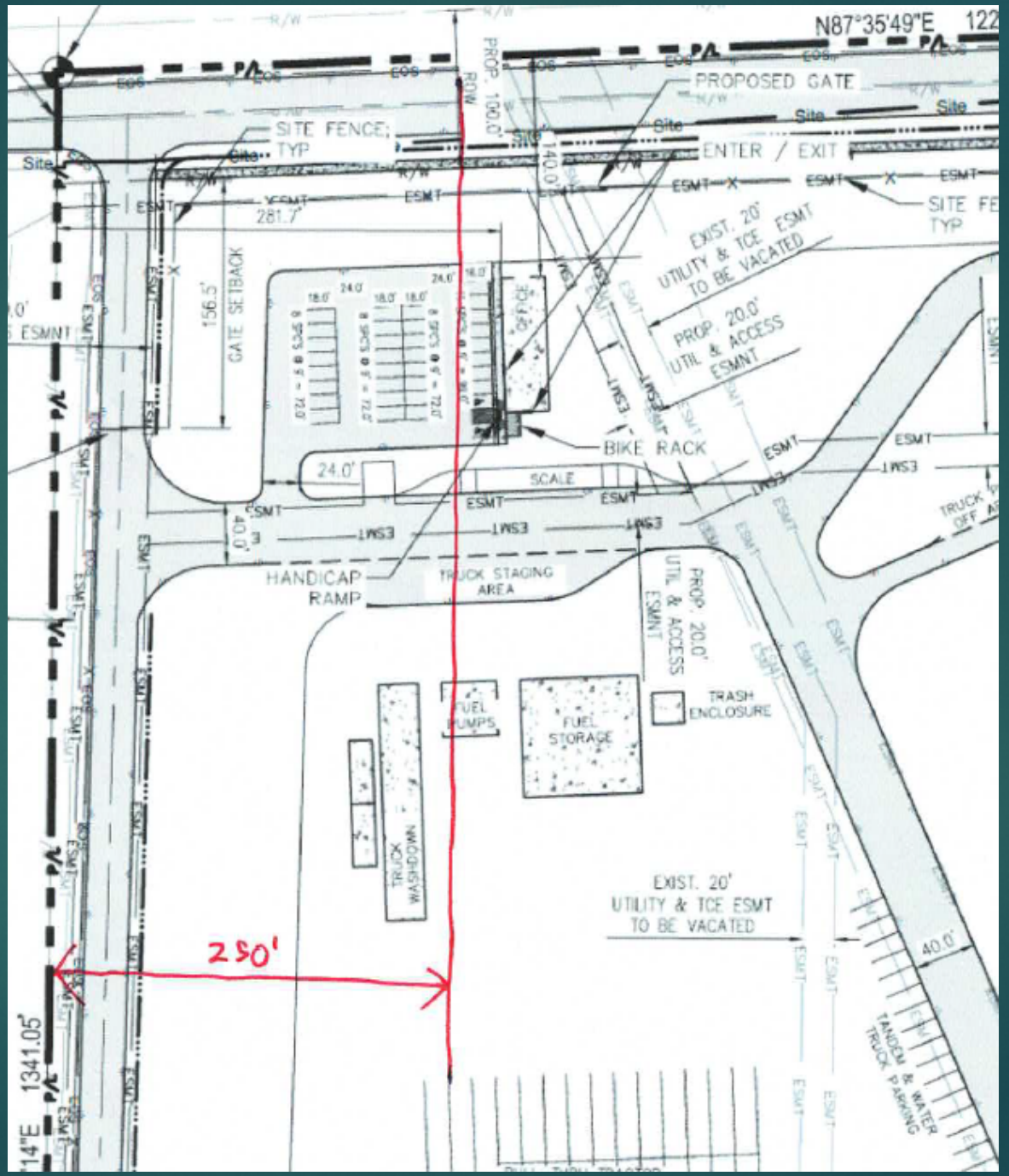
Industrial and Manufacturing, Light Manufacturing of products, from extracted, raw, recycled or secondary materials, including bulk storage and handling of those products and materials, or crushing, treating, washing, and/or processing of materials. This includes similar establishments, and businesses of a similar and no more objectionable character. It also includes incidental finishing and storage. …

“Light Industrial” Setback

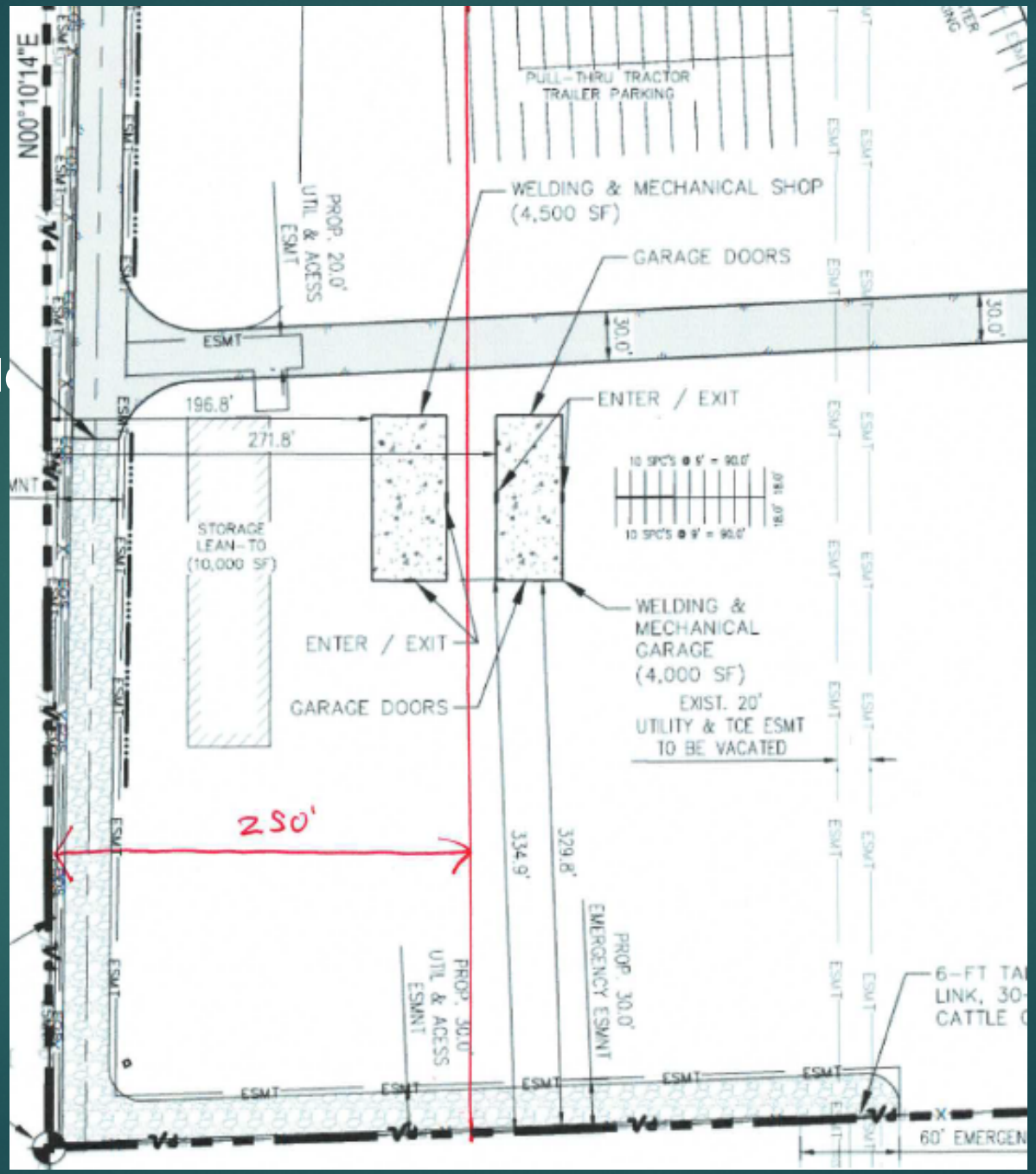
Residential district is on the west side of the site.

What is planned to be on the west side of the site:

- Fuel pumps, truck washing (maybe withdrawn), truck staging area, welding and mechanical shop, outdoor storage, roadways along the western side, and the main entrance. (Record page 449, site plan).

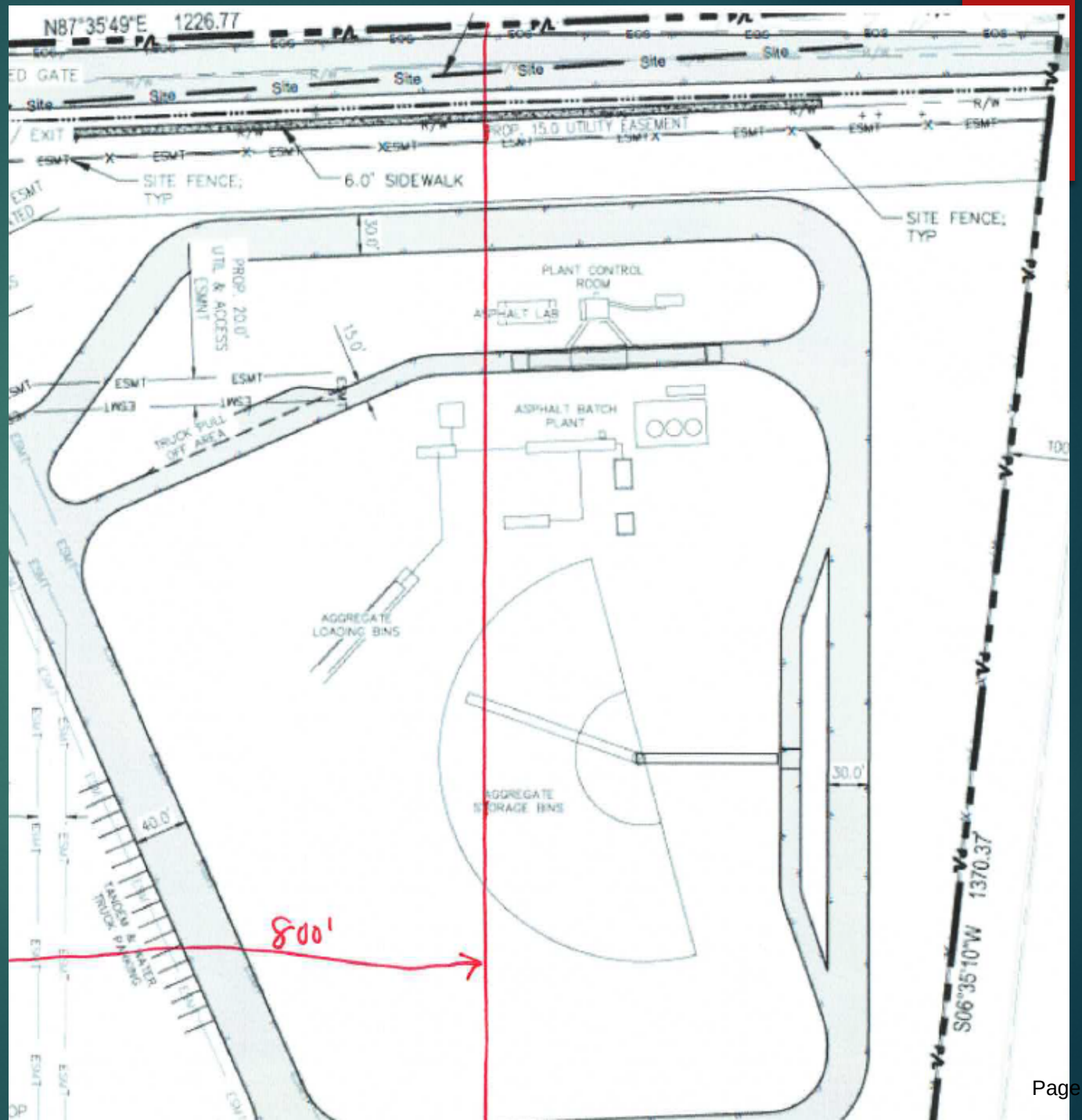

N87°35'49"E
PROPOSED GATE
SITE FENCE; TYP
ENTER / EXIT
EXIST. 20' UTILITY & TCE ESMT TO BE VACATED
PROP. 20.0' UTIL & ACCESS ESMNT
281.7'
156.5'
GATE SETBACK
BIKE RACK
SCALE
24.0'
HANDICAP RAMP
TRUCK STAGING AREA
TRUCK WASHDOWN
FUEL PUMPS
FUEL STORAGE
TRASH ENCLOSURE
EXIST. 20' UTILITY & TCE ESMT TO BE VACATED
250'
1341.05'
40.0'
TANDEM & WATER TRUCK PARKING

- Slide placehol



800-ft Setback

The red line is 800 feet from the western border.



Lack of Elevations

The Code clearly requires elevation drawings:

- Section 15-5-90: Dimensioned elevation drawings or renderings, including front, back, and side elevations shall be submitted with all site plan applications to illustrate conformance with the regulations herein. Elevations shall indicate materials to be installed on all building surfaces.

The purpose is to ensure that the basic requirements of 5.09.2.B-F are met, regarding building exteriors.

Connell's submissions clearly don't comply (record pages 441, 442, 477-487).

Approval with Conditions

- 2.12.4:

A. Minor variations in the location of structures, improvements or open space areas caused by engineering or other unforeseen difficulties may be reviewed and approved by the Town staff. Such changes shall not exceed ten percent (10%) of any measurable standard or modify the use, character, or density of an approved site plan. All plans so modified shall be revised to show the authorized changes and shall become a part of the permanent records of the Town.

B. Changes to approved site plans that exceed the ten percent (10%) threshold, or other major modifications (such as changes in building size or footprint, relocation of access points, changes to required parking, etc.), shall be considered as a new site plan application. Such amendments shall require Planning Commission review and approval to become effective. A complete site plan application shall be prepared and submitted in compliance with the requirements set forth in this Section.

Matters to Consider

(1) Whether the decision of the administrative official or Planning Commission was a clear error, as opposed to fairly debatable, according to the provisions of these regulations.

(2) The interpretation instructions of these regulations.

(3) The purposes, intent, and design objectives of any standards that are subject to the appeal.

(4) The record on the application, including the official plans and policies of the Town used to evaluate the application or make the decision.

(5) Whether the final decision and the grounds for relief requested in the appeal are within the authority granted by these regulations.

(6) Whether there are other more appropriate and applicable procedures to achieve the [Appellant]'s proposed objective, such as a plan amendment, text amendment, planned zoning districts, a zoning map amendment, or a variance.

Conclusion

- The Board of Trustees should reverse the Planning Commission.

WELLINGTON ASPHALT MIXING PLANT
Site Plan Appeal

AUGUST 23 2023

CONNELL

TOWN OF WELLINGTON

ditesco

AGENDA

1. Background
2. Appeal Grounds Have No Merit
    1. 2,640 Setback Inapplicable
    2. Light Industrial Setbacks Inapplicable
    3. Accessory Contractor and Contractor Storage will meet 100 ft setback
    4. Asphalt Use Meets 800 ft Setback
    5. Impacts Confined to Site per Code
    6. Exemplary Drawings and Renderings were provided for the office, other drawings were properly deferred
3. Condition(s) of Approval
4. Appeal Should be Denied; Site Plan Approval Upheld

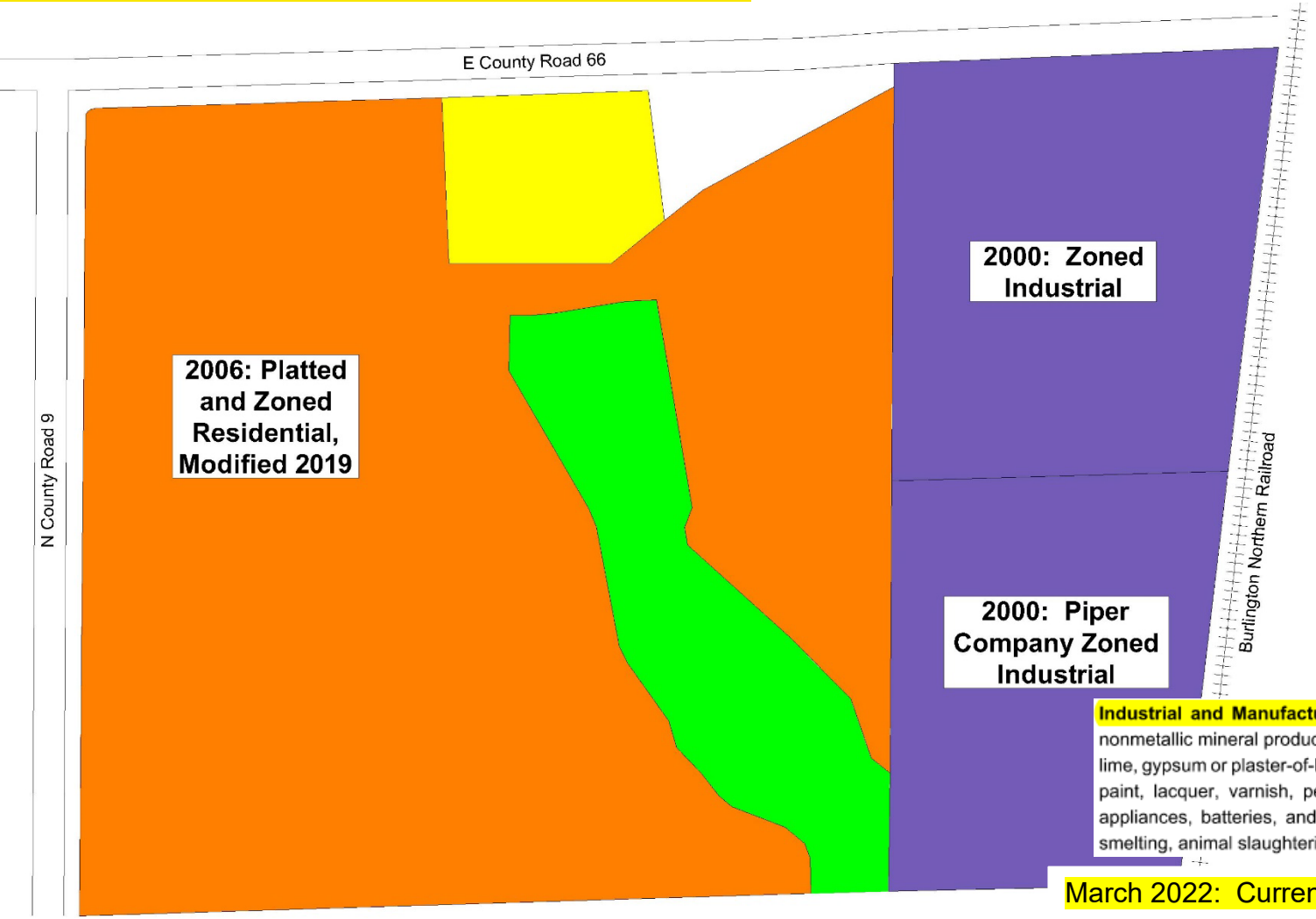
ABOUT CONNELL RESOURCES, INC.

- Founded in Loveland in 1946, Incorporated in 1969
- Serving North Colorado Community for 77 Years
- LOCAL, Family and Employee-Owned
- Operate within a 60-mile radius of Fort Collins
- 265 full time employees (18 of whom are residents of Wellington)
- Self-perform earthwork, pipeline utilities (water, sanitary sewer, storm sewer), aggregate production, and asphalt paving
- Current Asphalt Mixing Plant SE of Harmony and I-25 for nearly 20 years. Connell has operated the Asphalt Mixing Plant on two other sites east of I-25 for 10 years prior to moving east of I-25
- New site will have 35-40 full time employees

BACKGROUND AND PURPOSE OF HEARING

- Proposed Asphalt Mixing Plant operation is being relocated from its current site at Harmony and I-25 near Costco Wholesale
- Proposed site – 3548 E County Road 66
- The proposed site has been zoned ***Industrial and Manufacturing Heavy*** since 2000 and has retained this zoning designation through multiple Town Comprehensive Plan (2021), Zoning Map, and Land Use Code Updates (2022).
- Asphalt Mixing Plant is a use permitted by right in the Town of Wellington's Land Use Code
- Use is not in question; overall site plan not in question – Solely issues in appeal
- Residential zone to the west remains undeveloped

PROJECT INTRODUCTION – ZONING MAP



TOWN OF WELLINGTON ZONING MAP
AMENDED SEPTEMBER 24, 2013

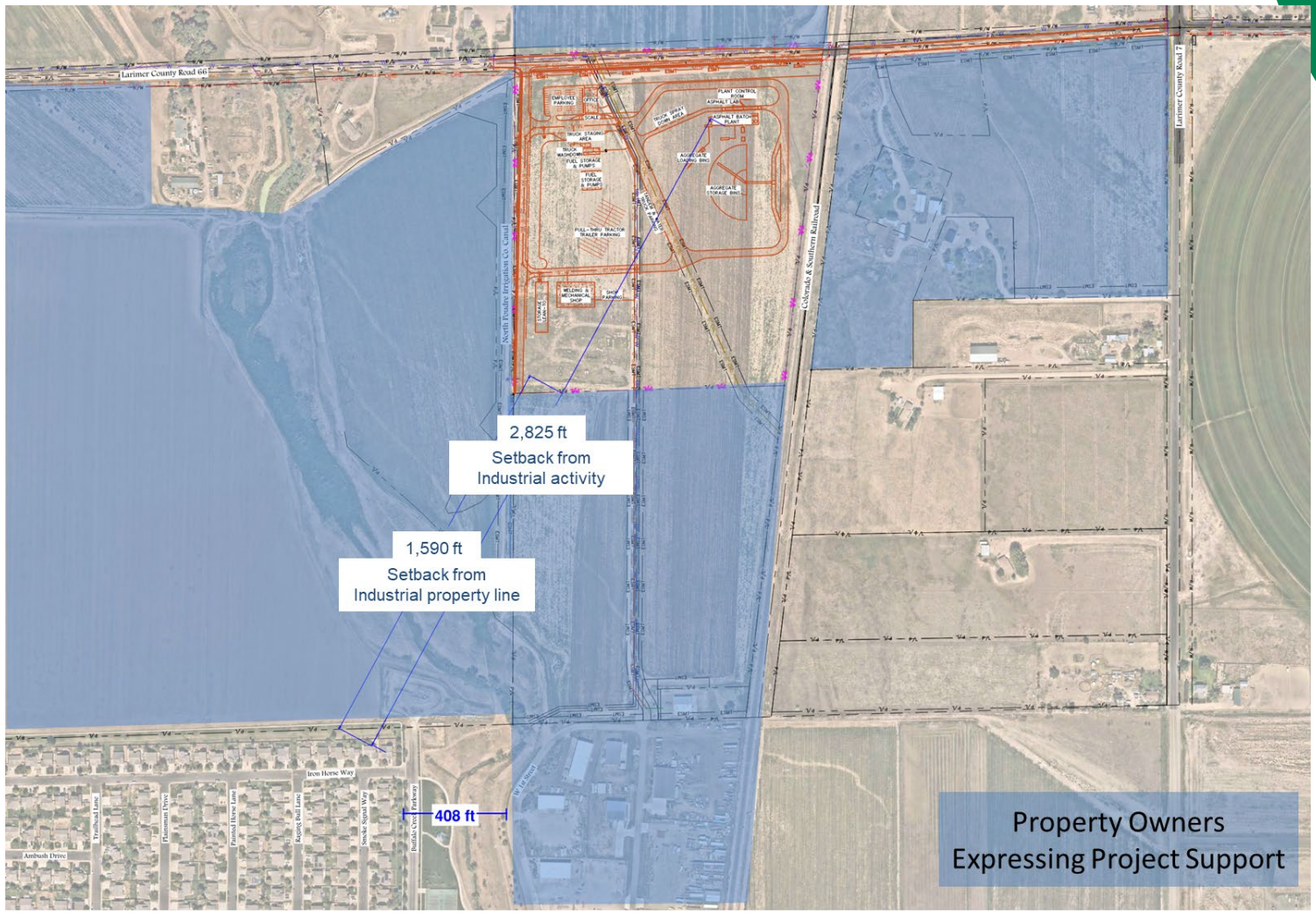
A	AGRICULTURE
R-1	RESIDENTIAL RURAL
R-2	RESIDENTIAL , MEDIUM
R-4	RESIDENTIAL MULTIFAMILY
C-1	COMMUNITY COMMERCIAL
C-2	DOWNTOWN COMMERCIAL
C-3	HIGHWAY COMMERCIAL
LI	LIGHT INDUSTRIAL
TR	TRANSITIONAL
I	INDUSTRIAL
P	PUBLIC

Industrial and Manufacturing, Heavy Manufacturing of paper, chemicals, plastics, rubber, cosmetics, drugs, nonmetallic mineral products (such as concrete and concrete products, glass), primary metals, acetylene, cement, lime, gypsum or plaster-of-Paris, chlorine, corrosive acid or fertilizer, insecticides, disinfectants, poisons, explosives, paint, lacquer, varnish, petroleum products, coal products, plastic and synthetic resins, electrical equipment, appliances, batteries, and machinery. This group also includes asphalt mixing plants, concrete mixing plants, smelting, animal slaughtering, oil refining, and magazine contained explosives facilities.

March 2022: Current Land Use Code for setbacks and building heights adopted.

SITE LOCATION

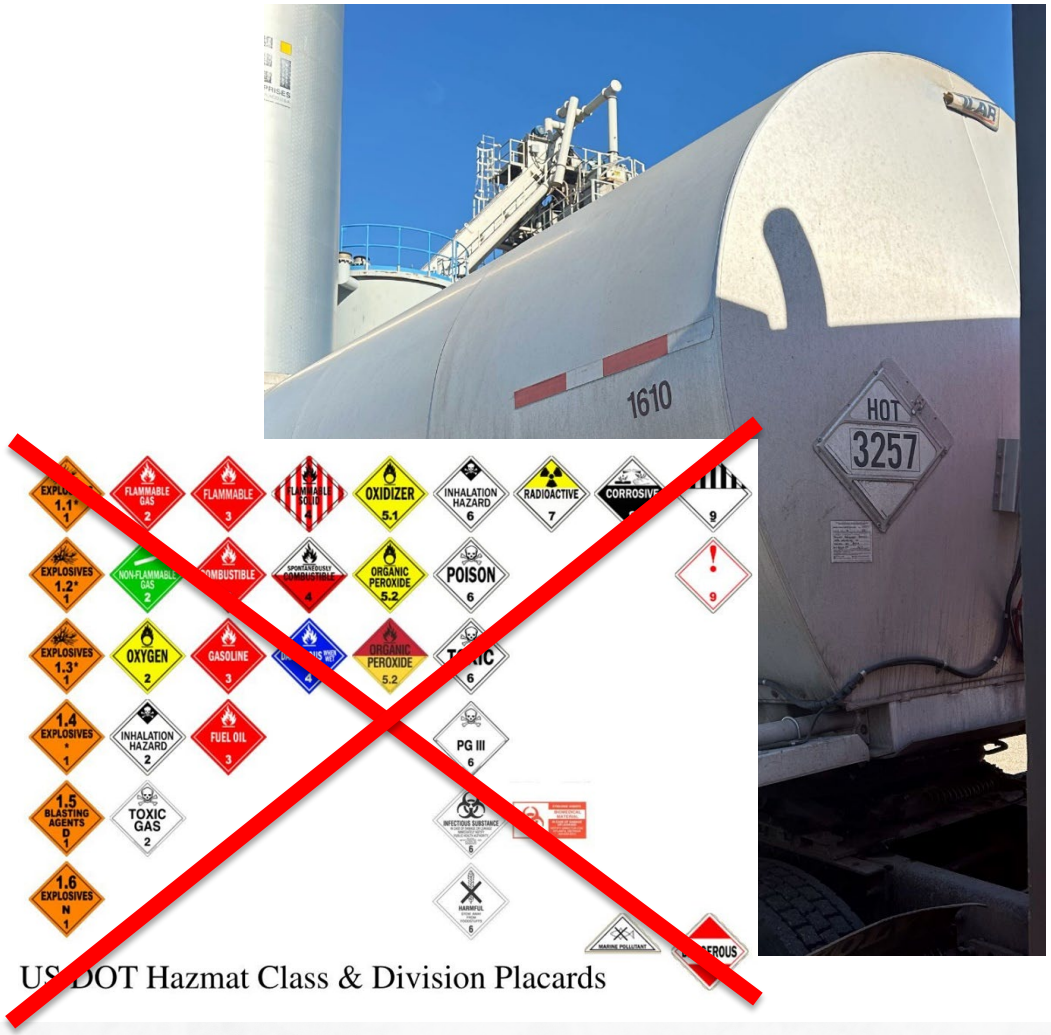
- All adjacent Property Owners have been consulted; site plan is an output of Property Owners input and Town of Wellington staff.
- All directly adjacent Property Owners have expressed support for the project.
- Site layout has been thoughtfully planned to reduce impacts to adjacent properties and the Wellington community.



SITE PLAN APPROVAL OVERVIEW

- Site Plan provides thoughtful development which adheres to the 6 conditions of approval imposed by BOA.
- Asphalt Mixing Plant northeastern corner of the site (nearest to the railroad and furthest from residential zoned property)
- October 27, 2022 - Board of Adjustment approved variance unanimously, 5-0, with conditions
- June 1, 2023 - Planning Commission approved site plan 6-1
  - Continued twice for additional studies, reports and analysis to address questions
  - Four-hour hearing
  - All appeal issues properly considered and decided by the Planning Commission

2,640 SETBACK - NOT APPLICABLE



US DOT Hazmat Class & Division Placards

- Asphalt Plant does not "produce or curate toxic chemicals"
  - USDOT classifies asphalt cement as non-hazardous (pictured on left)
  - OSHA does not regulate exposure limits to asphalt fumes
  - ATSDR concluded asphalt mixing plants do not pose a public health hazard.
  - EPA classifies asphalt mixing plants as a minor source emitter
- Asphalt mixing combines two raw materials – sand/gravel (95%) and asphalt cement (5%), neither of which are produced on site.
- Town staff determined 1000 ft setback was an applicable setback pursuant to Section 15-4-30(v)(1) of the Code.
- BOA granted variance from a 1000 ft to 800 ft setback
  - Decision not appealed, now final

2,640 SETBACK - NOT APPLICABLE

- National Asphalt Pavement Association (NAPA)
- Agency for Toxic Substances and Disease Registry (ATSDR)
  - No chemicals or compounds near levels that would pose a public health hazard
- Antea Group
  - Site specific air modeling report
  - Meets all state and federal standards
  - None of the 17 emission components modeled reach acute or chronic levels based on EPA, CalEPA, NIOSH or ATSDR
- Sanborn Head
  - Dr. Stephen Zemba – Health Risk Assessment

  Any risk to human health is *de minimis;* "lacking significance or importance **:** so minor as to merit disregard"
  - Any exposure attributable to plan would be well within EPA determined safe levels
- Larimer County
  - Lea Schneider

CONNELL 2023 RISK ASSESSMENT

- Connell contracted a consultant to conduct air dispersion modeling for criteria and noncriteria pollutants of Hazardous Air Pollutants/Air Toxics to evaluate community risk and determine if planned controls were adequate.

- Data for the modeling and risk assessment included the maximum pollutant emission rates from Connell's current 2021 permit, control equipment, local meteorology, etc.

- The air dispersion model for criteria pollutants and HAPs were determined to be below both the chronic and acute levels known to cause harmful health impacts under Federal and state screening values and health guideline values.

SITE PLAN COMPLIES WITH SETBACKS; 250' LIGHT INDUSTRIAL SETBACKS ARE NOT APPLICABLE

- Site is zoned Industrial, not Light Industrial.
- Light Industrial setbacks do not apply
- Nonetheless, all the accessory uses associated with the principal use of asphalt plant can be slightly adjusted to meet the Light Industrial setbacks
- Such minor adjustment is allowed per Town Code (2.12.4)
- Purpose of Light Industrial Setbacks are to protect adjacent residential zone property
  - Adjacent residential zone property owner has no concerns

Sundance at Daubert Farm Holdings, LLC is the owner of the land immediately west of the proposed Connell site. We currently have a single-family home subdivision planned for this site and plan to construct it in the future. We have had several meetings and conversations with representatives from Connell, as well as several meetings and conversations with Cody Bird of the Wellington Planning Department. In every meeting we found all parties willing to work together to produce a plan that would work well for everyone. We have known from the very beginning that the land immediately east of our site would be developed into an industrial commercial facility. I am familiar with Connell's current plant located on I-25 just south of the Harmony exit. I have always been impressed with their efforts to make the plant as aesthetically pleasing as possible. We feel there are far worse potential users for this site than Connell. We also think Connell will be a good neighbor to our community. We fully support Connell's proposal for their plant and believe the effect it will have on our community will be minimal. We ask that you please approve this proposal.

Thank you for your time.

Sincerely,

John G. Giuliano
Managing Member

PROPOSED CONDITION OF APPROVAL

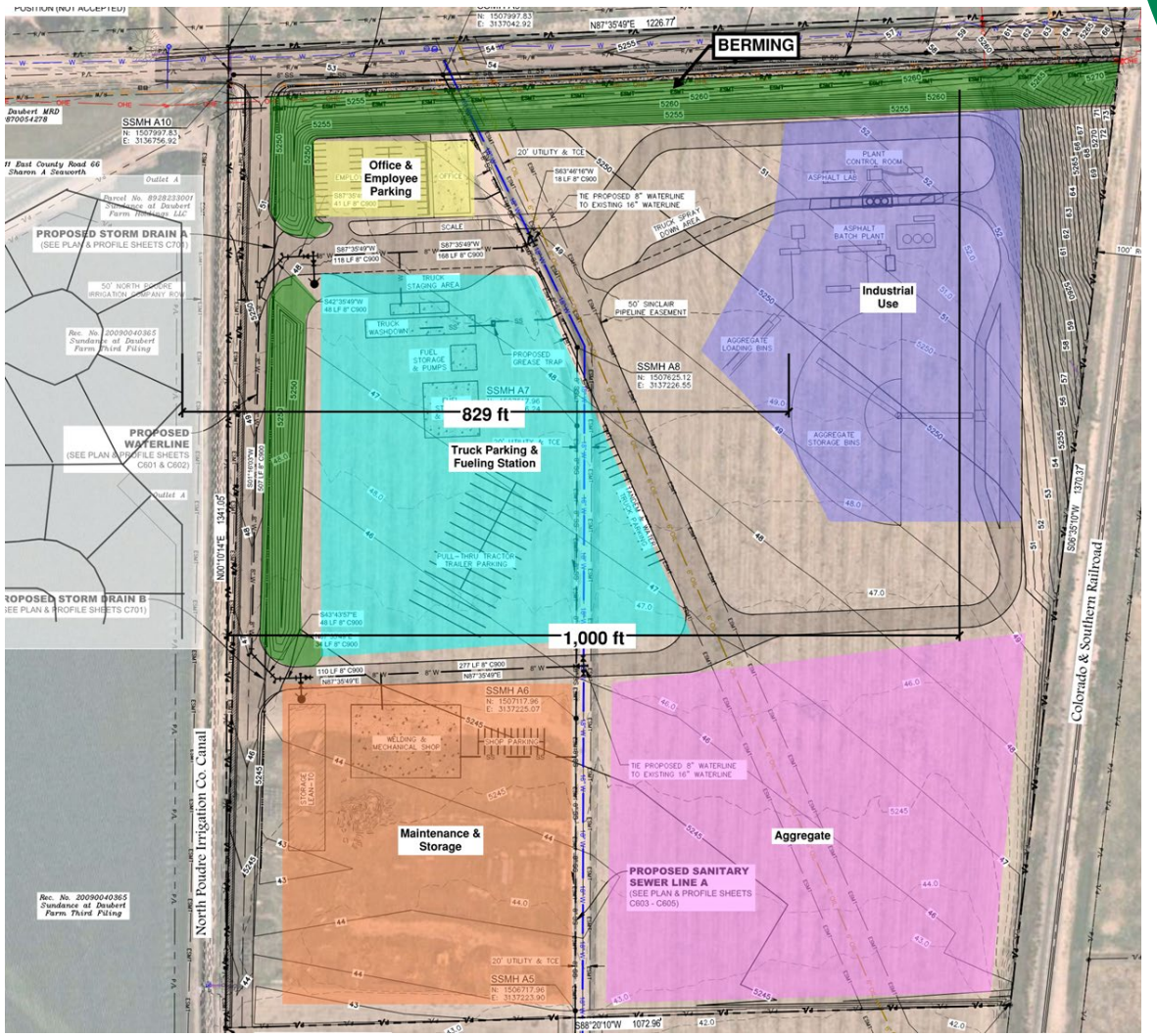
- Minor Site Plan Variations

CONTRACTOR AND CONTRACTOR STORAGE POTENTIAL CONDITION OF APPROVAL

- Accessory Contractor and Contractor Storage will meet 100 ft setback
- Nonetheless, all the accessory uses associated with the principal use of asphalt plant can be slightly adjusted to meet the Light Industrial setbacks
- Such minor adjustment is allowed per Town Code (2.12.4)

SITE PLAN COMPLIES WITH 800 FT SETBACK

- Permanent/fixed components of asphalt plant consist of Control House, Silos, Mixing Drum, Bag House/Dryer Stack
- All are at least 800 feet from residential zoned property line, as shown on original Site Plan approved by Planning Commission
- Temporary/moveable objects such as Stockpiles, Aggregate Bins, and Conveyor Belts were not dimensioned on Site Plan, nor shown in any permanent location as they are not fixed
- All these components can and will be moved to be at least 800 feet from residential zoned property line in final site plan
- As with other faulty interpretations, can be clarified with condition of approval



IMPACTS CONFINED TO SITE PER WELLINGTON CODE

- All evidence supports that asphalt mixing plant will comply with county, state and federal standards in all respects
- Wellington Code cannot be interpreted to mean that the amount of “dust, fumes, odors, smoke, vapor and noise” allowed outside the property line is zero – otherwise the Town has allowed numerous violations of its Code to be approved and maintain operations for years
  - At least five CDPHE Air Emissions Permits within Light Industrial zoning within Town limits
- Must be interpreted to mean compliance with established standards
  - Planning Director testified as to this interpretation
- Not possible for any development to contain 100% of dust, fumes, odor, smoke, vapor and noise
- Otherwise no need for additional language regarding “compliance with state air pollution laws”
- Multiple third-party studies confirm project will comply all applicable regulations

IMPACTS CONFINED TO SITE PER WELLINGTON CODE

As Staff explained during the PC Hearing in response to a question from the Commission regarding the intent of section 15-3-40(a)(3) of the Code, the intent of this section of the Code is to ensure that the Applicant has implemented proper mitigation measures to address relevant concerns and mitigate what can be feasibly mitigated:

> "In my experience in in planning, you typically design sites to mitigate adverse impacts as best you can. . . . it might be impossible to mitigate every single emission from every single source in town and how that standard might be applied town wide, consistently and fairly. Intent can be interpreted in large part that can be the role of the Planning Commission and considering the site application, but the intent from Staff's perspective would be to provide controls and mechanisms and mitigation measures to address the concerns. That if an operation involved heavy smoke and it's unmitigated, that would obviously not meet the intent of the of that language in the land use code. If an operation generates smoker vapors and the majority of it is mitigated except for worst case days, I think that arguably would meet the intent. I recognize that a lot of what's being looked at is pretty black and white. Right. And an application or site in real world activities, it's not always practical to eliminate 100% of the mitigating or the circumstances which might need mitigation if the standard is all or nothing. I'm not sure how we apply that to all of our land. These applications, all everywhere in town. So my position would be that the intent would be to mitigate all that can be mitigated through site plan controls."

Transcript of PC Hearing, p. 65-66.

MITIGATION OF SITE IMPACTS

Additionally, Connell has incorporated the following design principles into the Site Plan to mitigate impacts:

- Satisfied BOA conditions of approval
- Site emissions monitored and controlled by County, State, and Federal standards
- Site operations limited
- 15-foot landscaped berm
- Cognizant site planning
- Relocation and improvements to local infrastructure
- Xeric-low water use landscape predominantly non-potable water – Town water NOT used in plant processes or landscape irrigation

ADDITIONAL INFORMATION, INVESTIGATIONS, AND STUDIES

- Site Location
- Landscaping
- Traffic Planning and Impacts
- Wildlife Impact Study
- Noise Assessment Study
- Permitting
  - Requirements
  - Reporting
  - Enforcement
- Stormwater and Drainage
- Ground Water Monitoring
- Air Quality
  - Dispersion Modeling
  - Health Risk Assessment
  - Peer Reviewed by Larimer County and CDPHE

PERMITTING "CONTROLLED IN ACCORDANCE WITH STATE STANDARDS"

Environmental Permits for Wellington Site

Permit Type	Permit Number	AIRS ID	Purpose	Governing Entity	Enforcement Fine Range	Governing Agency Inspection Freq.	CRI Inspection Frequency	CRI Testing Frequency
Air	00LR0746*	069-0373	HMA plant permit	CDPHE-APCD	$15,000 - $54,833 per day per violation	Target Freq: Every 2 Years	Monthly, Annual, Per O/M Plan	Monthly, Annual, Per O/M** Plan
Air	20LR0484.XA*	069-0353	HMA plant genset permit	CDPHE-APCD	$15,000 - $54,833 per day per violation	Target Freq: Every 2 Years	Monthly, Annual, Per O/M Plan	Monthly, Annual, Per O/M** Plan
Air	TBD	TBD	Facility air permit for aggregate processing	CDPHE-APCD	$15,000 - $54,833 per day per violation	Target Freq: Every 2 Years	Monthly, Annual	NA
Air	Various	Various	Individual permits for crushing equipment	CDPHE-APCD	$15,000 - $54,833 per day per violation	Target Freq: Every 2 Years	Monthly, Annual	Depends on each crushing unit
Stormwater	COR900000	NA	Facility industrial stormwater discharge	CDPHE-WQCD	$10,000 - $47,357 per day per violation	Target Freq: Every 2 Years	Quarterly, Annual & Post Storm Events	Bi-monthly, Quarterly, Annual
Petroleum Storage	TBD	NA	AST registration with Colorado	CDLE-OPS	$0-$37,500 /day/violation with no cap	Target Freq: Every 2 Years	Monthly, Annual	Annual
SPCC	NA	NA	Plan for petroleum storage	CDLE-OPS	$0-$37,500 /day/violation with no cap	Target Freq: Every 2 Years	Monthly, Annual	Annual

*Permit number will change when permit issued for new facility

**CDPHE-APCD Approved Operation/Maintenance Plan

CDPHE-APCD (Colorado Department Public Health Environment - Air Pollution Control Division)

CDPHE-WQCD (Colorado Department Public Health Environment - Water Quality Control Division)

CDLE-OPS (Colorado Department Labor & Employment - Oil & Public Safety)

VOLUNTARY AIR QUALITY STUDIES – MAJOR VS MINOR SOURCES

Larimer County Major Source Emitters

Emitter	2014 Reportable Greenhouse Gas Emissions* (Tons of CO2)	2021 Reportable Greenhouse Gas Emissions (Tons of CO2)
Colorado State University	46,500	43,820
Anheuser Busch	50,493	43,712
Larimer County Landfill	145,812	195,915
Broadcom - Fort Collins	213,562	125,324
Rawhide	2,173,850	1,738,576

*https://www.coloradoan.com/story/news/2016/07/14/meet-larimer-countys-5-biggest-polluters/86818052/

- EPA and CDPHE recognize Asphalt Mixing Plants as a *minor* source emitter.
- In comparison to the five major source emitters in the chart to the left, Connell's maximum allowable CO emissions are ***19.5 tons/year. Actual for 2022 was 10.53 tons.***
- Other permitted minor source emitters in Wellington include fuel stations and commercial and light industrial facilities. (At least 5 currently active) These active permits allow releases of VOC's, Benzene, Hexane, Toluene, and Ethylbenzene.

VOLUNTARY AIR QUALITY STUDIES

- Connell ***voluntarily*** completed an Air Dispersion Model dated May 18, 2023 by Antea Group

- Connell ***voluntarily*** completed Health Risk Assessment and Evaluation dated May 24, 2023 by Sanborn Head

- The results of each study indicate
  - Compliance with all Local, State and Federal air quality standards.
  - Connell's Wellington Mixing Plant will have minimal impact to local air quality.
  - Connell's Wellington Mixing Plant will have no effect on public health.

VOLUNTARY AIR QUALITY STUDIES – DISPERSION MODEL

Connell Resources
Wellington, CO

Modeling demonstrated screening levels will not be exceeded for chronic long-term and acute short-term levels at nearby residences, Wellington Community Park, and Eyestone Elementary.

Table 6: AerMod Calculated HAP Emissions and Discrete Receptors - Acute Values

Pollutant (CAS No.)	Emission Rate (ton/yr)	Acute Screening Value ($\mu g/m^3$)	Calculated 1-Hour Average HAP Exposure (µg/m3)					
			Receptor 1: Residential[1]	Receptor 1 Above Screening Value (Yes/No)	Receptor 2: Park[2]	Receptor 2 Above Screening Value (Yes/No)	Receptor 3: School[3]	Receptor 3 Above Screening Value (Yes/No)
Acetaldehyde (75-07-0)	0.195	470 a	0.17	No	0.241	No	0.030	No
Hexane[4] (110-54-3)	0.138	390,000 b	0.12	No	0.017	No	0.021	No
Hexane[5] (110-54-3)	0.143	390,000 b	0.12	No	0.018	No	0.022	No
Formaldehyde[6] (50-00-0)	0.103	55 a	0.09	No	0.013	No	0.016	No
Formaldehyde[7] (50-00-0)	0.465	55 a	0.40	No	0.057	No	0.072	No
Toluene (108-88-3)	0.435	37,000 a	0.37	No	0.054	No	0.068	No
Quinone (106-51-4)	0.0405	10,000 b	0.035	No	0.0050	No	0.0063	No
Benzene (71-43-2)	0.0420	1,300 a	0.036	No	0.0052	No	0.0065	No
Ethylbenzene (100-41-4)	0.330	140,000 c	0.28	No	0.041	No	0.051	No
Xylene (1330-20-7)	0.405	8,700 d	0.35	No	0.050	No	0.063	No
Total PAH	0.0345	0.75 e	0.030	No	0.0043	No	0.0054	No
HCl (7647-01-0)	0.0315	190 f	0.027	No	0.0039	No	0.0049	No

Health Risk Assessment Evaluation
Connell Resources Inc. Proposed Hot-Mix Asphalt Plant

Stephen Zemba, PhD

Wellington Planning Commission Meeting

June 5, 2023




SANBORN HEAD

Air Impact Assessment -- Scope of Pollutants

Criteria Pollutants

- Particulate Matter
- Total
- Smaller than 10 µm (PM_{10})
- Smaller than 2.5 µm ($PM_{2.5}$)
- Nitrogen Oxides (NO_X)
- Sulfur Dioxide (SO_2)
- Carbon Monoxide (CO)

Key Air Toxics

- Acetaldehyde
- Hexane
- Formaldehyde
- Toluene
- Quinone
- Benzene
- Ethylbenzene
- Xylenes
- Polycyclic Aromatic Hydrocarbons (PAHs)
- Hydrogen Chloride (HCl)

Antea Group's Criteria Pollutant Assessment

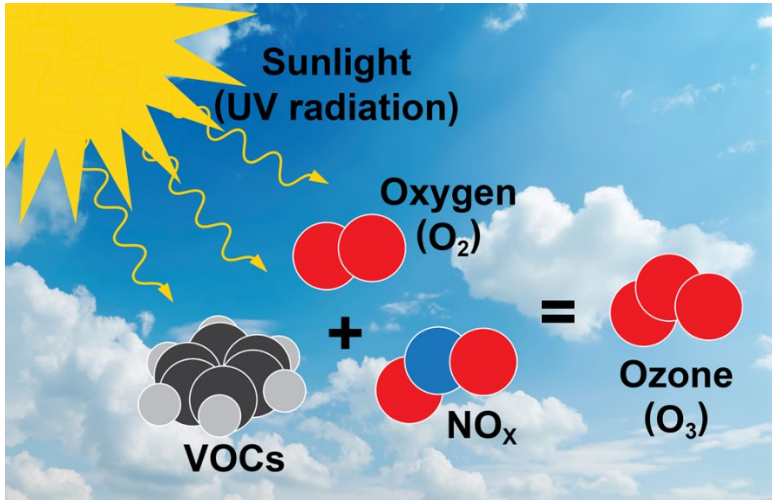
Connell Resources
Wellington, CO
Table 3: Summary of AerMod Calculated Emissions and NAAQS

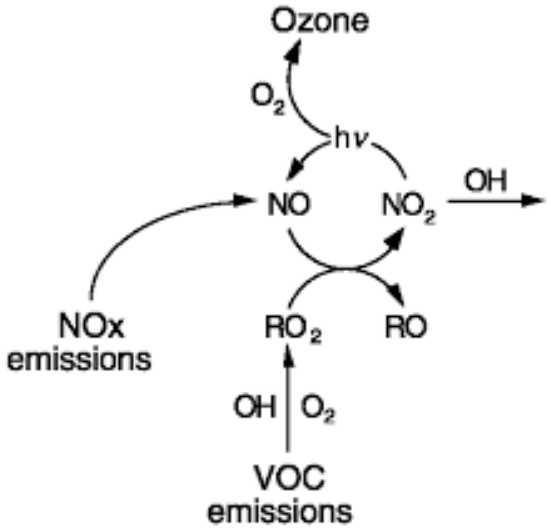
Pollutant	Averaging Period	AerMod Concentration for Wellington Location ($\mu g/m^3$)	NAAQS Primary Concentration[1] ($\mu g/m^3$)	AerMod Wellington Percent of NAAQS
PM-10	24-hour	0.15	150	0.1%
PM-2.5	24-hour	0.042	35	0.1%
	1-year	0.0025	12	0.02%
NOx	1-hour	7.1	188 ab	4%
	1-year	0.10	100 ab	0.1%
SO2	1-hour	7.5	196 a	4%
CO	1-hour	17	40,000 a	0.0%
	8-hour	10	10,000 a	0.1%

Notes
$\mu g/m^3$ = micrograms per cubic meter
1 = National Ambient Air Quality Standards (NAAQS) for public health protection, including the health of sensitive populations
a = Conversion of units from ppm provided by NAAQS to $\mu g/m^3$ provided by California Air Resource Board
b = Standard provided for NO_2

Air Quality in Larimer County – Ozone Non-Attainment

- Principal air quality issue in Larimer county is ozone (O_3)
- Ozone is created in the atmosphere from chemical reactions involving nitrogen oxides (NOx) and volatile organic compounds (VOCs)
- Ozone is a *regional* issue, and relocating the hot-mix asphalt plant will not substantially affect overall ozone production





- Image Sources: U.S. Environmental Protection Agency, Oklahoma Department of Environmental Quality

Conclusions

- Emissions from the hot-mix asphalt plant ***will not*** present significant risks to human health
- Highest incremental modeled concentrations ***will be small*** compared to existing background levels (from other sources)

ODOR MITIGATION

Excerpt from Larimer County Site Plan Referral Review dated December 21, 2022

"This property in review is surrounded by a mix of commercial and residential uses as well as public recreation, therefore the more strict residential threshold for odors shall be complied with. Please note that it is a violation if odors are detected at property lines after the odorous air has been diluted with seven (7) or more volumes of odor free air using a nasal ranger operated by certified staff. Larimer County staff are certified in odor compliance and will evaluate complaints."

- Primary fuel source is Compressed Natural Gas (CNG)
  - Clean burning with little to no odor
  - Latest inspection – November 8 2021
- AMP is outfitted with numerous systems which capture and refilter emissions to reduce odors
- Connell owns the same odor control monitoring equipment as Larimer County and 3 full time EHS Staff members trained in monitoring odor compliance.

From CDPHE Field Inspection Report November 8 2021 "No odor complaints have been received by the department for this site. No odor noted at the time of inspection by inspector. In Compliance."

VOLUNTARY COMMUNITY NOISE ASSESSMENT STUDY

- *Larimer County Noise Ordinance No. 97-03 specifies **maximum sound levels of 55dbA** at receiving property lines.*

    - A community noise assessment was completed on May 19, 2023 to demonstrate future operations will comply with the County and State ordinances.
    - Site Plan has incorporated sound mitigation measures through berming and selective layout.
    - Committed to restricting the use of engine brakes (Jake Brakes) for east and westbound trucks on CR 66. Signs will be posted on CR 66.
    - Will install white noise back up alarms on equipment being used at the asphalt facility.
    - Modeling indicates asphalt mixing plant will be well below standard

VOLUNTARY COMMUNITY NOISE ASSESSMENT STUDY

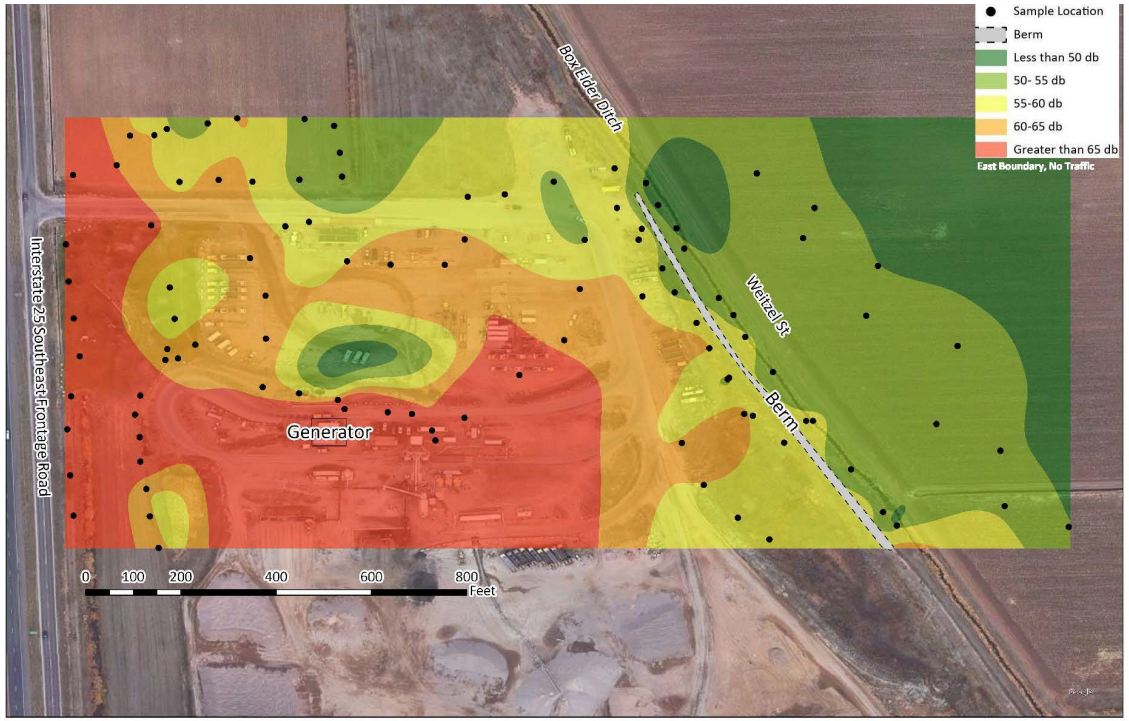
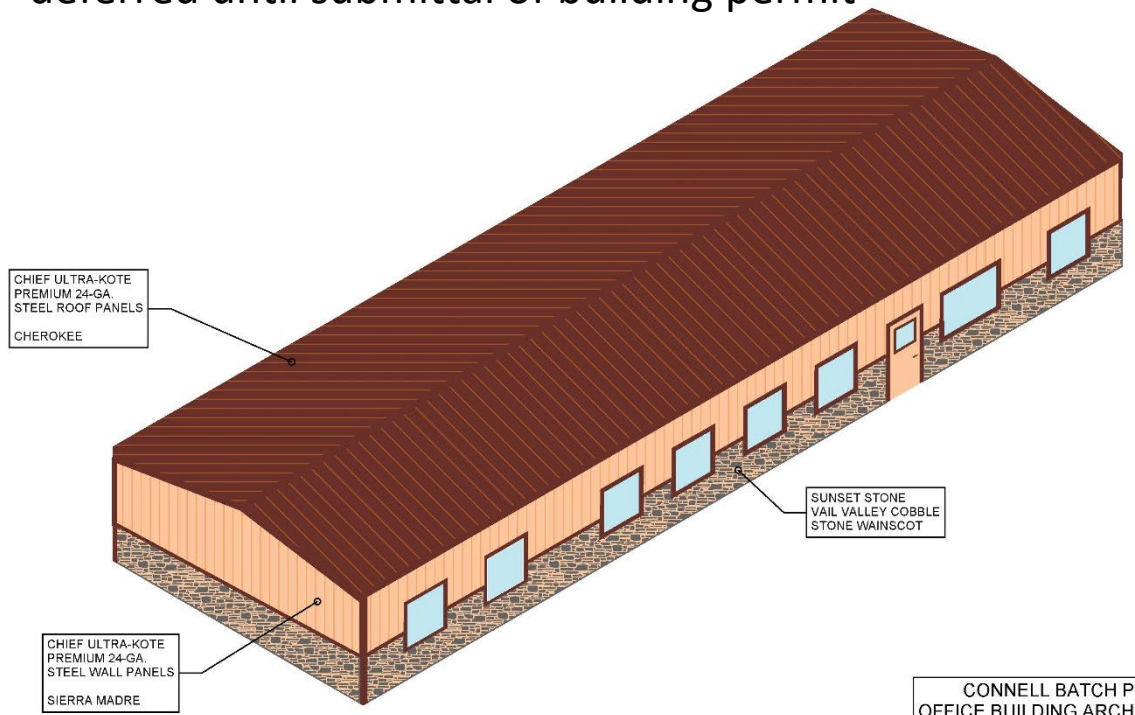


Table 2: Inverse Square Law Calculations

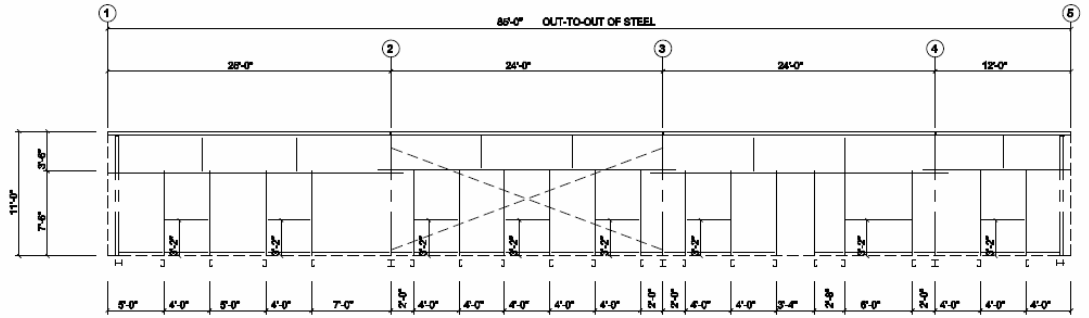
Sound Pressure Level db(A)	Distance (ft)	Sound Pressure Level db(A)	Distance (ft)	Sound Pressure Level db(A)	Distance (ft)
83 (source)	1	55.0	150	38.6	1000
70.6	25	52.5	200		
64.6	50	46.5	400		
58.6	100	44.6	800		

DRAWINGS - ELEVATIONS

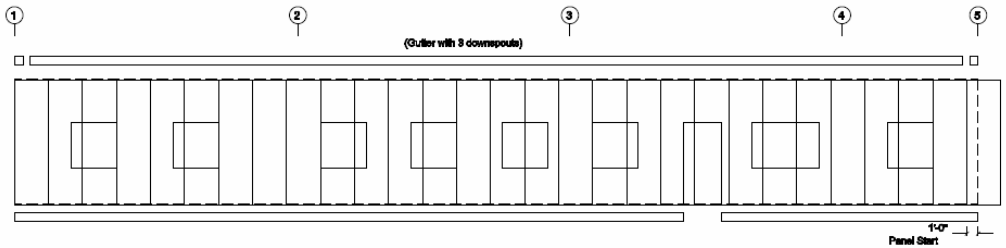
- Town directed Connell to submit written narrative with building renderings, material examples and photos of current/other facilities
- Town directed final dimensioned elevations be deferred until submittal of building permit



CONNELL BATCH PLANT
OFFICE BUILDING ARCHITECTURE
SAMPLE MATERIAL SUBMITTALS



SIDEWALL FRAMING: FRAME LINE D



SIDEWALL SHEETING & TRIM: FRAME LINE D

PANELS: 26 Ga. AP - Std.PVDF-FEVE Finish

BUILDING ARCHITECTURE NARRATIVE SUBMITTED WITH SITE PLAN

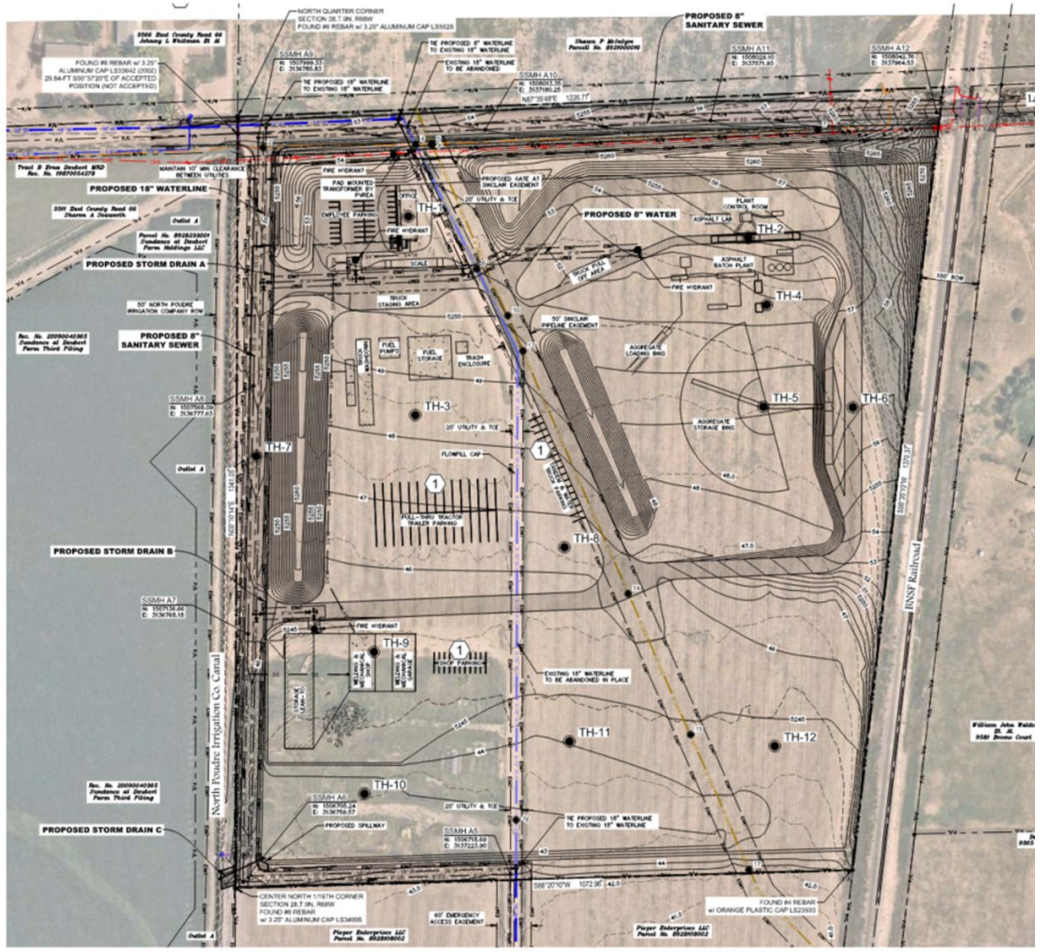
Connell's proposed site plan includes the construction of an office building, vehicle maintenance shop, ancillary vehicle shop, and lean-to structure. These structures are in a preliminary phase of design and elevations of these structures are not developed. Square-footages and finish floor elevations of each building are noted on the site plan. Color palettes for site buildings are not yet defined, but are intended to match the natural colors of the site.

Connell's office building is anticipated to have 26-gauge steel walls and roof, with a stone/brick wainscot. Connell anticipates maximizing natural light and will have windows on all four elevations of the building. The primary entrance to the building will be oriented to the west, facing the employee parking area. Connell's vehicle shop buildings and lean-to storage structure are anticipated to have 26-gauge steel walls and roof. Both structures are anticipated to have translucent panels installed on a portion of the facility to maximize natural light into the building.

CONDITIONS OF APPROVAL

- Applicant requests the following conditions of approval per Planning Commission's approval of Site Plan, if this Board determines such conditions of approval should apply:
  - The Accessory Uses must be located at least 250 feet from the property line boundary adjacent to the residential district.
  - The location of the temporary and moveable objects, such as such as the stockpiles, aggregate bins, and conveyor belts, must comply with 800-foot Variance.
  - The lean-to structure must be located at least 100 feet from the property line.

SITE PLAN WITH CONDITIONS



CONCLUSION

- Appeal allegations are without merit
- Site Plan meets Town criteria
- Planning Commission supervised excessive and unprecedented due diligence and approved 6-1
- Board of Trustees should uphold Planning Commission decision