Received
October 3, 2022
WV DEP/Div of Air Quality

Division of Air Quality Permit Application Submittal

Please find attached a permit application for : Roxul USA Inc, dba ROCKWOOL

[Company Name; Facility Location]

- DAQ Facility ID (for existing facilities only): 037-00108
- Current 45CSR13 and 45CSR30 (Title V) permits associated with this process (for existing facilities only): R14-0037

- Type of NSR Application (check all that apply):
  - ☐ Construction
  - ☑ Modification
  - ☐ Class I Administrative Update
  - ☐ Class II Administrative Update
  - ☐ Relocation
  - ☐ Temporary
  - ☐ Permit Determination

- Type of 45CSR30 (TITLE V) Application:
  - ☐ Title V Initial
  - ☐ Title V Renewal
  - ☐ Administrative Amendment**
  - ☐ Minor Modification**
  - ☐ Significant Modification**
  - ☐ Off Permit Change

****If the box above is checked, include the Title V revision information as ATTACHMENT S to the combined NSR/Title V application.**

- Payment Type:
  - ☑ Credit Card (Instructions to pay by credit card will be sent in the Application Status email.)
  - ☐ Check (Make checks payable to: WVDEP – Division of Air Quality)
    Mail checks to:
    WVDEP – DAQ – Permitting
    Attn: NSR Permitting Secretary
    601 57th Street, SE
    Charleston, WV 25304

Please wait until DAQ emails you the Facility ID Number and Permit Application Number. Please add these identifiers to your check or cover letter with your check.

- If the permit writer has any questions, please contact (all that apply):
  - ☐ Responsible Official/Authorized Representative
    - Name: Mark Graves
    - Email: Mark.Graves@Rockwool.com
    - Phone Number:
  - ☑ Company Contact
    - Name: Stacey Phillips
    - Email: Stacey.Phillips@rockwool.co
    - Phone Number: 681-247-0824
  - ☑ Consultant
    - Name: Grant Morgan
    - Email: Grant.morgan@erm.com
    - Phone Number: 304 590 6160

R13 Air Permit Application

Roxul USA, Inc dba ROCKWOOL
R14-0037

3 October 2022

Project No.: 0593738

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1. INTRODUCTION

1.1 Background

ROXUL USA Inc. dba Rockwool, (ROCKWOOL) submits this application for a permit modification to the West Virginia Department of Environmental Protection (WVDEP), Division of Air Quality (WVDAQ) to reflect modifications to Permit No. R14-0037. The modifications outlined in this application results in a net decrease in emissions.

1.2 Application Overview

This permit application narrative is provided to add clarification and/or further detail to the permit application forms being provided to the WVDAQ for this project.

This section (Section 1) contains introductory information. Section 2 presents an overview of the proposed updates to processes and equipment. Processes with no changes have been omitted from Section 2. A summary of emissions changes is provided as Section 3. Section 4 provides a review of updates to federal regulatory requirements. A review of updates to state regulatory requirements is provided as Section 5. The WVDAQ permit application forms are provided as Appendix A. The air dispersion modeling report is provided as Appendix B. A Best Achievable Control Technologies (BACT) voluntary assessment is provided as Appendix C.

2. PROCESS UPDATES OVERVIEW

The modifications included in this permit application reflect an aggregation of minor changes in equipment sizing, location, and source details. The types permitting updates can be categorized into the following sets of changes:

- Removal of coal transfer, storage, and preparation equipment from the permit. The RAN facility will not fire coal and these sources have not been installed;
- Reallocation of eight (8) pounds per hour of Carbon Monoxide (CO) emissions from the Melting Furnace (IMF01) to the WESP (HE01);
- Removal, addition, and modification to raw material handling sources, including haul roads;
- Removal and modification to the capacity of various storage tanks;
- Removal of cooling towers;
- Modifications to the sizing of combustion sources; and
- Updates to release point parameters, including stack height and stack location coordinates.

A description of the changes to the manufacturing process and associated emission points is provided in Attachment G – Process Description of the Permit Application.

3. SUMMARY OF EMISSIONS CHANGES

The updates proposed in this application will not result in an increase of emissions for any pollutants. The original potential to emit, the changes due to the updates, and the resulting potential to emit are shown in the table below.

Table 3-1: Summary of PTE Changes

Pollutant	Permitted Facility Emission Rate (tons/year)	Changes due to Updates (tons/year)	New Facility Emission Rate (tons/year)
CO[1]	71.40	-2.43	68.97
NOx	238.96	-1.78	237.18
Total PM	250.87	-6.89	243.97
Filterable PM	129.23	-1.89	127.34
PM_{10}	153.19	-4.20	148.99
$PM_{2.5}$	133.41	-5.69	127.72
SO_2	147.45	No Change	147.45
VOC	471.41	-1.69	469.72
CO_2e	152,934.82	-1,627.34	151,307.48
Formaldehyde	68.63	-1.50E-02	68.61
Methanol	106.61	No Change	106.61
H_2SO_4	16.37	No Change	16.37
Lead	2.47E-04	-1.34E-05	2.34E-04
Total HAP	392.59	-1.61	390.98
HF	1.62	No Change	1.62
HCl	1.29	No Change	1.29
COS	1.64	No Change	1.64
Arsenic	3.93E-04	No Change	3.93E-04
Lead	2.36E-04	-2.45E-06	2.33E-04
Mercury	2.55E-03	No Change	2.55E-03
Phenol	100.22	No Change	100.22
Mineral Fiber	112.28	-1.54	110.73
Methanol	106.61	No Change	106.61
Hexane	0.26	-2.04E-03	0.25
Benzene	0.05	-4.59E-02	5.17E-04

[1]Carbon Monoxide (CO) is not subject to PSD.

4. FEDERAL REGULATORY REQUIREMENTS

New Source Performance Standards (NSPS) are established for specific industrial categories in 40 CFR Part 60. West Virginia regulations in WV 45 CSR 16 incorporate the federal NSPS by reference. A review of the NSPS categories has been performed for applicability and is presented below.

4.1 Non-Applicable NSPS Standards

The NSPS subparts discussed in this section are not applicable, but are addressed for documentation purposes.

4.1.1 NSPS Subpart Dc – Small Industrial Steam Generating Units

There are no changes to applicability of NSPS Subpart Dc due to the updates discussed in this application. Additionally, the Coal Mill Burner (IMF05) was not installed and is proposed to be removed from the permit.

4.1.2 NSPS Subpart Kb – Volatile Organic Liquid Storage Tanks

There are no changes to applicability of NSPS Subpart Kb due to the updates discussed in this application. Two of the thermal oil tanks have updated sizing, but both of these tanks will still have a capacity of less than 19,813 gallons (75 m^3) and are therefore not subject to NSPS Subpart Kb.

4.1.3 NSPS Subpart Y – Standards Of Performance For Coal Preparation And Processing Plants

The facility will no longer prepare of process any coal and therefore is not subject to NSPS Subpart Y.

4.1.4 NSPS Subpart LL – Standards Of Performance For Metallic Mineral Processing Plants

There are no changes to applicability of NSPS Subpart LL based on updates discussed in this application.

4.1.5 NSPS Subpart VVV - Standards Of Performance For Polymeric Coating Of Supporting Substrates Facilities

There are no changes to applicability of NSPS Subpart VVV due to the updates discussed in this application.

4.1.6 NSPS Subpart CCCC – Standards Of Performance For Commercial And Industrial Solid Waste Incineration Units

There are no changes to applicability of NSPS Subpart CCCC due to the updates discussed in this application. The facility remains not subject to this subpart. Additionally, PET Coke and Coal sources were not installed and are proposed to be removed from the permit.

4.2 Applicable NSPS Standards

4.2.1 NSPS Subpart OOO – Nonmetallic Mineral Processing

NSPS Subpart OOO applies to the following affected facilities in fixed or portable nonmetallic mineral processing plants that commenced construction after August 31, 1983: each crusher, grinding mill, screening operation, bucket elevator, belt conveyor, bagging operation, storage bin, enclosed truck or railcar loading station. A “nonmetallic mineral processing plant” is defined as any combination of equipment that is used to crush or grind any nonmetallic mineral. The definition of nonmetallic mineral specifically mentions limestone, dolomite, and other minerals which may be contained in stone raw materials that will be sieved, crushed (if necessary), and conveyed in the charging building operations.

Per §60.672(d), truck dumping of nonmetallic minerals into any screening operation, feed hopper, or crusher is exempt from PM standards of NSPS Subpart OOO, which would exclude the Raw Material Loading Hopper (B215). Vacuum systems are not identified as affected facilities in NSPS Subpart OOO; therefore the Charging Building Vacuum Cleaning Filter (IMF21) is not subject to NSPS Subpart OOO. The remaining affected sources subject to PM emissions limits include the belt conveyor connected to the charging building (IMF11) ; indoor conveyor transfer points IMF12 and IMF16; outdoor transfer point IMF15; indoor sieve, crusher, storage bins, and belt conveyors located inside the charging building (represented by IMF17); Raw Material Reject Outdoor Collection Bin (RM_REJ); and indoor Sieve Reject Collection Bin (S_REJ). The Filter Fines Day Silo (IMF07) and Filter Fines Receiving Silo (IMF10) are conservatively considered as part of the nonmetallic mineral processing plant because the silos will store stone or mineral raw materials that have been through the charging building operations.

After the final belt conveyor transfer from charging building operations to the furnace building, raw materials are dosed to a continuous weigh bin connected to the Melting Furnace. This bin is part of the mineral wool production operations and is not considered part of the nonmetallic mineral processing plant.

A summary of the applicable emission limits to affected sources subject to NSPS Subpart OOO is shown in Table 5-1 below.

Table 5-1: Summary of Applicable Emission Limits to NSPS Subpart OOO Affected Sources

Source ID	Source Description	Control Device (if present)	NSPS Subpart OOO Limit	
			Limit	Citation
RM_REJ	Raw Material Reject Collection Bin	4-sided rubber drop guards	7% opacity	§60.672(b) & Table 3 [fugitive emission limits]
S_REJ	Sieve Reject Collection Bin	Telescopic Chute & Full Enclosure	7% opacity	
IMF14	Raw Material Reject Stockpile	3-sided enclosure	7% opacity	
IMF07	One (1) Storage Silo (Filter Fines Day)	Bin Vent Filter Enclosed Indoors	7% opacity	§60.672(a) & Table 2; §60.672(f) [opacity in lieu of concentration limit for dry control devices on individual enclosed storage bins]
IMF10	Filter Fines Receiving Silo	Bin Vent Filter	7% opacity	
IMF11	Conveyor Transition Point (B215 to B220)	Fabric Filter Enclosed Indoors	7% opacity	§60.672(b) & Table 3 [fugitive emission limits]
IMF17	Indoor sieve, crusher, storage bins, and belt conveyors located inside the charging building B220	Full Enclosure	7% opacity	§60.672(e)(1) [fugitive emissions from building openings]
IMF12	Conveyor Transfer Point	Full Enclosure	7% opacity	
IMF16	Conveyor Transfer Point	Full Enclosure	7% opacity	
IMF15	Transfer Points: Magnet Separator to Iron Container & Vacuum Cleaning	4-Sided Drop Guard	7% opacity	

ROCKWOOL will be required to submit applicable notifications and initial testing results for affected sources subject to NSPS Subpart OOO. Monitoring of baghouses required by §60.674(c) consists of quarterly 30-minute visible emissions inspections using EPA Method 22 or the alternative specified in §60.674(d) for operation of a bag leak detection system. Recordkeeping and reporting requirements will be applicable and will be conducted as required.

NSPS Subpart OOO does not apply to the following operations at the proposed facility as described below.

- The Recycling Plant is not part of a nonmetallic mineral processing plant because only formed mineral wool fibers are handled in this area (i.e., no stone or mineral raw materials).
- The capacity of the Melting Furnace Portable Crusher (170) will be equal to or less than the exemption threshold of 136 megagrams per hour (150 short tons per hour) per §60.670(c)(2). The portable crushing operation is separate from the charging building operations that are subject to NSPS Subpart OOO.
- Fresh and spent sorbent used in the desulfurization system at ROCKWOOL will be stored in silos and pneumatically conveyed either to or from the control system (e.g., no crushing, grinding, or other processing occurs). Sorbent handling is separate from the charging building operations that are subject to NSPS Subpart OOO. Therefore, the Sorbent Storage Silo (IMF08) and Spent Sorbent Silo (IMF09) are not part of a nonmetallic mineral processing plant and are not subject to NSPS Subpart OOO.

4.2.2 NSPS Subpart IIII - Stationary CI ICE

The Emergency Fire Pump Engine (EFP1) remains subject to this subpart. The installed unit has a maximum design heat input of 236 kW, as opposed to the original permitted value of 147kW. There are no changes to applicability of NSPS Subpart IIII based on the updates discussed in this application. The installed unit is an EPA certified unit. A copy of the emission guarantee with Reference to the EPA Certificate of Conformity is included in the WVDAQ Permit application forms.

4.3 NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP)

NESHAP standards are established for specific pollutants and source categories in 40 CFR Part 61 and Part 63 in accordance with the Clean Air Act Amendments of 1990, which required development standards for sources of HAP. West Virginia regulations in WV 45 CSR 34 incorporate the federal NESHAP by reference. Potential HAP emissions from the ROCKWOOL facility are above the major source thresholds of 10 tpy (9.07 MT/year) of an individual HAP or 25 tpy (22.7 MT/year) of total HAP emissions. Thus, ROCKWOOL is a major source of HAP and is subject to any applicable MACT standards.

There are no existing or proposed NESHAP standards under 40 CFR Part 61 that are applicable to the ROCKWOOL facility.

A review of the NESHAP regulations under 40 CFR Part 63 has been performed for applicability to the ROCKWOOL facility and is presented below.

4.3.1 NESHAP Subpart DDD – Mineral Wool Production

There are no changes to applicability of NESHAP Subpart DDD based on the updates discussed in this application.

4.3.2 NESHAP Subpart ZZZZ – Stationary RICE

Federal NESHAP regulations for stationary Reciprocating Internal Combustion Engines (RICE) are found at 40 CFR Part 63, Subpart ZZZZ (“RICE MACT”). For the Emergency Fire Pump Engines, as new emergency stationary RICE with a site rating less 500 brake hp and located at a major source of HAP, the requirements of NESHAP Subpart ZZZZ are satisfied by meeting the requirements of NSPS Subpart IIII

(per §63.6590(c)(7)). No further requirements apply for such engines under this part. As discussed in Section 5.2.2, the Emergency Fire Pump Engines comply with NSPS Subpart IIII.

4.3.3 NESHAP Subpart DDDDD - Industrial, Commercial, and Institutional Boilers And Process Heaters

The Natural Gas-Fired Boilers (CM03 and CM04) have an updated heat input capacity of 4.99 MMBtu/hr (1,462 kW). Since these boilers have a heat input capacity less than 5 MMBtu/hr, ROCKWOOL will now be required to perform tune-ups on these boilers every 5 years, rather than biennially, in accordance with §63.7540 and Table 3 of Boiler MACT.

4.3.4 NESHAP Subpart JJJJ – Paper or Other Web Coating

There are no changes to applicability of NESHAP Subpart JJJJ based on the updates discussed in this application.

5. STATE REGULATORY REQUIREMENTS

This section outlines the West Virginia state air quality regulations that could be reasonably expected to apply to ROCKWOOL and makes an applicability determination for each regulation based on activities conducted at the site and the emissions of regulated air pollutants. This review is presented to supplement and/or add clarification to the information provided in the WVDEP Rule 14 permit application forms.

The West Virginia State Regulations address federal regulations, including Prevention of Significant Deterioration permitting, Title V permitting, New Source Performance Standards, and National Emission Standards for Hazardous Air Pollutants. The regulatory requirements in reference to the facility are described in detail in the below section.

5.1 45 CSR 02 – To Prevent and Control Particulate Air Pollution From Combustion of Fuel in Indirect heat Exchangers

The Natural Gas-Fired Boilers (CM03 and CM04) have an updated heat input capacity of 4.99 MMBtu/hr (1,462 kW). There are no changes to applicability of 45 CSR 2 based on this update, and these units still qualify for the exemption noted in 45 CSR 2 Section 11, as they have a heat input rating less than 10 MMBtu/hr (2,930 kW).

5.2 45 CSR 04 – To Prevent and Control the Discharge of Air Pollutants into the Air Which Causes or Contributes to an Objectionable Odor

There are no changes to applicability of 45 CSR 04 based upon the updates discussed in this application.

5.3 45 CSR 05 – To Prevent and Control Air Pollution from the Operation of Coal Preparation Plants, Coal Handling Operations, and Coal Refuse Disposal Areas

There are no changes to applicability of 45 CSR 05 based upon the updates discussed in this application. The facility is subject to the requirements of 45 CSR 7 and therefore, is not subject to this rule.

5.4 45 CSR 06 – Control of Air Pollution from the Combustion of Refuse

There are no changes to applicability of 45 CSR 06 based on the updates discussed in this application. 45 CSR 06 remains applicable to the Curing Oven Afterburner (CO-AB).

5.4.1 45 CSR 6-4.1 - Determination for Maximum Allowable Particulate Emissions

Curing Oven Afterburner (CO-AB):

The Curing Oven Afterburner (CO-AB) has been installed with a maximum heat input capacity of 9.86 MMBtu/hr but was originally permitted at 6.83 MMBtu/hr. No updates to flow rate to the Afterburner have been made. The estimated Total PM emission rate of 3.31 lb/hr (1.50 kg/hr) remains below the maximum allowable PM emission rate mandated by 45 CSR 06, and thus there are no changes to applicability based on the updates discussed in this application.

5.5 45 CSR 7 – To Prevent and Control Particulate Air Pollution from Manufacturing Processes and Associated Operations

45 CSR 7 regulates the emissions of filterable particulate matter from source operations within manufacturing processes. Manufacturing processes are defined as any industrial or manufacturing actions or processes that emit smoke, particulate matter, or gaseous matter.

ROCKWOOL operates multiple manufacturer processes that will emit filterable PM into the open air, including a mineral wool manufacturing process, a Rockfon manufacturing process, and material handling point source activities. These separate manufacturing processes operate with separate source operations, which are defined as the last operation in a manufacturing process preceding the emissions of air contaminants.

The facility shall not emit filterable PM into the open air from any process source operation which is greater than twenty (20) percent opacity.

5.5.1 Mineral Wool Line

There are no changes to applicability or compliance based upon the updates discussed in this application.

5.5.2 Rockfon Line

There are no changes to applicability or compliance based upon the updates discussed in this application.

5.5.3 Materials Handling Sources

The expected filterable PM emission rate for the materials handling process source operation is 1.48 lb/hr (0.67 kg/hr) and will demonstrate compliance with the Rule 7 requirements. The updates to material handling sources discussed within this permit application will have no impact on compliance with the Rule 7 requirements. There is no impact to the maximum allowable total stack filterable PM emission rate.

5.5.4 Coal Milling

Coal Milling was not installed and is proposed to be removed from the permit, and will no longer be subject to 45 CSR 7.

5.6 45 CSR 10 – To Prevent and Control Air Pollution from the Emission of Sulfur Oxides

The Natural Gas-Fired Boilers (CM03 and CM04) have an updated heat input capacity of 4.99 MMBtu/hr (1,462 kW). There are no changes to applicability of 45 CSR 10 based on this update, and these units still qualify for the exemption noted in 45 CSR 2 Section 11, as they have a heat input rating less than 10 MMBtu/hr (2,930 kW).

5.7 45 CSR 11 – Prevention of Air Pollution Emergency Episodes

There are no changes to applicability of 45 CSR 11 based on the updates discussed in this application.

5.8 45 CSR 13 – Permits For Construction, Modification, Relocation And Operation Of Stationary Sources Of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, Permission To Commence Construction, And Procedures For Evaluation

Rule 13 outlines the requirements for the submission of deliverables as they apply to the construction or modification of stationary sources of air pollution. ROCKWOOL's initial permitting action was subject to the requirements of this rule based upon the construction of a stationary source of air pollutants exceeding West Virginia's minor source permitting applicability thresholds (6 lb/hr AND 10 tpy of any regulated air pollutant).

When evaluating the updates contained within the permit application, the most appropriate permitting mechanism for an update to ROCKWOOL's existing air permit has been identified as a Class I Administrative Update. ROCKWOOL understands that WVDAQ will use it's discretionary authority to process the permitting update as a Modification and submits this modification applications based upon WVDAQ's direction.

Pursuant to its authority under 45 CSR13, Section 7, WVDAQ has requested air quality modeling analysis is submitted as a part of this Rule 13 update. The assumptions, information and data relied upon for the previous modeling remained unchanged except as noted in Appendix B. This supplemental air quality modeling was required for the sole purpose of confirming that the changes for which modification are being sought by ROCKWOOL will not interfere with attainment of National Ambient Air Quality Standards, or cause or contribute to violation of an air quality increment.

5.9 45 CSR 14 – Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration

Federal construction permitting programs regulate new and modified sources of attainment pollutants under Prevention of Significant Deterioration. The requirements of this rule apply to the construction of any new major stationary source. In the pre-construction application, the ROCKWOOL facility was classified as a major stationary source because of the potential to emit (PTE) at least two hundred fifty (250) tons per year of VOC. Further, emissions of NO_x, SO_2, PM, PM_{10}, $PM_{2.5}$, H_2SO_4 Mist, and CO_2e are also subject to PSD review due to potential emissions greater than the PSD significant emission rate (SER) for each pollutant.

This permitting action was evaluated against the regulatory definitions of major modification and minor modification. Given the set of updates discussed in this permit application result in a decrease in emissions, ROCKWOOL concludes that no significant increase exists to constitute a major modification.

ROCKWOOL has included a voluntary BACT assessment included as Appendix C of this submittal. The BACT submittal is provided to document the appropriateness of control selections for equipment modified or added with this permitting action. As discussed in this permitting action, the RAN facility removes coal handling equipment that was permitted in R14-0037. The melt furnace, IMF01, is not modified in this permitting action. Permit limits for BACT pollutants was established in R14-0037 for IMF01 based upon the aggregate emission impacts from raw materials, processes, and fuel inputs. Based upon operations of the direct-fired melt furnace and the various input material contents necessary for product creation, a linear relationship between fuel type and resultant emissions is not readily identifiable. For this reason, a modified BACT for IMF01 is not included in Appendix C.

5.10 45 CSR 16 – Standards of Performance for New Stationary Sources (NSPS)

45 CSR 16 applies to registrants that are subject to 40 CFR 60 Standards of Performance for New Source Stationary Sources (NSPS).

ROCKWOOL is subject to the following NSPS subparts because of processes and equipment used at the facility:

- NSPS Subpart OOO – Standards of Performance for Nonmetallic Mineral Processing Plants; and
- NSPS Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.

No additional NSPS are applicable for this facility. Additional descriptions of these regulations are provided in the Federal Regulations section of this regulatory discussion.

5.11 45 CSR 17 – To Prevent and Control Particulate Matter Air Pollution from Materials Handling, Preparation, Storage, and other Sources of Fugitive Particulate Matter

The facility is not subject to this rule because sources that are subject to the fugitive PM emission requirements of WV 45 CSR 7 are exempt from the provisions of WV 45 CSR 17.

5.12 45 CSR 21 – To Prevent and Control Air Pollution from the Emissions of Volatile Organic Compounds

There are no changes to applicability of 45 CSR 21 based on updates discussed in this application.

5.13 45 CSR 29 – Rules Requiring the Submission of Emission Statements for Volatile Organic Compound (VOC) Emissions and Oxides of Nitrogen (NOx) Emissions

There are no changes to applicability of 45 CSR 29 based on updates discussed in this application.

5.14 45 CSR 30 – Requirements for Operating Permits

There are no changes to applicability of 45 CSR 29 based on updates discussed in this application.

5.15 45 CSR 34 – National Emission Standards for Hazardous Air Pollutants (NESHAP)

45 CSR 34 applies to registrants that are subject to NESHAP requirements. The RAN facility is subject to the following NESHAP subparts because of processes and equipment used at the facility:

- NESHAP Subpart DDD – Mineral Wool Production;
- NESHAP Subpart JJJJ – Paper or Other Web Coating;
- NESHAP Subpart ZZZZ – Stationary Reciprocating Internal Combustion Engines (RICE); and
- NESHAP Subpart DDDDD – Industrial, Commercial, and Institutional Boilers and Process Heaters.

These NESHAP requirements are described in more detail in the Federal Regulations section of this regulatory discussion.

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF AIR QUALITY

601 57th Street, SE
Charleston, WV 25304
(304) 926-0475
www.dep.wv.gov/daq

APPLICATION FOR NSR PERMIT AND TITLE V PERMIT REVISION (OPTIONAL)

PLEASE CHECK ALL THAT APPLY TO **NSR (45CSR13)** (IF KNOWN):

☐ **CONSTRUCTION** ☒ **MODIFICATION** ☐ **RELOCATION**
☐ **CLASS I ADMINISTRATIVE UPDATE** ☐ **TEMPORARY**
☐ **CLASS II ADMINISTRATIVE UPDATE** ☐ **AFTER-THE-FACT**

PLEASE CHECK TYPE OF **45CSR30 (TITLE V)** REVISION (IF ANY):

☐ **ADMINISTRATIVE AMENDMENT** ☐ **MINOR MODIFICATION**
☐ **SIGNIFICANT MODIFICATION**

IF ANY BOX ABOVE IS CHECKED, INCLUDE TITLE V REVISION INFORMATION AS **ATTACHMENT S** TO THIS APPLICATION

FOR TITLE V FACILITIES ONLY: Please refer to "Title V Revision Guidance" in order to determine your Title V Revision options (Appendix A, "Title V Permit Revision Flowchart") and ability to operate with the changes requested in this Permit Application.

Section I. General

1. Name of applicant *(as registered with the WV Secretary of State's Office):*
Roxul USA Inc.

2. Federal Employer ID No. ***(FEIN):***
99-0378111

3. Name of facility *(if different from above):*
RAN Facility

4. The applicant is the:
☐ **OWNER** ☐ **OPERATOR** ☒ **BOTH**

5A. Applicant's mailing address:
665 Northport Avenue
Ranson, WV 25430

5B. Facility's present physical address:
665 Northport Avenue
Ranson, WV 25430

6. **West Virginia Business Registration.** Is the applicant a resident of the State of West Virginia? ☒ **YES** ☐ **NO**

➪ If **YES,** provide a copy of the **Certificate of Incorporation/Organization/Limited Partnership** (one page) including any name change amendments or other Business Registration Certificate as **Attachment A.**

➪ If **NO,** provide a copy of the **Certificate of Authority/Authority of L.L.C./Registration** (one page) including any name change amendments or other Business Certificate as **Attachment A.**

7. If applicant is a subsidiary corporation, please provide the name of parent corporation: **Rockwool Group**

8. Does the applicant own, lease, have an option to buy or otherwise have control of the *proposed site?* ☒ **YES** ☐ **NO**

➪ If **YES,** please explain: **Applicant owns the site.**

➪ If **NO,** you are not eligible for a permit for this source.

9. Type of plant or facility (stationary source) to be **constructed, modified, relocated, administratively updated** or **temporarily permitted** (e.g., coal preparation plant, primary crusher, etc.):
Mineral Wool Insulation Manufacturing Facility

10. North American Industry Classification System **(NAICS)** code for the facility:
327993

11A. DAQ Plant ID No. (for existing facilities only):
037-00108

11B. List all current 45CSR13 and 45CSR30 (Title V) permit numbers associated with this process (for existing facilities only):
R14-0037

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

12A.

- For **Modifications, Administrative Updates** or **Temporary permits** at an existing facility, please provide directions to the *present location* of the facility from the nearest state road;
- For **Construction** or **Relocation permits,** please provide directions to the *proposed new site location* from the nearest state road. Include a **MAP** as **Attachment B**.

From WV-9 E, take the County Route 1 exit toward WV-480/Kearneysville/Leetown. Turn right onto Leetown Road and travel 0.4 miles. Turn left onto WV 115 and travel for 1.4 miles. Turn left onto Northport Avenue. Take a left onto Granny Smith Lane after traveling 0.4 mile to enter the facility.

12.B. New site address (if applicable):	12C. Nearest city or town:	12D. County:
665 Northport Avenue Ranson, WV 25430	**Ranson**	**Jefferson**
12.E. UTM Northing (KM): **4362.62**	12F. UTM Easting (KM): **252.06**	12G. UTM Zone: **18**

13. Briefly describe the proposed change(s) at the facility:

Updating various sources to account for facility configuration and source updates that results in a net decrease in emissions. A detailed description of each change is provided in the permit application introduction narrative

14A. Provide the date of anticipated installation or change: / / ➪ If this is an **After-The-Fact** permit application, provide the date upon which the proposed change did happen:	14B. Date of anticipated Start-Up if a permit is granted: / /

14C. Provide a **Schedule** of the planned **Installation** of/**Change** to and **Start-Up** of each of the units proposed in this permit application as **Attachment C** (if more than one unit is involved).

15. Provide maximum projected **Operating Schedule** of activity/activities outlined in this application:
Hours Per Day **24** Days Per Week **7** Weeks Per Year **52**

16. Is demolition or physical renovation at an existing facility involved? ☐ **YES** ☒ **NO**

17**. Risk Management Plans.** If this facility is subject to 112(r) of the 1990 CAAA, or will become subject due to proposed changes (for applicability help see www.epa.gov/ceppo), submit your **Risk Management Plan (RMP)** to U. S. EPA Region III.

18**. Regulatory Discussion.** List all Federal and State air pollution control regulations that you believe are applicable to the proposed process *(if known).* A list of possible applicable requirements is also included in Attachment S of this application (Title V Permit Revision Information). Discuss applicability and proposed demonstration(s) of compliance *(if known).* Provide this information as **Attachment D.**

Section II. Additional attachments and supporting documents.

19. Include a check payable to WVDEP – Division of Air Quality with the appropriate **application fee** (per 45CSR22 and 45CSR13).

20. Include a **Table of Contents** as the first page of your application package.

21. Provide a **Plot Plan,** e.g. scaled map(s) and/or sketch(es) showing the location of the property on which the stationary source(s) is or is to be located as **Attachment E** (Refer to ***Plot Plan Guidance***) **.**

➪ Indicate the location of the nearest occupied structure (e.g. church, school, business, residence).

22. Provide a **Detailed Process Flow Diagram(s)** showing each proposed or modified emissions unit, emission point and control device as **Attachment F.**

23. Provide a **Process Description** as **Attachment G.**

➪ Also describe and quantify to the extent possible all changes made to the facility since the last permit review (if applicable).

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

24. Provide **Material Safety Data Sheets (MSDS)** for all materials processed, used or produced as **Attachment H.**

➪ For chemical processes, provide a MSDS for each compound emitted to the air.

25. Fill out the **Emission Units Table** and provide it as **Attachment I.**

26. Fill out the **Emission Points Data Summary Sheet (Table 1 and Table 2)** and provide it as **Attachment J.**

27. Fill out the **Fugitive Emissions Data Summary Sheet** and provide it as **Attachment K.**

28. Check all applicable **Emissions Unit Data Sheets** listed below:

☐ Bulk Liquid Transfer Operations	☒ Haul Road Emissions	☐ Quarry
☐ Chemical Processes	☐ Hot Mix Asphalt Plant	☒ Solid Materials Sizing, Handling and Storage Facilities
☐ Concrete Batch Plant	☐ Incinerator	☒ Storage Tanks
☐ Grey Iron and Steel Foundry	☒ Indirect Heat Exchanger	

☒ General Emission Unit, specify

Mineral Wool Line - Melting Furnace, Cooling Section, and Curing Vents.

Fill out and provide the **Emissions Unit Data Sheet(s)** as **Attachment L.**

29. Check all applicable **Air Pollution Control Device Sheets** listed below:

☐ Absorption Systems	☐ Baghouse	☐ Flare
☐ Adsorption Systems	☐ Condenser	☐ Mechanical Collector
☐ Afterburner	☐ Electrostatic Precipitator	☐ Wet Collecting System

☐ Other Collectors, specify

Fill out and provide the **Air Pollution Control Device Sheet(s)** as **Attachment M.**

30. Provide all **Supporting Emissions Calculations** as **Attachment N,** or attach the calculations directly to the forms listed in Items 28 through 31.

31. **Monitoring, Recordkeeping, Reporting and Testing Plans.** Attach proposed monitoring, recordkeeping, reporting and testing plans in order to demonstrate compliance with the proposed emissions limits and operating parameters in this permit application. Provide this information as **Attachment O.**

➢ Please be aware that all permits must be practically enforceable whether or not the applicant chooses to propose such measures. Additionally, the DAQ may not be able to accept all measures proposed by the applicant. If none of these plans are proposed by the applicant, DAQ will develop such plans and include them in the permit.

32. **Public Notice.** At the time that the application is submitted, place a **Class I Legal Advertisement** in a newspaper of general circulation in the area where the source is or will be located (See 45CSR§13-8.3 through 45CSR§13-8.5 and ***Example Legal Advertisement*** for details). Please submit the **Affidavit of Publication** as **Attachment P** immediately upon receipt.

33**. Business Confidentiality Claims.** Does this application include confidential information (per 45CSR31)?

☒ **YES** ☐ **NO**

➢ If **YES,** identify each segment of information on each page that is submitted as confidential and provide justification for each segment claimed confidential, including the criteria under 45CSR§31-4.1, and in accordance with the DAQ's "***Precautionary Notice – Claims of Confidentiality"*** guidance found in the ***General Instructions*** as **Attachment Q.**

Section III. Certification of Information

34. **Authority/Delegation of Authority.** Only required when someone other than the responsible official signs the application. Check applicable **Authority Form** below:

☐ Authority of Corporation or Other Business Entity	☐ Authority of Partnership
☐ Authority of Governmental Agency	☐ Authority of Limited Partnership

Submit completed and signed **Authority Form** as **Attachment R.**

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

35A. **Certification of Information.** To certify this permit application, a Responsible Official (per 45CSR§13-2.22 and 45CSR§30-2.28) or Authorized Representative shall check the appropriate box and sign below.

Certification of Truth, Accuracy, and Completeness

I, the undersigned ☒ **Responsible Official** / ☐ **Authorized Representative,** hereby certify that all information contained in this application and any supporting documents appended hereto, is true, accurate, and complete based on information and belief after reasonable inquiry I further agree to assume responsibility for the construction, modification and/or relocation and operation of the stationary source described herein in accordance with this application and any amendments thereto, as well as the Department of Environmental Protection, Division of Air Quality permit issued in accordance with this application, along with all applicable rules and regulations of the West Virginia Division of Air Quality and W.Va. Code § 22-5-1 et seq. (State Air Pollution Control Act). If the business or agency changes its Responsible Official or Authorized Representative, the Director of the Division of Air Quality will be notified in writing within 30 days of the official change.

Compliance Certification

Except for requirements identified in the Title V Application for which compliance is not achieved, I, the undersigned hereby certify that, based on information and belief formed after reasonable inquiry, all air contaminant sources identified in this application are in compliance with all applicable requirements.

SIGNATURE _____ DATE: 09/30/2022

(Please use blue ink) *(Please use blue ink)*

35B. Printed name of signee: **Mark Graves**		35C. Title: **Director of Operations**
35D. E-mail: **Mark.Graves@rockwool.com**	36E. Phone:	36F. FAX:
36A. Printed name of contact person (if different from above): **Stacey Phillips**		36B. Title: **Environmental Manager**
36C. E-mail: **Stacey.Phillips@rockwool.com**	36D. Phone: **681 - 247 - 0824**	36E. FAX:

PLEASE CHECK ALL APPLICABLE ATTACHMENTS INCLUDED WITH THIS PERMIT APPLICATION:

- ☒ **Attachment A: Business Certificate**
- ☐ **Attachment B: Map(s)**
- ☒ **Attachment C: Installation and Start Up Schedule**
- ☒ **Attachment D: Regulatory Discussion**
- ☐ **Attachment E: Plot Plan**
- ☒ **Attachment F: Detailed Process Flow Diagram(s)**
- ☒ **Attachment G: Process Description**
- ☐ **Attachment H: Material Safety Data Sheets (MSDS)**
- ☒ **Attachment I: Emission Units Table**
- ☒ **Attachment J: Emission Points Data Summary Sheet**
- ☒ **Attachment K: Fugitive Emissions Data Summary Sheet**
- ☒ **Attachment L: Emissions Unit Data Sheet(s)**
- ☐ **Attachment M: Air Pollution Control Device Sheet(s)**
- ☒ **Attachment N: Supporting Emissions Calculations**
- ☒ **Attachment O: Monitoring/Recordkeeping/Reporting/Testing Plans**
- ☒ **Attachment P: Public Notice**
- ☒ **Attachment Q: Business Confidential Claims**
- ☐ **Attachment R: Authority Forms**
- ☐ **Attachment S: Title V Permit Revision Information**
- ☒ **Application Fee**

Please mail an original and three (3) copies of the complete permit application with the signature(s) to the DAQ, Permitting Section, at the address listed on the first page of this application. Please DO NOT fax permit applications.

FOR AGENCY USE ONLY – IF THIS IS A TITLE V SOURCE:

- ☐ ***Forward 1 copy of the application to the Title V Permitting Group and:***
- ☐ ***For Title V Administrative Amendments:***
  - ☐ ***NSR permit writer should notify Title V permit writer of draft permit,***
- ☐ ***For Title V Minor Modifications:***
  - ☐ ***Title V permit writer should send appropriate notification to EPA and affected states within 5 days of receipt,***
  - ☐ ***NSR permit writer should notify Title V permit writer of draft permit.***
- ☐ ***For Title V Significant Modifications processed in parallel with NSR Permit revision:***
  - ☐ ***NSR permit writer should notify a Title V permit writer of draft permit,***
  - ☐ ***Public notice should reference both 45CSR13 and Title V permits,***
  - ☐ ***EPA has 45 day review period of a draft permit.***

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

Appendix A - WVDAQ Forms

TABLE OF CONTENTS

Attachments:

Attachment A

WEST VIRGINIA
STATE TAX DEPARTMENT
BUSINESS REGISTRATION CERTIFICATE

ISSUED TO:
ROXUL USA INC.
DBA ROCKWOOL
71 EDMOND RD 6
KEARNEYSVILLE, WV 25430-2781

BUSINESS REGISTRATION ACCOUNT NUMBER: **2348-4027**

This certificate is issued on: **10/25/2017**

This certificate is issued by
the West Virginia State Tax Commissioner
in accordance with Chapter 11, Article 12, of the West Virginia Code

The person or organization identified on this certificate is registered to conduct business in the State of West Virginia at the location above.

This certificate is not transferrable and must be displayed at the location for which issued

This certificate shall be permanent until cessation of the business for which the certificate of registration was granted or until it is suspended, revoked or cancelled by the Tax Commissioner.

Change in name or change of location shall be considered a cessation of the business and a new certificate shall be required.

TRAVELING/STREET VENDORS: Must carry a copy of this certificate in every vehicle operated by them. CONTRACTORS, DRILLING OPERATORS, TIMBER/LOGGING OPERATIONS: Must have a copy of this certificate displayed at every job site within West Virginia.

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Attachment C

Attachment C

Installation and Start Up Schedule

The changes outlined in this application reflect as-built construction of the facility. The facility began operation on May 22, 2021.

Attachment D

Attachment D

Regulation Discussion

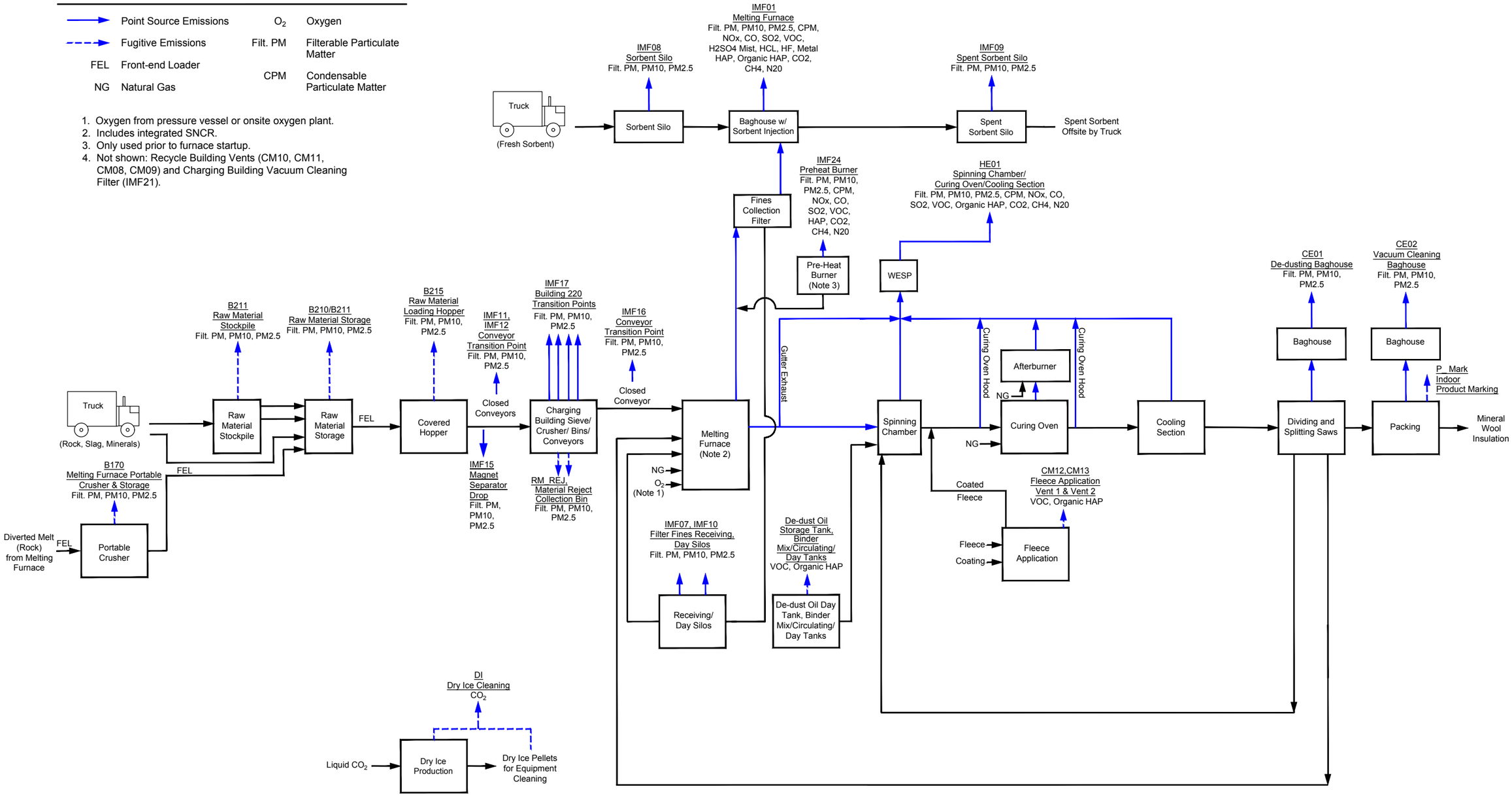
Please see the regulatory discussion in Section 4 and Section 5 of the Introduction of this permit application for the federal and state regulatory discussions, respectively.

Attachment F

KEY/ NOTES

→	Point Source Emissions	O_2	Oxygen
- - →	Fugitive Emissions	Filt. PM	Filterable Particulate Matter
FEL	Front-end Loader	CPM	Condensable Particulate Matter
NG	Natural Gas		

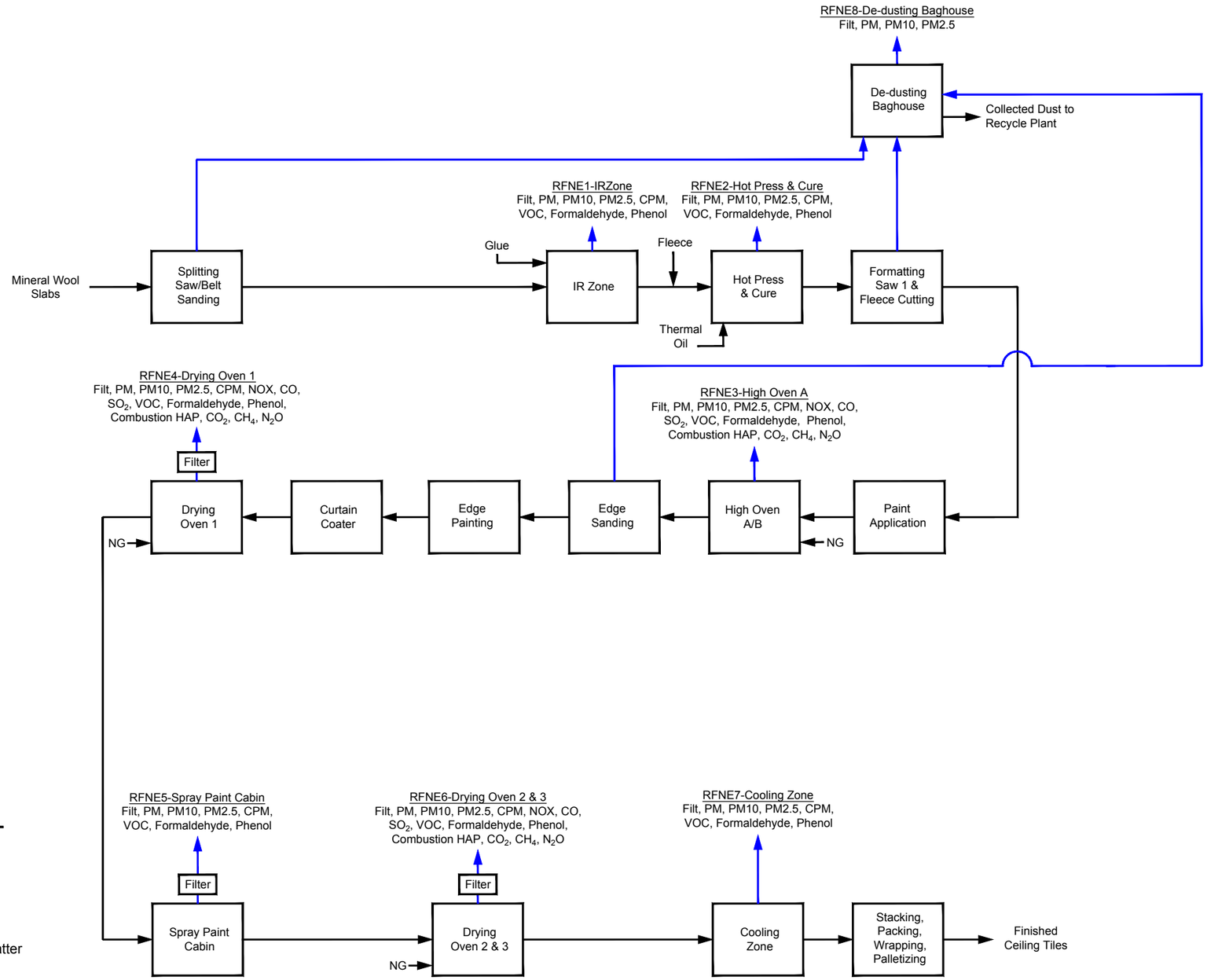
1. Oxygen from pressure vessel or onsite oxygen plant.
2. Includes integrated SNCR.
3. Only used prior to furnace startup.
4. Not shown: Recycle Building Vents (CM10, CM11, CM08, CM09) and Charging Building Vacuum Cleaning Filter (IMF21).



ERM Environmental Resources Management

MINERAL WOOL LINE
PROCESS FLOW DIAGRAM
ROXUL USA INC.
RANSON, WEST VIRGINIA

FIGURE 3-1



KEY

- Point Source Emissions
- Fugitive Emissions
- Filt. PM — Filterable Particulate Matter
- CPM — Condensable Particulate Matter
- NG — Natural Gas

ERM Environmental Resources Management

ROCKFON LINE
PROCESS FLOW DIAGRAM
ROXUL USA INC.
RANSON, WEST VIRGINIA

FIGURE 3-2

(SDBNADC02) T:\DWG\AutoCAD\dwg\0408003\0408003_RoxulShuttlePFDs3 RED_A VERSION R1.dwg, 11/14/2017 4:03:10 PM

Attachment G

Attachment G

Process Description

ROCKWOOL provides the updates to the process descriptions below to provide detailed information on the equipment and types of changes included in the as-built permit application. Processes with no changes have been omitted from the descriptions below.

Mineral Wool Line

Raw Material Handling

Melt Raw Material Handling

Conveyor Transition Point IMF11 is now located indoors. This source has been updated to include an indoor settling factor in addition to the fabric filter already permitted.

Five material handling fugitive emission points are proposed to be modified in the permit, which are listed below:

- IMF17, which now includes 22 transfer points inside B220, Mixer and Crusher emissions inside B220 (previously included IMF18, which is proposed to be removed from the permit), and 2 transfer points with fabric filters inside B220;
- IMF12, which includes one transfer point inside B215;
- IMF16, which includes one transfer point inside B300;
- IMF15, which includes one transfer point outside B220; and
- IMF14, which includes a storage stockpile with a base area of 10 m^2.

The material handling sources IMF17, IMF12, IMF16, and IMF15, capture emission sources as material moves from B215 to B220, moves through B220, and exits B220 to B300. IMF12 includes the transfer point from the loading hopper (located inside B215) to a conveyor. From B215, material transfers to a second conveyor, and this transfer point corresponds to IMF11. The material moves outside from B215 to B220, where there is a transfer point from a magnet separator into an iron container with a 4-sided drop guard corresponding to IMF15. Material is delivered to B220 by a conveyor transfer point which is included in IMF17. IMF17 includes 19 conveyor transfer points which are indoors but otherwise uncontrolled, as well as the two conveyor transition points, which are equipped with fabric filters. Additional transfer points inside B220 included with IMF17 are one transfer point from the magnet separator to the iron container with a telescopic chute and two transfer points, one which transfers material from the magnet separator to the feeder and the second from the feeder to the crusher. Once material leaves B220, it is transferred to B300. The conveyor transfer point located inside B300 corresponds to IMF16.

The two mechanical vents on the charging building were not installed. As described above, emissions from the Mixer and Crusher are included with the other new B220 Material Handling emissions (IMF17). IMF18 is proposed to be removed from the permit.

The Sieve Reject Collection Bin (S_REJ) has been installed indoors with a telescopic chute, rather than outdoors with a 4-sided rubber drop guard, and the control efficiency has been updated to reflect this installation.

The number of haul road routes have been updated to remove those associated with Coal and PET Coke, including the Truck trips for Coal/PET Coke and the Front-End Loader trips for Coal/PET Coke from the Bunker to the Feed Hopper (for Milling).

Emissions from all material handling sources consists of filterable PM/PM_{10}/$PM_{2.5}$.

Energy Material Handling

The emission points from this section were not installed and are proposed to be removed from the permit. These emission points are:

- Three (3) Coal Storage Silos (IMF03A, IMF03B, IMF03C); and
- One (1) Coal Feed Tank (IMF25).

Coal Milling

The emission points from this section were not installed and are proposed to be removed from the permit. These emission points are:

- Coal Conveyor Transition Point (B231 to B235) (IMF13);
- Coal Mill Burner & Baghouse (IMF05);
- Coal Milling De-dusting Baghouse (IMF06);
- Coal Conveyor Transition Point (B231 to B235) (IMF04);
- Fugitive emissions from Coal Unloading (B230);
- Fugitive emissions from Coal Loading Hopper (B231); and
- Fugitive emissions from Coal Milling Building (B235).

Melting

It is proposed to remove 8 pounds/hour (35.04 tons/year) of Carbon Monoxide from the Melting Furnace (IMF01) potential to emit and add it to the WESP (HE01) potential to emit. The new Melting Furnace (IMF01) CO emission rate will be 3.21 pounds/ hour (14.06 tons/year). Carbon Monoxide is not subject to PSD.

The Secondary Energy Materials Storage Silo (IMF07B) was not installed. The source IMF07 now only contains IMF07A, the Filter Fines Day Silo, which has also been updated to include an indoor settling factor.

Cooling Towers

The two cooling towers were not installed, and are proposed to be removed from the permit:

- Melting Furnace Cooling Tower (IMF02); and
- Gutter Cooling Tower (HE02).

Spinning, Curing and Cooling

The spinning, curing, and cooling section are contributors of Carbon Monoxide to the WESP (HE01). As described in the Melting section above, it is proposed to remove 8 pounds/hour (35.04 tons per year) of Carbon Monoxide from the Melting Furnace (IMF01) potential to emit and add it to the WESP (HE01) potential to emit, based upon stack testing results from a similar facility. Carbon Monoxide is not subject to PSD.

The combined spinning, cooling, and curing will now have a CO emission rate of 9.82 pounds/hour (43.01 tons/year

Additionally, the Curing Oven Afterburner (CO-AB) was installed with a maximum heat input capacity of 9.86 MMBtu/hr (originally permitted at 6.83 MMBtu/hr).

Other Facility-Wide Operations and Activities

Building Heat with Natural Gas Boilers

Building heat is supplied with natural gas boilers. Two natural gas-fired boilers were installed to provide a source of building heat when the furnace is not in operation (CM03, CM04). These two boilers were installed at a lower maximum rated heat input capacity of 4.99 MMBtu/hr (originally permitted at 5.1 MMBtu/hr).

The Rockfon building's natural gas-fired boiler for building heating (RFN10), is unchanged.

Emergency Fire Pump Engines.

The diesel engine fire pump was installed with a rating of 316 horsepower (hp) (236 kW). The emission factors for this source have been updated to reflect the manufacturer rating data, where available.

The engine is certified to NSPS Subpart IIII engine standards and will operate only during emergencies or other limited scenarios as allowed by federal rules (i.e., maintenance checks, readiness testing, etc.).

Storage Tanks

The following storage thanks have updated sizing:

- One (1) Thermal Oil Horizontal Tank, TK-TO3 (5,283 gallons, previously 2,642 gallons); and
- One (1) Thermal Oil Horizontal Expansion Tank, TK-TO4 (1,928 gallons, previously 1,321 gallons).
- Six (6) Resin Vertical Storage Tanks, TK-RS1 - TK-RS6 (13,209 gallons each, previously 15,850 gallons).
- One (1) Coupling Agent Vertical Storage Tank, TK-CA (396 gallons, previously 264 gallons);
- One (1) Additive Vertical Storage Tank, TK-AD (396 gallons, previously 53 gallons);

The following storage tanks were not installed and are proposed to be removed from the permit:

- One (1) Used Oil Horizontal Storage Tank, TK-OU (581 gallons);
- One (1) Resin Vertical Storage Tank, TK-RS7 (15,850 gallons);
- One (1) Vertical Binder Mix Tank, TK-BM (2,642 gallons);
- One (1) De-dust Oil Vertical Storage Tank, TK-DO (15,850 gallons);
- One (1) Vertical Binder Circulating Tank, TK-BC (4,227 gallons); and
- One (1) Binder Vertical Day Tank, TK-BD (793 gallons).

The following storage tanks are being added to the permit:

- One (1) Vertical Additive Buffer Tank, TK-ADB1 (396 gallons);
- One (1) Vertical Additive Buffer Tank, TK-ADB2 (132 gallons); and
- One (1) Vertical Glycol Storage Tank, TK-GLY (396 gallons).

The following storage tanks have been updated with current AP-42 calculation methodology:

- One (1) Diesel Fuel Horizontal Storage Tank, TK-DF (2,642 gallons);
- Three (3) Binder Storage Containers, TK-BS1-TK-BS3, (ea. 264 gallons);
- One (1) De-dust Oil Vertical Day Tank, TK-DOD (264 gallons);

- One (1) Thermal Oil Horizontal Expansion Tank, TK-TO1 (212 gallons);
- One (1) Thermal Oil Horizontal Drain Tank, TK-TO2 (159 gallons).
- One (1) Paint Dilution Storage Tank, TK-PD (793 gallons); and
- One (1) Paint Dilution Day Tank, TK-PDD (397 gallons).

Attachment I

Attachment I

Emission Units Table

(includes all emission units and air pollution control devices that will be part of this permit application review, regardless of permitting status)

Emission Unit ID[1]	Emission Point ID[2]	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type[3] and Date of Change	Control Device[4]
IMF01	IMF01	Melting Furnace	2021	21,414 scfm	Modification	IMF01-BH De-NOx De-SOx
IMF02	IMF02	Furnace Cooling Tower	NA	1,321 gpm (300 m^3/h)	Removal	None
IMF03A	IMF03A	Coal Storage Silo A	NA	758 scfm (1,200 Nm^3/h)	Removal	IMF03A-FF
IMF03B	IMF03B	Coal Storage Silo B	NA	758 scfm (1,200 Nm^3/h)	Removal	IMF03B-FF
IMF03C	IMF03C	Coal Storage Silo C	NA	758 scfm (1,200 Nm^3/h)	Removal	IMF03C-FF
IMF07A	IMF07	Filter Fines Day Silo	2021	790 scfm (1,250 Nm^3/h)	Modification	IMF07A-FF Enclosed Indoors
IMF07B	IMF07	Secondary Energy Materials Silo	NA	790 scfm (1,250 Nm^3/h)	Removal	IMF07B-FF
IMF11	IMF11	Conveyor Transition Point (B215 to B220)	2021	1,137 scfm (1,800 Nm^3/h)	Modification	IMF11-FF Enclosed Indoors
IMF12	IMF12	Conveyor Transfer Point (B215)	2021	716 ton/day	Modification	Enclosed Indoors
IMF14	IMF14	Raw Material Reject Stockpile	2021	0.002 acres 10 m^2	Modification	3-sided enclosure

Emission Unit ID[1]	Emission Point ID[2]	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type[3] and Date of Change	Control Device[4]
IMF15	IMF15	Outside B220 Transfer Point	2021	716 ton/day	Modification	4-sided drop guard
IMF16	IMF16	Conveyor Transfer Point (B300)	2021	716 ton/day	Modification	Enclosed Indoors
B211	B211	Raw Material Stockpile	2021	0.10 acres 398 m^2	New	3-sided enclosure
S_REJ	S_REJ	Sieve Reject Collection Bin	2021	NA	Removal	4-sided rubber drop guard
IMF25	IMF25	Coal Feed Tank	2018	758 scfm (1,200 Nm^3/h)	Removal	IMF25-FF
CO	HE01	Curing Oven	2021	18,950 scfm Confidential	Modification	HE01 CO-AB
CO-AB	HE01	Curing Oven Afterburner	2021	9.86 MMBtu/hr	Modification	HE01
CS	HE01	Cooling Section	2021	50,534 scfm	Modification	HE01
HE02	HE02	Gutter Cooling Tower	2018	308 gpm (70 m^3/hr)	Removal	None
IMF17	IMF17	B220 Material Handling	2021	716 ton/day	Modification	Enclosed Indoors
IMF18	IMF18	Charging Material Handling Vent 2	2021	NA	Removal	IMF17/18-FF
IMF04	IMF04	Coal Conveyor Transition Point (B231 to B235)	2018	1,137 scfm (1,800 Nm^3/h)	Removal	IMF04-FF
IMF05	IMF05	Coal Milling Burner & Baghouse	2018	2,873 scfm (4,547 Nm^3/h)	Removal	IMF05-BH

Emission Unit ID[1]	Emission Point ID[2]	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type[3] and Date of Change	Control Device[4]
IMF06	IMF06	Coal Milling De-Dusting Baghouse	2018	6,317 scfm (10,000 Nm^3/h)	Removal	IMF06-BH
IMF13	IMF13	Coal Conveyor Transition Point (B231 to B235)	2018	1,137 scfm (1,800 Nm^3/h)	Removal	IMF13-FF
B235	B235	Coal Milling Building	2018	NA	Removal	Enclosed Indoors
B230	B230	Coal Unloading	2018	NA	Removal	3-sided enclosure with cover
B231	B231	Coal Unloading Hopper	2018	NA	Removal	3-sided enclosure with cover
CM03	CM03	Natural Gas Boiler 1	2021	4.99 MMBtu/h (1.462 MW)	Modification	None
CM04	CM04	Natural Gas Boiler 2	2021	4.99 MMBtu/h (1.462 MW)	Modification	None
EFP1	EFP1	Emergency Fire Pump	2021	316 hp (236 kw)	Modification	None
TK-DF	TK-DF	Diesel Fuel Tank	2021	1,242 gal 4.7 m^3	Modification	None
TK-UO	TK-UO	Used Oil Tank	2018	581 gal 2.2 m^3	Removal	None
TK-TO1	TK-TO1	Thermal Oil Expansion Tank – Rockfon	2021	212 gal 0.8 m^3	Modification	None
TK-TO2	TK-TO2	Thermal Oil Drain Tank - Rockfon	2021	159 gal 0.6 m^3	Modification	None
TK-TO3	TK-TO3	Thermal Oil Tank – IMF	2021	5,283 gal 20 m^3	Modification	None
TK-TO4	TK-TO4	Thermal Oil Expansion Tank - IMF	2021	1,928 gal 7.3 m^3	Modification	None
TK-DO	TK-DO	De-dust Oil Storage Tank	2021	15,850 gal 35.7 m^3	Removal	None

Emission Unit ID[1]	Emission Point ID[2]	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type[3] and Date of Change	Control Device[4]
TK-RS1	TK-RS1	Resin Storage Tank	2021	13.209 gal 50 m^3	Modification	None
TK-RS2	TK-RS2	Resin Storage Tank	2021	13.209 gal 50 m^3	Modification	None
TK-RS3	TK-RS3	Resin Storage Tank	2021	13.209 gal 50 m^3	Modification	None
TK-RS4	TK-RS4	Resin Storage Tank	2021	13.209 gal 50 m^3	Modification	None
TK-RS5	TK-RS5	Resin Storage Tank	2021	13.209 gal 50 m^3	Modification	None
TK-RS6	TK-RS6	Resin Storage Tank	2021	13.209 gal 50 m^3	Modification	None
TK-RS7	TK-RS7	Resin Storage Tank	2018	15,850 gal 60 m^3	Removal	None
TK-CA	TK-CA	Coupling Agent Storage Tank	2021	396 gal 1.5 m^3	Modification	None
TK-AD	TK-AD	Additive Storage Tank	2021	396 gal 1.5 m^3	Modification	None
TK-BM	TK-BM	Binder Mix Tank	2021	2.642 gal 10 m^3	Removal	None
TK-BC	TK-BC	Binder Circulation Tank	2021	4,227 gal 16 m^3	Removal	None
TK-BD	TK-BD	Binder Day Tank	2021	793 gal 3 m^3	Removal	None
TK-BS1	TK-BS1	Binder Storage Container	2021	264 gal 1 m^3	Modification	None
TK-BS2	TK-BS2	Binder Storage Container	2021	264 gal 1 m^3	Modification	None

Emission Unit ID[1]	Emission Point ID[2]	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type[3] and Date of Change	Control Device[4]
TK-BS3	TK-BS3	Binder Storage Container	2021	264 gal 1 m^3	Modification	None
TK-DOD	TK-DOD	De-dust Oil Day Tank	2021	264 gal 1 m^3	Modification	None
TK-ADB1	TK-ADB1	Additive Buffer Tank	2021	396 gal 1.5 m^3	New	None
TK-ADB2	TK-ADB2	Additive Buffer Tank	2021	132 gal 0.5 m^3	New	None
TK-GLY	TK-GLY	Glycol Tank	2021	396 gal 1.5 m^3	New	None
TK-PD	TK-PD	Paint Dilution Tank	2021	793 gal 3 m^3	New	None
TK-PDD	TK-PDD	Paint Dilution Day Tank	2021	397 gal 1.5 m^3	New	None

[1] For Emission Units (or Sources) use the following numbering system:1S, 2S, 3S,... or other appropriate designation.
[2] For Emission Points use the following numbering system:1E, 2E, 3E, ... or other appropriate designation.
[3] New, modification, removal
[4] For Control Devices use the following numbering system: 1C, 2C, 3C,... or other appropriate designation.

Attachment J

Attachment J
EMISSION POINTS DATA SUMMARY SHEET

Table 1: Emissions Data

Emission Point ID No. *(Must match Emission Units Table & Plot Plan)*	Emission Point Type[1]	Emission Unit Vented Through This Point *(Must match Emission Units Table & Plot Plan)*		Air Pollution Control Device *(Must match Emission Units Table & Plot Plan)*		Vent Time for Emission Unit *(chemical processes only)*		All Regulated Pollutants - Chemical Name/CAS[3] *(Speciate VOCs & HAPS)*	Maximum Potential Uncontrolled Emissions[4]		Maximum Potential Controlled Emissions[5]		Emission Form or Phase *(At exit conditions, Solid, Liquid or Gas/Vapor)*	Est. Method Used[6]	Emission Concentration[7] (ppmv or mg/m^3)
		ID No.	Source	ID No.	Device Type	Short Term[2]	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
Mineral Wool Line															
IMF01	Upward Vertical Stack	IMF01	Point	IMF01-BH	BH SCR SIS	C	8760	NOx			37.37	163.67	Gas/Vapor	EE	
								SO_2			33.63	147.31			
								CO			3.21	14.06			
								VOCs			11.66	51.08			
								PM_{10}			8.22	36.01			
								$PM_{2.5}$			7.47	32.73			
								CO_2e			21,814.29	94,981.42			
								H_2SO_4			3.74	16.37			
								Lead			<0.01	<0.01			
								Total HAPs			3.43	15.04			
IMF07	Upward Vertical Stack	IMF07	Point	IMF07-FF	FF	C	8760	PM_{10}			<0.01	0.01	Solid	EE	
								$PM_{2.5}$			<0.01	0.01			

HE01	Upward Vertical Stack	HE01	Point			C	8760	NOx			14.55	63.73	Gas/Vapor, Solid	EE	
								SO_2			0.01	0.05			
								CO			9.82	43.01			
								VOC			78.02	341.71			
								PM_{10}			21.21	92.89			
								$PM_{2.5}$			19.22	84.20			
								CO_2e			8,492.77	37,198.32			
								Phenol			19.37	84.85			
								Formalde-hyde			12.79	56.01			
								Methanol			23.70	103.80			
								Total HAPs			77.07	337.56			
Other RAN Facility-Wide Sources															
CM03	Upward Vertical Stack	CM03	Point			C	8760	NOx			0.18	0.77	Gas/Vapor, Solid	EE	
								SO_2			<0.01	0.01			
								CO			0.41	1.79			
								VOC			0.03	0.12			
								PM_{10}			0.04	0.16			
								$PM_{2.5}$			0.04	0.16			
								CO_2e			584.32	2559.32			
								Lead			<0.01	<0.01			
								Hexane			<0.01	0.04			
								Total HAPs			<0.01	0.04			

CM04	Upward Vertical Stack	CM04	Point			C	8760	NOx			0.18	0.77	Gas/Vapor, Solid	EE	
								SO_2			<0.01	0.01			
								CO			0.41	1.79			
								VOC			0.03	0.12			
								PM_{10}			0.04	0.16			
								$PM_{2.5}$			0.04	0.16			
								CO_2e			584.32	2559.32			
								Lead			<0.01	<0.01			
								Hexane			<0.01	0.04			
								Total HAPs			<0.01	0.04			
EFP1	Upward Vertical Stack	EFP1	Point			EM	500	NOx			1.78	0.45	Gas/Vapor	EE	
								SO_2			<0.01	<0.01			
								CO			0.42	0.10			
								VOC			0.06	0.01			
								PM_{10}			0.07	0.02			
								$PM_{2.5}$			0.07	0.02			
								CO_2e			361.99	90.50			
								Total HAPs			<0.01	<0.01			

RAN Facility Storage Tanks															
TK-DF	Vent	TK-DF	Point			C	8760	Distillate fuel oil 2	<0.01	<0.01	<0.01	<0.01	Gas/Vapor	Emission Master	
								VOC	<0.01	<0.01	<0.01	<0.01			
TK-TO1	Vent	TK-TO1	Point			C	8760	Jet naphtha	<0.01	<0.01	<0.01	<0.01	Gas/Vapor	Emission Master	
								VOC	<0.01	<0.01	<0.01	<0.01			
TK-TO2	Vent	TK-TO2	Point			C	8760	Jet naphtha	<0.01	<0.01	<0.01	<0.01	Gas/Vapor	Emission Master	
								VOC	<0.01	<0.01	<0.01	<0.01			
TK-TO3	Vent	TK-TO3	Point			C	8760	Power Steering Fluid	<0.01	<0.01	<0.01	<0.01	Gas/Vapor	Emission Master	
								VOC	<0.01	<0.01	<0.01	<0.01			
TK-TO4	Vent	TK-TO4	Point			C	8760	Power Steering Fluid	<0.01	<0.01	<0.01	<0.01	Gas/Vapor	Emission Master	
								VOC	<0.01	<0.01	<0.01	<0.01			
TK-DO	Vent	TK-DO	Point			C	8760	Distillate fuel oil 2	<0.01	<0.01	<0.01	<0.01	Gas/Vapor	Emission Master	
								VOC	<0.01	<0.01	<0.01	<0.01			
TK-RS1	Vent	TK-RS1	Point			C	8760	Formaldehyde	<0.01	0.02	<0.01	0.02	Gas/Vapor	Emission Master	
								Methanol	<0.01	<0.01	<0.01	<0.01			
								VOC	<0.01	0.02	<0.01	0.02			
								HAP	<0.01	0.02	<0.01	<0.02			
TK-RS2	Vent	TK-RS2	Point			C	8760	Formaldehyde	<0.01	0.02	<0.01	0.02	Gas/Vapor	Emission Master	
								Methanol	<0.01	<0301	<0.01	<0.01			
								VOC	<0.01	0.02	<0.01	0.02			
								HAP	<0.01	0.02	<0.01	0.02			

TK-RS3	Vent	TK-RS3	Point			C	8760	Formaldehyde	<0.01	0.02	<0.01	0.02	Gas/Vapor	Emission Master	
								Methanol	<0.01	<0.01	<0.01	<0.01			
								VOC	<0.01	0.02	<0.01	0.02			
								HAP	<0.01	0.02	<0.01	0.02			
TK-RS4	Vent	TK-RS4	Point			C	8760	Formaldehyde	<0.01	0.02	<0.01	0.02	Gas/Vapor	Emission Master	
								Methanol	<0.01	<0.01	<0.01	<0.01			
								VOC	<0.01	0.02	<0.01	0.02			
								HAP	<0.01	0.02	<0.01	0.02			
TK-RS5	Vent	TK-RS5	Point			C	8760	Formaldehyde	<0.01	0.02	<0.01	0.02	Gas/Vapor	Emission Master	
								Methanol	<0.01	<0.01	<0.01	<0.01			
								VOC	<0.01	0.02	<0.01	0.02			
								HAP	<0.01	0.02	<0.01	0.02			
TK-RS6	Vent	TK-RS6	Point			C	8760	Formaldehyde	<0.01	0.02	<0.01	0.02	Gas/Vapor	Emission Master	
								Methanol	<0.01	<0.01	<0.01	<0.01			
								VOC	<0.01	0.02	<0.01	0.02			
								HAP	<0.01	0.02	<0.01	0.02			
TK-CA	Vent	TK-CA	Point			C	8760	Ethyl Alcohol	<0.01	<0.01	<0.01	<0.01	Gas/Vapor	Emission Master	
								VOC	<0.01	<0.01	<0.01	<0.01			
TK-AD	Vent	TK-AD	Point			C	8760	Ethyl Alcohol	<0.01	<0.01	<0.01	<0.01	Gas/Vapor	Emission Master	
								VOC	<0.01	<0.01	<0.01	<0.01			

TK-BM	Vent	TK-BM	Point			C	8760	Formaldehyde	<0.01	0.01	<0.01	0.01	Gas/Vapor	Emission Master	
								Methanol	<0.01	<0.01	<0.01	<0.01			
								VOC	<0.01	0.01	<0.01	0.01			
								HAP	<0.01	<0.01	<0.01	<0.01			
TK-BC	Vent	TK-BC	Point			C	8760	Formaldehyde	<0.01	0.01	<0.01	0.01	Gas/Vapor	Emission Master	
								Methanol	<0.01	<0.01	<0.01	<0.01			
								VOC	<0.01	0.01	<0.01	0.01			
								HAP	<0.01	<0.01	<0.01	<0.01			
TK-BD	Vent	TK-BD	Point			C	8760	Formaldehyde	<0.01	0.01	<0.01	0.01	Gas/Vapor	Emission Master	
								Methanol	<0.01	<0.01	<0.01	<0.01			
								VOC	<0.01	0.01	<0.01	0.01			
								HAP	<0.01	<0.01	<0.01	<0.01			
TK-BS1	Vent	TK-BS1	Point			C	8760	Formaldehyde	<0.01	<0.01	<0.01	<0.01	Gas/Vapor	Emission Master	
								Methanol	<0.01	<0.01	<0.01	<0.01			
								VOC	<0.01	<0.01	<0.01	<0.01			
								HAP	<0.01	<0.01	<0.01	<0.01			
TK-BS2	Vent	TK-BS2	Point			C	8760	Formaldehyde	<0.01	<0.01	<0.01	<0.01	Gas/Vapor	Emission Master	
								Methanol	<0.01	<0.01	<0.01	<0.01			
								VOC	<0.01	<0.01	<0.01	<0.01			
								HAP	<0.01	<0.01	<0.01	<0.01			

TK-BS3	Vent	TK-BS3	Point			C	8760	Formaldehyde	<0.01	<0.01	<0.01	<0.01	Gas/Vapor	Emission Master	
								Methanol	<0.01	<0.01	<0.01	<0.01			
								VOC	<0.01	<0.01	<0.01	<0.01			
								HAP	<0.01	<0.01	<0.01	<0.01			
TK-DOD	Vent	TK-DOD	Point			C	8760	Distillate fuel oil 2	<0.01	<0.01	<0.01	<0.01	Gas/Vapor	Emission Master	
								VOC	<0.01	<0.01	<0.01	<0.01			

The EMISSION POINTS DATA SUMMARY SHEET provides a summation of emissions by emission unit. Note that uncaptured process emission unit emissions are not typically considered to be fugitive and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET. Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions). Please complete the FUGITIVE EMISSIONS DATA SUMMARY SHEET for fugitive emission activities.

[1] Please add descriptors such as upward vertical stack, downward vertical stack, horizontal stack, relief vent, rain cap, etc.

[2] Indicate by "C" if venting is continuous. Otherwise, specify the average short-term venting rate with units, for intermittent venting (ie., 15 min/hr). Indicate as many rates as needed to clarify frequency of venting (e.g., 5 min/day, 2 days/wk).

[3] List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. **LIST** Acids, CO, CS_2, VOCs, H_2S, Inorganics, Lead, Organics, O_3, NO, NO_2, SO_2, SO_3, all applicable Greenhouse Gases (including CO_2 and methane), etc. **DO NOT LIST** H_2, H_2O, N_2, O_2, and Noble Gases.

[4] Give maximum potential emission rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

[5] Give maximum potential emission rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

[6] Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).

[7] Provide for all pollutant emissions. Typically, the units of parts per million by volume (ppmv) are used. If the emission is a mineral acid (sulfuric, nitric, hydrochloric or phosphoric) use units of milligram per dry cubic meter (mg/m^3) at standard conditions (68 °F and 29.92 inches Hg) (see 45CSR7). If the pollutant is SO_2, use units of ppmv (See 45CSR10).

Attachment J
EMISSION POINTS DATA SUMMARY SHEET

Table 2: Release Parameter Data								
Emission Point ID No. *(Must match Emission Units Table)*	Inner Diameter (ft.)	Exit Gas			Emission Point Elevation (ft)		UTM Coordinates (km)	
		Temp. (°F)	Volumetric Flow [1] (acfm) *at operating conditions*	Velocity (fps)	Ground Level *(Height above mean sea level)*	Stack Height [2] *(Release height of emissions above ground level)*	Northing	Easting
Mineral Wool Line								
IMF01	3.28	271.67	21,413.73	69.27	581.30	212.70	4362.64453	252.09348
IMF07	1.00	140.27	790.81	4.66	581.30	100.26	4362.62904	252.10067
IMF08	1.08	68	758.86	9.15	581.30	72.93	4362.60314	252.10795
IMF09	1.08	145.67	758.86	51.15	581.30	72.93	4362.59772	252.10768
IMF10	1.08	145.67	758.86	51.15	581.30	72.93	4362.60804	252.10817
IMF21	0.49	104	336.99	29.53	581.30	9.84	4362.6777	252.07332
IMF24	1.15	482.27	3,059.94	54.43	581.30	126.25	4362.61797	252.08677
HE01	12.93	93.02	369,528.94	51.53	581.30	212.66	4362.54558	252.12056
CE01	3.81	104	44,217.14	69.33	581.30	116.14	4362.53451	252.07615
CE02	2.30	104	12,633.47	54.33	581.30	98.42	4362.51457	252.06187
CM10	2.67	70.27	18,950.20	44.76	581.30	51.51	4362.57256	252.09509
CM11	2.67	70.27	18,950.20	44.76	581.30	64.30	4362.57383	252.06922
CM08	1.17	70.27	1,597.18	24.62	581.30	51.51	4362.55726	252.09517
CM09	1.17	70.27	1,597.18	24.62	581.30	51.51	4362.58552	252.09826

Rockfon Line								
RFNE1	1.05	131	2,189.77	42.16	581.30	42.65	4362.2906	252.01604
RFNE2	1.05	104	2,090.93	40.26	581.30	42.65	4362.33212	252.0169
RFNE3	1.64	212	6,436.15	50.75	581.30	39.37	4362.30725	251.98527
RFNE4	1.64	320	4,667.98	36.81	581.30	39.37	4362.29223	251.96675
RFNE5	1.64	104	6,752.34	53.25	581.30	108.27	4362.26875	251.96562
RFNE6	2.62	320	11,204.48	34.51	581.30	49.21	4362.25044	251.96458
RFNE7	2.62	104	16,881.27	52.00	581.30	45.93	4362.28032	251.97847
RFNE8	5.12	104	74,418.90	64.44	581.30	98.42	4362.25851	252.03994
RFNE9	1.64	212	6,436.15	50.75	581.30	39.37	4362.20203	251.98162
RFN10	1.15	134.6	3,059.94	49.25	581.30	49.21	4362.356	251.98927
Other RAN Facility-Wide Sources								
CM03	1.00	232.07	3,059.94	41.80	581.30	75.62	4362.63842	252.06266
CM04	1.00	232.07	3,059.94	41.80	581.30	75.62	4362.63877	252.05549
EFP1	0.50	847.67	1,155.78	128.97	581.30	13.98	4362.5904	252.18352

[1] Give at operating conditions. Include inerts.
[2] Release height of emissions above ground level.

Attachment K

Attachment K

FUGITIVE EMISSIONS DATA SUMMARY SHEET

The FUGITIVE EMISSIONS SUMMARY SHEET provides a summation of fugitive emissions. Fugitive emissions are those emissions which could not reasonably pass through a stack, chimney, vent or other functionally equivalent opening. Note that uncaptured process emissions are not typically considered to be fugitive, and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET.

Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions).

APPLICATION FORMS CHECKLIST - FUGITIVE EMISSIONS
1.) Will there be haul road activities? ☒ Yes ☐ No ☒ If YES, then complete the HAUL ROAD EMISSIONS UNIT DATA SHEET.
2.) Will there be Storage Piles? ☒ Yes ☐ No ☒ If YES, complete Table 1 of the NONMETALLIC MINERALS PROCESSING EMISSIONS UNIT DATA SHEET.
3.) Will there be Liquid Loading/Unloading Operations? ☐ Yes ☒ No ☐ If YES, complete the BULK LIQUID TRANSFER OPERATIONS EMISSIONS UNIT DATA SHEET.
4.) Will there be emissions of air pollutants from Wastewater Treatment Evaporation? ☐ Yes ☒ No ☐ If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
5.) Will there be Equipment Leaks (e.g. leaks from pumps, compressors, in-line process valves, pressure relief devices, open-ended valves, sampling connections, flanges, agitators, cooling towers, etc.)? ☐ Yes ☒ No ☐ If YES, complete the LEAK SOURCE DATA SHEET section of the CHEMICAL PROCESSES EMISSIONS UNIT DATA SHEET.
6.) Will there be General Clean-up VOC Operations? ☐ Yes ☒ No ☐ If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
7.) Will there be any other activities that generate fugitive emissions? ☒ Yes ☐ No ☒ If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET or the most appropriate form.
If you answered “NO” to all of the items above, it is not necessary to complete the following table, “Fugitive Emissions Summary.”

FUGITIVE EMISSIONS SUMMARY	All Regulated Pollutants - Chemical Name/CAS [1]	Maximum Potential Uncontrolled Emissions [2]		Maximum Potential Controlled Emissions [3]		Est. Method Used [4]
		lb/hr	ton/yr	lb/hr	ton/yr	
Paved Haul Roads	PM_{10}	<0.01	1.61	<0.01	0.40	O – AP42
	$PM_{2.5}$	<0.01	0.39	<0.01	0.10	
Unpaved Haul Roads		--	--	--	--	--
Storage Pile Emissions – **Raw Material Outdoor Stockpile (B211)**	PM	0.03	0.14	0.02	0.07	EE
	PM_{10}	0.02	0.07	<0.01	0.03	
	$PM_{2.5}$	<0.01	0.01	<0.01	<0.01	
Storage Pile Emissions – **Raw Material Outdoor Reject Stockpile (IMF14)**	PM	<0.01	<0.01	<0.01	<0.01	EE
	PM_{10}	<0.01	<0.01	<0.01	<0.01	
	$PM_{2.5}$	<0.01	<0.01	<0.01	<0.01	
Loading/Unloading Operations		--	--	--	--	--
Wastewater Treatment Evaporation & Operations		--	--	--	--	--
Equipment Leaks		Does not apply	--	Does not apply	--	--
General Clean-up VOC Emissions		--	--	--	--	--
Other – **B220 Material Handling (IMF17)**	PM	--	--	0.37	1.64	EE
	PM_{10}	--	--	0.15	0.64	
	$PM_{2.5}$	--	--	0.14	0.62	
Other – **Conveyor Transfer Point (B215) (IMF12)**	PM	0.07	0.31	0.01	0.06	EE
	PM_{10}	0.03	0.11	<0.01	0.02	
	$PM_{2.5}$	0.03	0.11	<0.01	0.02	

Other – **Conveyor Transfer Point (B300) (IMF16)**	PM	0.07	0.31	0.01	0.06	EE
	PM_{10}	0.03	0.11	<0.01	0.02	
	$PM_{2.5}$	0.03	0.11	<0.01	0.02	
Other – **Outside B220 Transfer Point (IMF15)**	PM	0.07	0.31	0.02	0.08	EE
	PM_{10}	0.03	0.11	<0.01	0.03	
	$PM_{2.5}$	0.03	0.11	<0.01	0.03	

[1] List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS_2, VOCs, H_2S, Inorganics, Lead, Organics, O_3, NO, NO_2, SO_2, SO_3, all applicable Greenhouse Gases (including CO_2 and methane), etc. DO NOT LIST H_2, H_2O, N_2, O_2, and Noble Gases.

[2] Give rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

[3] Give rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

[4] Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).

Attachment L

Attachment L
EMISSIONS UNIT DATA SHEET
GENERAL

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): **IMF01**

1. Name or type and model of proposed affected source:

   Melting Furnace

2. On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants.

3. Name(s) and maximum amount of proposed process material(s) charged per hour:

   Mineral Inputs (Claimed Confidential) – Charge Rate Claimed Confidential

4. Name(s) and maximum amount of proposed material(s) produced per hour:

   Melted Mineral – Melt Rate Claimed Confidential

5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants:

   The chemical reactions from the Melting Furnace are caused by the combustion of the raw material inputs. These combustion reactions are generally considered well known and for this reason are not included.

* The identification number which appears here must correspond to the air pollution control device identification number appearing on the *List Form*.

6. Combustion Data (if applicable):

(a) Type and amount in appropriate units of fuel(s) to be burned:

(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:

NA

(c) Theoretical combustion air requirement (ACF/unit of fuel):

21,414 scfm (33,900 Nm^3/hr)	@	**3,000**	°F and	**14.7**	psia.

(d) Percent excess air:

(e) Type and BTU/hr of burners and all other firing equipment planned to be used:

(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:

TBD

(g) Proposed maximum design heat input: **Claimed Confidential** × 10^6 BTU/hr.

7. Projected operating schedule:

Hours/Day	**24**	Days/Week	**7**	Weeks/Year	**52**

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:			
@ **301.73** °F and			**14.7** psia
a. NO_X	**37.37**	lb/hr	grains/ACF
b. SO_2	**33.63**	lb/hr	grains/ACF
c. CO	**3.21**	lb/hr	grains/ACF
d. PM_{10}	**8.22**	lb/hr	grains/ACF
e. Hydrocarbons	**--**	lb/hr	grains/ACF
f. VOCs	**11.66**	lb/hr	grains/ACF
g. Pb	**<0.01**	lb/hr	grains/ACF
h. Specify other(s)			
Total HAPs	**3.43**	lb/hr	grains/ACF
		lb/hr	grains/ACF
		lb/hr	grains/ACF
		lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING	RECORDKEEPING
Not impacted by updates.	**Not impacted by updates.**
REPORTING	TESTING
Not impacted by updates.	**Not impacted by updates.**

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

NA

Attachment L
Emission Unit Data Sheet
(INDIRECT HEAT EXCHANGER)

Emission Unit ID No. must match List Form): **CO**

Control Device ID No. (must match List Form): **CO-AB, HE01**

Equipment Information

1. Manufacturer: **Bromkamp**	2. Model No. **+CO=A1, +CO=A11/12/13** Serial No.
3. Number of units:	4. Use: **Direct-fired unit - Provide heat for the curing process.**
5. Rated Boiler Horsepower: **NA** hp	6. Boiler Serial No.: **NA**
7. Date constructed: **2021**	8. Date of last modification and explain: **NA**
9. Maximum design heat input per unit: **Claimed Confidential** $\times 10^6$ BTU/hr	10. Peak heat input per unit: **Claimed Confidential** $\times 10^6$ BTU/hr
11. Steam produced at maximum design output: **NA** LB/hr psig	12. Projected Operating Schedule: Hours/Day **24** Days/Week **7** Weeks/Year **52**
13. Type of firing equipment to be used: ☐ Pulverized coal ☐ Spreader stoker ☐ Oil burners ☒ Natural Gas Burner ☐ Others, specify	14. Proposed type of burners and orientation: ☐ Vertical ☐ Front Wall ☐ Opposed ☐ Tangential ☐ Others, specify
15. Type of draft: ☐ Forced ☐ Induced	16. Percent of ash retained in furnace: %
17. Will flyash be reinjected? ☐ Yes ☐ No	18. Percent of carbon in flyash: %

Stack or Vent Data

19. Inside diameter or dimensions: **12.93** ft.	20. Gas exit temperature: **104** °F
21. Height: **212.66** ft.	22. Stack serves: ☐ This equipment only ☒ Other equipment also (submit type and rating of all other equipment exhausted through this stack or vent) **HE01, CO-AB, CO, SPN, and CS**
23. Gas flow rate: **18,950** ft^3/min	
24. Estimated percent of moisture: %	

Fuel Requirements

25.	Type	Fuel Oil No.	Natural Gas	Gas (other, specify)	Coal, Type:	Other:
	Quantity (at Design Output)	gph@60°F	**Claimed Confidential** ft^3/hr	ft^3/hr	TPH	
	Annually	$\times 10^3$ gal	**Claimed Confidential** $\times 10^6$ ft^3/hr	$\times 10^6$ ft^3/hr	tons	
	Sulfur	Maximum: wt. % Average: wt. %	gr/100 ft^3	gr/100 ft^3	Maximum: wt. %	
	Ash (%)				Maximum	
	BTU Content	BTU/Gal. Lbs/Gal.@60°F	**1026** BTU/ft^3	BTU/ft^3	BTU/lb	
	Source					
	Supplier					
	Halogens (Yes/No)					
	List and Identify Metals					

26. Gas burner mode of control:
☐ Manual ☐ Automatic hi-low
☐ Automatic full modulation ☐ Automatic on-off

27. Gas burner manufacture: **TBD**

28. Oil burner manufacture: **NA**

29. If fuel oil is used, how is it atomized? ☐ Oil Pressure ☐ Steam Pressure ☐ Compressed Air ☐ Rotary Cup ☐ Other, specify

30. Fuel oil preheated: ☐ Yes ☐ No

31. If yes, indicate temperature: °F

32. Specify the calculated theoretical air requirements for combustion of the fuel or mixture of fuels described above actual cubic feet (ACF) per unit of fuel:
@ °F, PSIA, % moisture

33. Emission rate at rated capacity: lb/hr

34. Percent excess air actually required for combustion of the fuel described: %

Coal Characteristics

35. Seams: **NA**

36. Proximate analysis (dry basis): % of Fixed Carbon: % of Sulfur:
% of Moisture: % of Volatile Matter:
% of Ash:

Emissions Stream

37. What quantities of pollutants will be emitted from the boiler before controls?

Pollutant	Pounds per Hour lb/hr	grain/ACF	@ °F	PSIA
CO	**No Controls – See Below**			
Hydrocarbons				
NO_x				
Pb				
PM_{10}				
SO_2				
VOCs				
Other (specify)				

38. What quantities of pollutants will be emitted from the boiler after controls?

Pollutant	Pounds per Hour lb/hr	grain/ACF	@ °F	PSIA
CO	**8.93**			
Hydrocarbons				
NO_x	**13.23**			
Pb				
PM_{Fil}	**3.31**			
PM_{10}	**3.31**			
$PM_{2.5}$	**1.32**			
SO_2	**0.01**			
VOCs	**3.31***			
Other (specify)				

*Includes non-HAP VOCs only – Organic HAP emissions are quantified as a combined limit – See Appendix A

39. How will waste material from the process and control equipment be disposed of?

Wastes are not expected from a natural gas-fired unit.

40. Have you completed an *Air Pollution Control Device Sheet(s)* for the control(s) used on this Emission Unit.

41. Have you included the ***air pollution rates*** on the Emissions Points Data Summary Sheet? **Yes**

42. **Proposed Monitoring, Recordkeeping, Reporting, and Testing**
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING PLAN: Please list (1) describe the process parameters and how they were chosen (2) the ranges and how they were established for monitoring to demonstrate compliance with the operation of this process equipment operation or air pollution control device.

Not impacted by updates.

TESTING PLAN: Please describe any proposed emissions testing for this process equipment or air pollution control device.

Not impacted by updates.

RECORDKEEPING: Please describe the proposed recordkeeping that will accompany the monitoring.

Not impacted by updates.

REPORTING: Please describe the proposed frequency of reporting of the recordkeeping.

Not impacted by updates.

43. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.
NA

Attachment L
EMISSIONS UNIT DATA SHEET
GENERAL

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): **CS**

1. Name or type and model of proposed affected source:

   Cooling Section

2. On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants.

3. Name(s) and maximum amount of proposed process material(s) charged per hour:

   Mineral Wool – Throughput Claimed Confidential

4. Name(s) and maximum amount of proposed material(s) produced per hour:

   Mineral Wool – Throughput Claimed Confidential

5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants:

   NA

* The identification number which appears here must correspond to the air pollution control device identification number appearing on the *List Form*.

6. Combustion Data (if applicable): **NA**

(a) Type and amount in appropriate units of fuel(s) to be burned:

(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:

(c) Theoretical combustion air requirement (ACF/unit of fuel):

@ °F and psia.

(d) Percent excess air:

(e) Type and BTU/hr of burners and all other firing equipment planned to be used:

(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:

(g) Proposed maximum design heat input: $\times 10^6$ BTU/hr.

7. Projected operating schedule:

Hours/Day	**24**	Days/Week	**7**	Weeks/Year	**52**

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:			
@ **104** °F and		**14.7** psia	
a. NO_X	**1.32**	lb/hr	grains/ACF
b. SO_2		lb/hr	grains/ACF
c. CO	**0.89**	lb/hr	grains/ACF
d. PM_{10}	**7.05**	lb/hr	grains/ACF
e. Hydrocarbons		lb/hr	grains/ACF
f. VOCs (Non-HAP)	**5.29**	lb/hr	grains/ACF
g. Pb		lb/hr	grains/ACF
h. Specify other(s)			
$PM_{2.5}$	**7.05**	lb/hr	grains/ACF
		lb/hr	grains/ACF
		lb/hr	grains/ACF
		lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING	RECORDKEEPING
Not impacted by updates.	**Not impacted by updates.**
REPORTING	TESTING
Not impacted by updates.	**Not impacted by updates.**

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

NA

Attachment L
Emission Unit Data Sheet
(INDIRECT HEAT EXCHANGER)

Emission Unit ID No. must match List Form): **CM03**

Control Device ID No. (must match List Form):

Equipment Information

1. Manufacturer: **Camus**	2. Model No. **DFNH-5004-NSI** Serial No.
3. Number of units: **1**	4. Use **Provide builidng heat.**
5. Rated Boiler Horsepower: hp	6. Boiler Serial No.:
7. Date constructed: **2021**	8. Date of last modification and explain: **NA**
9. Maximum design heat input per unit: **4.99** ×10^6 BTU/hr	10. Peak heat input per unit: **4.99** ×10^6 BTU/hr
11. Steam produced at maximum design output: **TBD** LB/hr psig	12. Projected Operating Schedule: Hours/Day **24** Days/Week **7** Weeks/Year **52**
13. Type of firing equipment to be used: ☐ Pulverized coal ☐ Spreader stoker ☐ Oil burners ☒ Natural Gas Burner ☐ Others, specify	14. Proposed type of burners and orientation: ☐ Vertical ☐ Front Wall ☐ Opposed ☐ Tangential ☐ Others, specify
15. Type of draft: ☐ Forced ☐ Induced	16. Percent of ash retained in furnace: %
17. Will flyash be reinjected? ☐ Yes ☒ No	18. Percent of carbon in flyash: %

Stack or Vent Data

19. Inside diameter or dimensions: **1.00** ft.	20. Gas exit temperature: **232.07** °F
21. Height: **75.62** ft.	22. Stack serves: ☒ This equipment only ☐ Other equipment also (submit type and rating of all other equipment exhausted through this stack or vent)
23. Gas flow rate: **3,059.94** ft^3/min	
24. Estimated percent of moisture: %	

Fuel Requirements

25.	Type	Fuel Oil No.	Natural Gas	Gas (other, specify)	Coal, Type:	Other:
	Quantity (at Design Output)	gph@60°F	**4864** ft^3/hr	ft^3/hr	TPH	
	Annually	$\times 10^3$ gal	**42.60** $\times 10^6$ ft^3/yr	$\times 10^6$ ft^3/hr	tons	
	Sulfur	Maximum: wt. % Average: wt. %	gr/100 ft^3	gr/100 ft^3	Maximum: wt. %	
	Ash (%)				Maximum	
	BTU Content	BTU/Gal. Lbs/Gal.@60°F	**1026** BTU/ft^3	BTU/ft^3	BTU/lb	
	Source					
	Supplier					
	Halogens (Yes/No)					
	List and Identify Metals					

26. Gas burner mode of control:
☐ Manual ☐ Automatic hi-low
☐ Automatic full modulation ☐ Automatic on-off

27. Gas burner manufacture: **TBD**

28. Oil burner manufacture: **NA**

29. If fuel oil is used, how is it atomized? ☐ Oil Pressure ☐ Steam Pressure ☐ Compressed Air ☐ Rotary Cup ☐ Other, specify

30. Fuel oil preheated: ☐ Yes ☐ No

31. If yes, indicate temperature: °F

32. Specify the calculated theoretical air requirements for combustion of the fuel or mixture of fuels described above actual cubic feet (ACF) per unit of fuel:
@ °F, PSIA, % moisture

33. Emission rate at rated capacity: lb/hr

34. Percent excess air actually required for combustion of the fuel described: %

Coal Characteristics

35. Seams: **NA**

36. Proximate analysis (dry basis): % of Fixed Carbon: % of Sulfur:
% of Moisture: % of Volatile Matter:
% of Ash:

Emissions Stream

37. What quantities of pollutants will be emitted from the boiler before controls?

Pollutant	Pounds per Hour lb/hr	grain/ACF	@ °F	PSIA
CO	**No Controls – See Below**			
Hydrocarbons				
NO_x				
Pb				
PM_{10}				
SO_2				
VOCs				
Other (specify)				

38. What quantities of pollutants will be emitted from the boiler after controls?

Pollutant	Pounds per Hour lb/hr	grain/ACF	@ °F	PSIA
CO	**0.41**			
Hydrocarbons				
NO_x	**0.18**			
Pb				
PM_{10}				
SO_2				
VOCs				
Other (specify)				

39. How will waste material from the process and control equipment be disposed of?

Wastes are not expected from a natural gas-fired boiler.

40. Have you completed an *Air Pollution Control Device Sheet(s)* for the control(s) used on this Emission Unit.

41. Have you included the ***air pollution rates*** on the Emissions Points Data Summary Sheet? **Yes**

42. **Proposed Monitoring, Recordkeeping, Reporting, and Testing**
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING PLAN: Please list (1) describe the process parameters and how they were chosen (2) the ranges and how they were established for monitoring to demonstrate compliance with the operation of this process equipment operation or air pollution control device.

Not impacted by updates.

TESTING PLAN: Please describe any proposed emissions testing for this process equipment or air pollution control device.

Not impacted by updates.

RECORDKEEPING: Please describe the proposed recordkeeping that will accompany the monitoring.

Not impacted by updates.

REPORTING: Please describe the proposed frequency of reporting of the recordkeeping.

Not impacted by updates.

43. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.

Attachment L
Emission Unit Data Sheet
(INDIRECT HEAT EXCHANGER)

Emission Unit ID No. must match List Form): **CM04**

Control Device ID No. (must match List Form):

Equipment Information

1. Manufacturer: **CAMUS**	2. Model No. **DFNH-5004-NSI** Serial No.
3. Number of units: 1	4. Use **Provide building heat.**
5. Rated Boiler Horsepower: hp	6. Boiler Serial No.:
7. Date constructed: **2021**	8. Date of last modification and explain: **NA**
9. Maximum design heat input per unit: **4.99** ×10^6 BTU/hr	10. Peak heat input per unit: **4.99** ×10^6 BTU/hr
11. Steam produced at maximum design output: **TBD** LB/hr psig	12. Projected Operating Schedule: Hours/Day **24** Days/Week **7** Weeks/Year **52**
13. Type of firing equipment to be used: ☐ Pulverized coal ☐ Spreader stoker ☐ Oil burners ☒ Natural Gas Burner ☐ Others, specify	14. Proposed type of burners and orientation: ☐ Vertical ☐ Front Wall ☐ Opposed ☐ Tangential ☐ Others, specify
15. Type of draft: ☐ Forced ☐ Induced	16. Percent of ash retained in furnace: %
17. Will flyash be reinjected? ☐ Yes ☒ No	18. Percent of carbon in flyash: %

Stack or Vent Data

19. Inside diameter or dimensions: **1.00** ft.	20. Gas exit temperature: **232.07** °F
21. Height: **75.62** ft.	22. Stack serves: ☒ This equipment only ☐ Other equipment also (submit type and rating of all other equipment exhausted through this stack or vent)
23. Gas flow rate: **3,059.94** ft^3/min	
24. Estimated percent of moisture: %	

Fuel Requirements

25.	Type	Fuel Oil No.	Natural Gas	Gas (other, specify)	Coal, Type:	Other:
	Quantity (at Design Output)	gph@60°F	**4864** ft^3/hr	ft^3/hr	TPH	
	Annually	$\times 10^3$ gal	**42.60** $\times 10^6$ ft^3/yr	$\times 10^6$ ft^3/hr	tons	
	Sulfur	Maximum: wt. % Average: wt. %	gr/100 ft^3	gr/100 ft^3	Maximum: wt. %	
	Ash (%)				Maximum	
	BTU Content	BTU/Gal. Lbs/Gal.@60°F	**1026** BTU/ft^3	BTU/ft^3	BTU/lb	
	Source					
	Supplier					
	Halogens (Yes/No)					
	List and Identify Metals					

26. Gas burner mode of control:
☐ Manual ☐ Automatic hi-low
☐ Automatic full modulation ☐ Automatic on-off

27. Gas burner manufacture: **TBD**

28. Oil burner manufacture: **NA**

29. If fuel oil is used, how is it atomized? ☐ Oil Pressure ☐ Steam Pressure ☐ Compressed Air ☐ Rotary Cup ☐ Other, specify

30. Fuel oil preheated: ☐ Yes ☐ No

31. If yes, indicate temperature: °F

32. Specify the calculated theoretical air requirements for combustion of the fuel or mixture of fuels described above actual cubic feet (ACF) per unit of fuel:
@ °F, PSIA, % moisture

33. Emission rate at rated capacity: lb/hr

34. Percent excess air actually required for combustion of the fuel described: %

Coal Characteristics

35. Seams: **NA**

36. Proximate analysis (dry basis): % of Fixed Carbon: % of Sulfur:
% of Moisture: % of Volatile Matter:
% of Ash:

Emissions Stream

37. What quantities of pollutants will be emitted from the boiler before controls?

Pollutant	Pounds per Hour lb/hr	grain/ACF	@ °F	PSIA
CO	**No Controls – See Below**			
Hydrocarbons				
NO_x				
Pb				
PM_{10}				
SO_2				
VOCs				
Other (specify)				

38. What quantities of pollutants will be emitted from the boiler after controls?

Pollutant	Pounds per Hour lb/hr	grain/ACF	@ °F	PSIA
CO	**0.41**			
Hydrocarbons				
NO_x	**0.18**			
Pb				
PM_{10}				
SO_2				
VOCs				
Other (specify)				

39. How will waste material from the process and control equipment be disposed of?

Wastes are not expected from a natural gas-fired boiler.

40. Have you completed an *Air Pollution Control Device Sheet(s)* for the control(s) used on this Emission Unit.

41. Have you included the ***air pollution rates*** on the Emissions Points Data Summary Sheet? **Yes**

42. **Proposed Monitoring, Recordkeeping, Reporting, and Testing**
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING PLAN: Please list (1) describe the process parameters and how they were chosen (2) the ranges and how they were established for monitoring to demonstrate compliance with the operation of this process equipment operation or air pollution control device.

Not impacted by updates.

TESTING PLAN: Please describe any proposed emissions testing for this process equipment or air pollution control device.

Not impacted by updates.

RECORDKEEPING: Please describe the proposed recordkeeping that will accompany the monitoring.

Not impacted by updates.

REPORTING: Please describe the proposed frequency of reporting of the recordkeeping.

Not impacted by updates.

43. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.

NA

Attachment L
EMISSIONS UNIT DATA SHEET
GENERAL

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): **EFP1**

1. Name or type and model of proposed affected source:

   Emergency Fire Pump Engine – 316 hp

2. On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants.

3. Name(s) and maximum amount of proposed process material(s) charged per hour:

4. Name(s) and maximum amount of proposed material(s) produced per hour:

5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants:

   NA

* The identification number which appears here must correspond to the air pollution control device identification number appearing on the *List Form*.

6. Combustion Data (if applicable):

(a) Type and amount in appropriate units of fuel(s) to be burned:

Diesel

(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:

(c) Theoretical combustion air requirement (ACF/unit of fuel):

@ °F and psia.

(d) Percent excess air:

(e) Type and BTU/hr of burners and all other firing equipment planned to be used:

(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:

(g) Proposed maximum design heat input: **2.21** $\times 10^6$ BTU/hr.

7. Projected operating schedule: **500 hours per year**

Hours/Day	Days/Week	Weeks/Year

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:			
@		°F and	psia
a. NO_X	**1.78**	lb/hr	grains/ACF
b. SO_2	**3.44E-03**	lb/hr	grains/ACF
c. CO	**0.42**	lb/hr	grains/ACF
d. PM_{10}	**0.07**	lb/hr	grains/ACF
e. Hydrocarbons		lb/hr	grains/ACF
f. VOCs	**0.06**	lb/hr	grains/ACF
g. Pb		lb/hr	grains/ACF
h. Specify other(s)			
$PM_{2.5}$	**0.07**	lb/hr	grains/ACF
CO2e	**361.99**	lb/hr	grains/ACF
		lb/hr	grains/ACF
		lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING	RECORDKEEPING
Not impacted by updates.	**Not impacted by updates.**
REPORTING	TESTING
Not impacted by updates.	**Not impacted by updates.**

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

Unit will comply with NSPS IIII Requirements.

Rating Specific Emissions Data - John Deere Power Systems

Rating Data

Rating	6068HFC48B	
Certified Power(kW)	236	
Rated Speed	2400	
Vehicle Model Number	OEM (Clarke Fire Pump-Emergency)	
Units	g/kW-hr	g/hp-hr
NOx	3.43	2.56
HC	0.09	0.07
NOx + HC	N/A	N/A
Pm	0.11	0.08
CO	0.8	0.6

Certificate Data

Engine Model Year	2019
EPA Family Name	KJDXL13.5103
EPA JD Name	650HAA
EPA Certificate Number	KJDXL13.5103-007
CARB Executive Order	
Parent of Family	6135HF485A
Units	g/kW-hr
NOx	3.31
HC	0.11
NOx + HC	N/A
Pm	0.10
CO	0.6

* The emission data listed is measured from a laboratory test engine according to the test procedures of 40 CFR 89 or 40 CFR 1039, as applicable. The test engine is intended to represent nominal production hardware, and we do not guarantee that every production engine will have identical test results. The family parent data represents multiple ratings and this data may have been collected at a different engine speed and load. Emission results may vary due to engine manufacturing tolerances, engine operating conditions, fuels used, or other conditions beyond our control.

Emissions Results by Rating run on Feb-18-2019

Attachment L
EMISSIONS UNIT DATA SHEET
STORAGE TANKS

Provide the following information for each new or modified bulk liquid storage tank as shown on the *Equipment List Form* and other parts of this application. A tank is considered modified if the material to be stored in the tank is different from the existing stored liquid.

IF USING US EPA'S TANKS EMISSION ESTIMATION PROGRAM (AVAILABLE AT www.epa.gov/tnn/tanks.html), APPLICANT MAY ATTACH THE SUMMARY SHEETS IN LIEU OF COMPLETING SECTIONS III, IV, & V OF THIS FORM. HOWEVER, SECTIONS I, II, AND VI OF THIS FORM MUST BE COMPLETED. US EPA'S AP-42, SECTION 7.1, "ORGANIC LIQUID STORAGE TANKS," MAY ALSO BE USED TO ESTIMATE VOC AND HAP EMISSIONS (http://www.epa.gov/tnn/chief/).

I. GENERAL INFORMATION (required)

1. Bulk Storage Area Name	2. Tank Name **Thermal Oil Tank - IMF**
3. Tank Equipment Identification No. (as assigned on *Equipment List Form*) **TK-TO3**	4. Emission Point Identification No. (as assigned on *Equipment List Form*) **TK-TO3**
5. Date of Commencement of Construction (for existing tanks) **2021**	
6. Type of change ☐ New Construction ☐ New Stored Material ☒ Other Tank Modification	
7. Description of Tank Modification (if applicable) **Increased tank capacity from 2642 gallons to 5283 gallons.**	
7A. Does the tank have more than one mode of operation? (e.g. Is there more than one product stored in the tank?) ☐ Yes ☒ No	
7B. If YES, explain and identify which mode is covered by this application (Note: A separate form must be completed for each mode). **N/A**	
7C. Provide any limitations on source operation affecting emissions, any work practice standards (e.g. production variation, etc.): **N/A**	

II. TANK INFORMATION (required) - See Attached Emission Master Report for the following information

8. Design Capacity (specify barrels or gallons). Use the internal cross-sectional area multiplied by internal height.	
9A. Tank Internal Diameter (ft)	9B. Tank Internal Height (or Length) (ft)
10A. Maximum Liquid Height (ft)	10B. Average Liquid Height (ft)
11A. Maximum Vapor Space Height (ft)	11B. Average Vapor Space Height (ft)
12. Nominal Capacity (specify barrels or gallons). This is also known as "working volume" and considers design liquid levels and overflow valve heights.	

13A. Maximum annual throughput (gal/yr) **698 gal/yr**	13B. Maximum daily throughput (gal/day)
14. Number of Turnovers per year (annual net throughput/maximum tank liquid volume)	
15. Maximum tank fill rate (gal/min)	
16. Tank fill method ☐ Submerged ☐ Splash ☐ Bottom Loading	
17. Complete 17A and 17B for Variable Vapor Space Tank Systems ☐ Does Not Apply	
17A. Volume Expansion Capacity of System (gal)	17B. Number of transfers into system per year

18. Type of tank (check all that apply):

☐ Fixed Roof ___ vertical ___ horizontal ___ flat roof ___ cone roof ___ dome roof
___ other (describe)

☐ External Floating Roof ___ pontoon roof ___ double deck roof

☐ Domed External (or Covered) Floating Roof

☐ Internal Floating Roof ___ vertical column support ___ self-supporting

☐ Variable Vapor Space ___ lifter roof ___ diaphragm

☐ Pressurized ___ spherical ___ cylindrical

☐ Underground

☐ Other (describe)

Attachment L
EMISSIONS UNIT DATA SHEET
STORAGE TANKS

Provide the following information for each new or modified bulk liquid storage tank as shown on the *Equipment List Form* and other parts of this application. A tank is considered modified if the material to be stored in the tank is different from the existing stored liquid.

IF USING US EPA'S TANKS EMISSION ESTIMATION PROGRAM (AVAILABLE AT www.epa.gov/tnn/tanks.html), APPLICANT MAY ATTACH THE SUMMARY SHEETS IN LIEU OF COMPLETING SECTIONS III, IV, & V OF THIS FORM. HOWEVER, SECTIONS I, II, AND VI OF THIS FORM MUST BE COMPLETED. US EPA'S AP-42, SECTION 7.1, "ORGANIC LIQUID STORAGE TANKS," MAY ALSO BE USED TO ESTIMATE VOC AND HAP EMISSIONS (http://www.epa.gov/tnn/chief/).

I. GENERAL INFORMATION (required)

1. Bulk Storage Area Name	2. Tank Name **Thermal Oil Expansion Tank - IMF**
3. Tank Equipment Identification No. (as assigned on *Equipment List Form*) **TK-TO4**	4. Emission Point Identification No. (as assigned on *Equipment List Form*) **TK-TO4**
5. Date of Commencement of Construction (for existing tanks) **2021**	
6. Type of change ☐ New Construction ☐ New Stored Material ☒ Other Tank Modification	
7. Description of Tank Modification (if applicable) **Increased tank capacity from 1321 gallons to 1928 gallons.**	
7A. Does the tank have more than one mode of operation? (e.g. Is there more than one product stored in the tank?) ☐ Yes ☒ No	
7B. If YES, explain and identify which mode is covered by this application (Note: A separate form must be completed for each mode). **NA**	
7C. Provide any limitations on source operation affecting emissions, any work practice standards (e.g. production variation, etc.): **NA**	

II. TANK INFORMATION (required) - See Attached Emission Master Report for the following information

8. Design Capacity (specify barrels or gallons). Use the internal cross-sectional area multiplied by internal height.	
9A. Tank Internal Diameter (ft)	9B. Tank Internal Height (or Length) (ft)
10A. Maximum Liquid Height (ft)	10B. Average Liquid Height (ft)
11A. Maximum Vapor Space Height (ft)	11B. Average Vapor Space Height (ft)
12. Nominal Capacity (specify barrels or gallons). This is also known as "working volume" and considers design liquid levels and overflow valve heights.	

13A. Maximum annual throughput (gal/yr) **698 gal/yr**	13B. Maximum daily throughput (gal/day)
14. Number of Turnovers per year (annual net throughput/maximum tank liquid volume)	
15. Maximum tank fill rate (gal/min)	
16. Tank fill method ☐ Submerged ☐ Splash ☐ Bottom Loading	
17. Complete 17A and 17B for Variable Vapor Space Tank Systems ☐ Does Not Apply	
17A. Volume Expansion Capacity of System (gal)	17B. Number of transfers into system per year

18. Type of tank (check all that apply):

☐ Fixed Roof ___ vertical ___ horizontal ___ flat roof ___ cone roof ___ dome roof
___ other (describe)

☐ External Floating Roof ___ pontoon roof ___ double deck roof

☐ Domed External (or Covered) Floating Roof

☐ Internal Floating Roof ___ vertical column support ___ self-supporting

☐ Variable Vapor Space ___ lifter roof ___ diaphragm

☐ Pressurized ___ spherical ___ cylindrical

☐ Underground

☐ Other (describe)

Attachment L
EMISSIONS UNIT DATA SHEET
STORAGE TANKS

Provide the following information for each new or modified bulk liquid storage tank as shown on the *Equipment List Form* and other parts of this application. A tank is considered modified if the material to be stored in the tank is different from the existing stored liquid.

IF USING US EPA'S TANKS EMISSION ESTIMATION PROGRAM (AVAILABLE AT www.epa.gov/tnn/tanks.html), APPLICANT MAY ATTACH THE SUMMARY SHEETS IN LIEU OF COMPLETING SECTIONS III, IV, & V OF THIS FORM. HOWEVER, SECTIONS I, II, AND VI OF THIS FORM MUST BE COMPLETED. US EPA'S AP-42, SECTION 7.1, "ORGANIC LIQUID STORAGE TANKS," MAY ALSO BE USED TO ESTIMATE VOC AND HAP EMISSIONS (http://www.epa.gov/tnn/chief/).

I. GENERAL INFORMATION (required)

1. Bulk Storage Area Name	2. Tank Name **Additive Storage Tank**
3. Tank Equipment Identification No. (as assigned on *Equipment List Form*) **TK-AD**	4. Emission Point Identification No. (as assigned on *Equipment List Form*) **TK-AD**
5. Date of Commencement of Construction (for existing tanks) **2021**	
6. Type of change ☐ New Construction ☐ New Stored Material ☒ Other Tank Modification	
7. Description of Tank Modification (if applicable) **Updating emission calculations to AP42 methodology.**	
7A. Does the tank have more than one mode of operation? (e.g. Is there more than one product stored in the tank?) ☐ Yes ☒ No	
7B. If YES, explain and identify which mode is covered by this application (Note: A separate form must be completed for each mode). **NA**	
7C. Provide any limitations on source operation affecting emissions, any work practice standards (e.g. production variation, etc.): **NA**	

II. TANK INFORMATION (required) - See Attached Emission Master Report for the following information

8. Design Capacity (specify barrels or gallons). Use the internal cross-sectional area multiplied by internal height.	
9A. Tank Internal Diameter (ft)	9B. Tank Internal Height (or Length) (ft)
10A. Maximum Liquid Height (ft)	10B. Average Liquid Height (ft)
11A. Maximum Vapor Space Height (ft)	11B. Average Vapor Space Height (ft)
12. Nominal Capacity (specify barrels or gallons). This is also known as "working volume" and considers design liquid levels and overflow valve heights.	

13A. Maximum annual throughput (gal/yr) **17,171 gal/yr**	13B. Maximum daily throughput (gal/day)
14. Number of Turnovers per year (annual net throughput/maximum tank liquid volume)	
15. Maximum tank fill rate (gal/min)	
16. Tank fill method ☐ Submerged ☐ Splash ☐ Bottom Loading	
17. Complete 17A and 17B for Variable Vapor Space Tank Systems ☐ Does Not Apply	
17A. Volume Expansion Capacity of System (gal)	17B. Number of transfers into system per year

18. Type of tank (check all that apply):

☐ Fixed Roof ___ vertical ___ horizontal ___ flat roof ___ cone roof ___ dome roof
___ other (describe)

☐ External Floating Roof ___ pontoon roof ___ double deck roof

☐ Domed External (or Covered) Floating Roof

☐ Internal Floating Roof ___ vertical column support ___ self-supporting

☐ Variable Vapor Space ___ lifter roof ___ diaphragm

☐ Pressurized ___ spherical ___ cylindrical

☐ Underground

☐ Other (describe)

Attachment L
EMISSIONS UNIT DATA SHEET
STORAGE TANKS

Provide the following information for each new or modified bulk liquid storage tank as shown on the *Equipment List Form* and other parts of this application. A tank is considered modified if the material to be stored in the tank is different from the existing stored liquid.

IF USING US EPA'S TANKS EMISSION ESTIMATION PROGRAM (AVAILABLE AT www.epa.gov/tnn/tanks.html), APPLICANT MAY ATTACH THE SUMMARY SHEETS IN LIEU OF COMPLETING SECTIONS III, IV, & V OF THIS FORM. HOWEVER, SECTIONS I, II, AND VI OF THIS FORM MUST BE COMPLETED. US EPA'S AP-42, SECTION 7.1, "ORGANIC LIQUID STORAGE TANKS," MAY ALSO BE USED TO ESTIMATE VOC AND HAP EMISSIONS (http://www.epa.gov/tnn/chief/).

I. GENERAL INFORMATION (required)

1. Bulk Storage Area Name	2. Tank Name **Binder Storage Containers**
3. Tank Equipment Identification No. (as assigned on *Equipment List Form*) **TK-BS1, TK-BS2, and TK-BS3**	4. Emission Point Identification No. (as assigned on *Equipment List Form*) **TK-BS1, TK-BS2, and TK-BS3**
5. Date of Commencement of Construction (for existing tanks) **2021**	
6. Type of change ☐ New Construction ☐ New Stored Material ☒ Other Tank Modification	
7. Description of Tank Modification (if applicable) **Updating emission calculations to AP42 methodology.**	
7A. Does the tank have more than one mode of operation? (e.g. Is there more than one product stored in the tank?) ☐ Yes ☒ No	
7B. If YES, explain and identify which mode is covered by this application (Note: A separate form must be completed for each mode). **NA**	
7C. Provide any limitations on source operation affecting emissions, any work practice standards (e.g. production variation, etc.): **NA**	

II. TANK INFORMATION (required) - See Attached Emission Master Report for the following information

8. Design Capacity (specify barrels or gallons). Use the internal cross-sectional area multiplied by internal height.	
9A. Tank Internal Diameter (ft)	9B. Tank Internal Height (or Length) (ft)
10A. Maximum Liquid Height (ft)	10B. Average Liquid Height (ft)
11A. Maximum Vapor Space Height (ft)	11B. Average Vapor Space Height (ft)
12. Nominal Capacity (specify barrels or gallons). This is also known as "working volume" and considers design liquid levels and overflow valve heights.	

13A. Maximum annual throughput (gal/yr) **130,325 gal/yr**	13B. Maximum daily throughput (gal/day)
14. Number of Turnovers per year (annual net throughput/maximum tank liquid volume)	
15. Maximum tank fill rate (gal/min)	
16. Tank fill method ☐ Submerged ☐ Splash ☐ Bottom Loading	
17. Complete 17A and 17B for Variable Vapor Space Tank Systems ☐ Does Not Apply	
17A. Volume Expansion Capacity of System (gal)	17B. Number of transfers into system per year

18. Type of tank (check all that apply):

☐ Fixed Roof ___ vertical ___ horizontal ___ flat roof ___ cone roof ___ dome roof
___ other (describe)

☐ External Floating Roof ___ pontoon roof ___ double deck roof

☐ Domed External (or Covered) Floating Roof

☐ Internal Floating Roof ___ vertical column support ___ self-supporting

☐ Variable Vapor Space ___ lifter roof ___ diaphragm

☐ Pressurized ___ spherical ___ cylindrical

☐ Underground

☐ Other (describe)

Attachment L
EMISSIONS UNIT DATA SHEET
STORAGE TANKS

Provide the following information for each new or modified bulk liquid storage tank as shown on the *Equipment List Form* and other parts of this application. A tank is considered modified if the material to be stored in the tank is different from the existing stored liquid.

IF USING US EPA'S TANKS EMISSION ESTIMATION PROGRAM (AVAILABLE AT www.epa.gov/tnn/tanks.html), APPLICANT MAY ATTACH THE SUMMARY SHEETS IN LIEU OF COMPLETING SECTIONS III, IV, & V OF THIS FORM. HOWEVER, SECTIONS I, II, AND VI OF THIS FORM MUST BE COMPLETED. US EPA'S AP-42, SECTION 7.1, "ORGANIC LIQUID STORAGE TANKS," MAY ALSO BE USED TO ESTIMATE VOC AND HAP EMISSIONS (http://www.epa.gov/tnn/chief/).

I. GENERAL INFORMATION (required)

1. Bulk Storage Area Name	2. Tank Name **Coupling Agent Storage Tank**
3. Tank Equipment Identification No. (as assigned on *Equipment List Form*) **TK-CA**	4. Emission Point Identification No. (as assigned on *Equipment List Form*) **TK-CA**
5. Date of Commencement of Construction (for existing tanks) **2021**	
6. Type of change ☐ New Construction ☐ New Stored Material ☒ Other Tank Modification	
7. Description of Tank Modification (if applicable) **Updating emission calculations to AP42 methodology.**	
7A. Does the tank have more than one mode of operation? (e.g. Is there more than one product stored in the tank?) ☐ Yes ☒ No	
7B. If YES, explain and identify which mode is covered by this application (Note: A separate form must be completed for each mode). **NA**	
7C. Provide any limitations on source operation affecting emissions, any work practice standards (e.g. production variation, etc.): **NA**	

II. TANK INFORMATION (required) - See Attached Emission Master Report for the following information

8. Design Capacity (specify barrels or gallons). Use the internal cross-sectional area multiplied by internal height.	
9A. Tank Internal Diameter (ft)	9B. Tank Internal Height (or Length) (ft)
10A. Maximum Liquid Height (ft)	10B. Average Liquid Height (ft)
11A. Maximum Vapor Space Height (ft)	11B. Average Vapor Space Height (ft)
12. Nominal Capacity (specify barrels or gallons). This is also known as "working volume" and considers design liquid levels and overflow valve heights.	

13A. Maximum annual throughput (gal/yr) **4,227 gal/yr**	13B. Maximum daily throughput (gal/day)
14. Number of Turnovers per year (annual net throughput/maximum tank liquid volume)	
15. Maximum tank fill rate (gal/min)	
16. Tank fill method ☐ Submerged ☐ Splash ☐ Bottom Loading	
17. Complete 17A and 17B for Variable Vapor Space Tank Systems ☐ Does Not Apply	
17A. Volume Expansion Capacity of System (gal)	17B. Number of transfers into system per year

18. Type of tank (check all that apply):

☐ Fixed Roof ___ vertical ___ horizontal ___ flat roof ___ cone roof ___ dome roof
___ other (describe)

☐ External Floating Roof ___ pontoon roof ___ double deck roof

☐ Domed External (or Covered) Floating Roof

☐ Internal Floating Roof ___ vertical column support ___ self-supporting

☐ Variable Vapor Space ___ lifter roof ___ diaphragm

☐ Pressurized ___ spherical ___ cylindrical

☐ Underground

☐ Other (describe)

Attachment L
EMISSIONS UNIT DATA SHEET
STORAGE TANKS

Provide the following information for each new or modified bulk liquid storage tank as shown on the *Equipment List Form* and other parts of this application. A tank is considered modified if the material to be stored in the tank is different from the existing stored liquid.

IF USING US EPA'S TANKS EMISSION ESTIMATION PROGRAM (AVAILABLE AT www.epa.gov/tnn/tanks.html), APPLICANT MAY ATTACH THE SUMMARY SHEETS IN LIEU OF COMPLETING SECTIONS III, IV, & V OF THIS FORM. HOWEVER, SECTIONS I, II, AND VI OF THIS FORM MUST BE COMPLETED. US EPA'S AP-42, SECTION 7.1, "ORGANIC LIQUID STORAGE TANKS," MAY ALSO BE USED TO ESTIMATE VOC AND HAP EMISSIONS (http://www.epa.gov/tnn/chief/).

I. GENERAL INFORMATION (required)

1. Bulk Storage Area Name	2. Tank Name **Diesel Fuel Tank**
3. Tank Equipment Identification No. (as assigned on *Equipment List Form*) **TK-DF**	4. Emission Point Identification No. (as assigned on *Equipment List Form*) **TK-DF**
5. Date of Commencement of Construction (for existing tanks) **2021**	
6. Type of change ☐ New Construction ☐ New Stored Material ☒ Other Tank Modification	
7. Description of Tank Modification (if applicable) **Updating emission calculations to AP42 methodology.**	
7A. Does the tank have more than one mode of operation? (e.g. Is there more than one product stored in the tank?) ☐ Yes ☒ No	
7B. If YES, explain and identify which mode is covered by this application (Note: A separate form must be completed for each mode). **NA**	
7C. Provide any limitations on source operation affecting emissions, any work practice standards (e.g. production variation, etc.): **NA**	

II. TANK INFORMATION (required) - See Attached Emission Master Report for the following information

8. Design Capacity (specify barrels or gallons). Use the internal cross-sectional area multiplied by internal height.	
9A. Tank Internal Diameter (ft)	9B. Tank Internal Height (or Length) (ft)
10A. Maximum Liquid Height (ft)	10B. Average Liquid Height (ft)
11A. Maximum Vapor Space Height (ft)	11B. Average Vapor Space Height (ft)
12. Nominal Capacity (specify barrels or gallons). This is also known as "working volume" and considers design liquid levels and overflow valve heights.	

13A. Maximum annual throughput (gal/yr) **52,834 gal/yr**	13B. Maximum daily throughput (gal/day)
14. Number of Turnovers per year (annual net throughput/maximum tank liquid volume)	
15. Maximum tank fill rate (gal/min)	
16. Tank fill method ☐ Submerged ☐ Splash ☐ Bottom Loading	
17. Complete 17A and 17B for Variable Vapor Space Tank Systems ☐ Does Not Apply	
17A. Volume Expansion Capacity of System (gal)	17B. Number of transfers into system per year

18. Type of tank (check all that apply):

☐ Fixed Roof ___ vertical ___ horizontal ___ flat roof ___ cone roof ___ dome roof
___ other (describe)

☐ External Floating Roof ___ pontoon roof ___ double deck roof

☐ Domed External (or Covered) Floating Roof

☐ Internal Floating Roof ___ vertical column support ___ self-supporting

☐ Variable Vapor Space ___ lifter roof ___ diaphragm

☐ Pressurized ___ spherical ___ cylindrical

☐ Underground

☐ Other (describe)

Attachment L
EMISSIONS UNIT DATA SHEET
STORAGE TANKS

Provide the following information for each new or modified bulk liquid storage tank as shown on the *Equipment List Form* and other parts of this application. A tank is considered modified if the material to be stored in the tank is different from the existing stored liquid.

IF USING US EPA'S TANKS EMISSION ESTIMATION PROGRAM (AVAILABLE AT www.epa.gov/tnn/tanks.html), APPLICANT MAY ATTACH THE SUMMARY SHEETS IN LIEU OF COMPLETING SECTIONS III, IV, & V OF THIS FORM. HOWEVER, SECTIONS I, II, AND VI OF THIS FORM MUST BE COMPLETED. US EPA'S AP-42, SECTION 7.1, "ORGANIC LIQUID STORAGE TANKS," MAY ALSO BE USED TO ESTIMATE VOC AND HAP EMISSIONS (http://www.epa.gov/tnn/chief/).

I. GENERAL INFORMATION (required)

1. Bulk Storage Area Name	2. Tank Name **De-dust Oil Day Tank**
3. Tank Equipment Identification No. (as assigned on *Equipment List Form*) **TK-DOD**	4. Emission Point Identification No. (as assigned on *Equipment List Form*) **TK-DOD**
5. Date of Commencement of Construction (for existing tanks) **2021**	
6. Type of change ☐ New Construction ☐ New Stored Material ☒ Other Tank Modification	
7. Description of Tank Modification (if applicable) **Updating emission calculations to AP42 methodology.**	
7A. Does the tank have more than one mode of operation? (e.g. Is there more than one product stored in the tank?) ☐ Yes ☒ No	
7B. If YES, explain and identify which mode is covered by this application (Note: A separate form must be completed for each mode). **NA**	
7C. Provide any limitations on source operation affecting emissions, any work practice standards (e.g. production variation, etc.): **NA**	

II. TANK INFORMATION (required) - See Attached Emission Master Report for the following information

8. Design Capacity (specify barrels or gallons). Use the internal cross-sectional area multiplied by internal height.	
9A. Tank Internal Diameter (ft)	9B. Tank Internal Height (or Length) (ft)
10A. Maximum Liquid Height (ft)	10B. Average Liquid Height (ft)
11A. Maximum Vapor Space Height (ft)	11B. Average Vapor Space Height (ft)
12. Nominal Capacity (specify barrels or gallons). This is also known as "working volume" and considers design liquid levels and overflow valve heights.	

13A. Maximum annual throughput (gal/yr) **52,834 gal/yr**	13B. Maximum daily throughput (gal/day)
14. Number of Turnovers per year (annual net throughput/maximum tank liquid volume)	
15. Maximum tank fill rate (gal/min)	
16. Tank fill method ☐ Submerged ☐ Splash ☐ Bottom Loading	
17. Complete 17A and 17B for Variable Vapor Space Tank Systems ☐ Does Not Apply	
17A. Volume Expansion Capacity of System (gal)	17B. Number of transfers into system per year

18. Type of tank (check all that apply):

☐ Fixed Roof ___ vertical ___ horizontal ___ flat roof ___ cone roof ___ dome roof
___ other (describe)

☐ External Floating Roof ___ pontoon roof ___ double deck roof

☐ Domed External (or Covered) Floating Roof

☐ Internal Floating Roof ___ vertical column support ___ self-supporting

☐ Variable Vapor Space ___ lifter roof ___ diaphragm

☐ Pressurized ___ spherical ___ cylindrical

☐ Underground

☐ Other (describe)

Attachment L
EMISSIONS UNIT DATA SHEET
STORAGE TANKS

Provide the following information for each new or modified bulk liquid storage tank as shown on the *Equipment List Form* and other parts of this application. A tank is considered modified if the material to be stored in the tank is different from the existing stored liquid.

IF USING US EPA'S TANKS EMISSION ESTIMATION PROGRAM (AVAILABLE AT www.epa.gov/tnn/tanks.html), APPLICANT MAY ATTACH THE SUMMARY SHEETS IN LIEU OF COMPLETING SECTIONS III, IV, & V OF THIS FORM. HOWEVER, SECTIONS I, II, AND VI OF THIS FORM MUST BE COMPLETED. US EPA'S AP-42, SECTION 7.1, "ORGANIC LIQUID STORAGE TANKS," MAY ALSO BE USED TO ESTIMATE VOC AND HAP EMISSIONS (http://www.epa.gov/tnn/chief/).

I. GENERAL INFORMATION (required)

1. Bulk Storage Area Name	2. Tank Name **Resin Storage Tanks**
3. Tank Equipment Identification No. (as assigned on *Equipment List Form*) **TK-RS1 - TK-RS6**	4. Emission Point Identification No. (as assigned on *Equipment List Form*) **TK-RS1 - TK-RS6**
5. Date of Commencement of Construction (for existing tanks) **2021**	
6. Type of change ☐ New Construction ☐ New Stored Material ☒ Other Tank Modification	
7. Description of Tank Modification (if applicable) **Updating tank sizing.**	
7A. Does the tank have more than one mode of operation? ☐ Yes ☒ No (e.g. Is there more than one product stored in the tank?)	
7B. If YES, explain and identify which mode is covered by this application (Note: A separate form must be completed for each mode). **NA**	
7C. Provide any limitations on source operation affecting emissions, any work practice standards (e.g. production variation, etc.): **NA**	

II. TANK INFORMATION (required) - See Attached Emission Master Report for the following information

8. Design Capacity (specify barrels or gallons). Use the internal cross-sectional area multiplied by internal height.	
9A. Tank Internal Diameter (ft)	9B. Tank Internal Height (or Length) (ft)
10A. Maximum Liquid Height (ft)	10B. Average Liquid Height (ft)
11A. Maximum Vapor Space Height (ft)	11B. Average Vapor Space Height (ft)
12. Nominal Capacity (specify barrels or gallons). This is also known as "working volume" and considers design liquid levels and overflow valve heights.	

13A. Maximum annual throughput (gal/yr) **317,006 gal/yr**	13B. Maximum daily throughput (gal/day)
14. Number of Turnovers per year (annual net throughput/maximum tank liquid volume)	
15. Maximum tank fill rate (gal/min)	
16. Tank fill method ☐ Submerged ☐ Splash ☐ Bottom Loading	
17. Complete 17A and 17B for Variable Vapor Space Tank Systems ☐ Does Not Apply	
17A. Volume Expansion Capacity of System (gal)	17B. Number of transfers into system per year

18. Type of tank (check all that apply):

☐ Fixed Roof ___ vertical ___ horizontal ___ flat roof ___ cone roof ___ dome roof
___ other (describe)

☐ External Floating Roof ___ pontoon roof ___ double deck roof

☐ Domed External (or Covered) Floating Roof

☐ Internal Floating Roof ___ vertical column support ___ self-supporting

☐ Variable Vapor Space ___ lifter roof ___ diaphragm

☐ Pressurized ___ spherical ___ cylindrical

☐ Underground

☐ Other (describe)

Attachment L
EMISSIONS UNIT DATA SHEET
STORAGE TANKS

Provide the following information for each new or modified bulk liquid storage tank as shown on the *Equipment List Form* and other parts of this application. A tank is considered modified if the material to be stored in the tank is different from the existing stored liquid.

IF USING US EPA'S TANKS EMISSION ESTIMATION PROGRAM (AVAILABLE AT www.epa.gov/tnn/tanks.html), APPLICANT MAY ATTACH THE SUMMARY SHEETS IN LIEU OF COMPLETING SECTIONS III, IV, & V OF THIS FORM. HOWEVER, SECTIONS I, II, AND VI OF THIS FORM MUST BE COMPLETED. US EPA'S AP-42, SECTION 7.1, "ORGANIC LIQUID STORAGE TANKS," MAY ALSO BE USED TO ESTIMATE VOC AND HAP EMISSIONS (http://www.epa.gov/tnn/chief/).

I. GENERAL INFORMATION (required)

1. Bulk Storage Area Name	2. Tank Name **Thermal Oil Expansion Tank - Rockfon**
3. Tank Equipment Identification No. (as assigned on *Equipment List Form*) **TK-TO1**	4. Emission Point Identification No. (as assigned on *Equipment List Form*) **TK-TO1**
5. Date of Commencement of Construction (for existing tanks) **2021**	
6. Type of change ☐ New Construction ☐ New Stored Material ☒ Other Tank Modification	
7. Description of Tank Modification (if applicable) **Updating emission calculations to AP42 methodology.**	
7A. Does the tank have more than one mode of operation? (e.g. Is there more than one product stored in the tank?) ☐ Yes ☒ No	
7B. If YES, explain and identify which mode is covered by this application (Note: A separate form must be completed for each mode). **NA**	
7C. Provide any limitations on source operation affecting emissions, any work practice standards (e.g. production variation, etc.): **NA**	

II. TANK INFORMATION (required) - See Attached Emission Master Report for the following information

8. Design Capacity (specify barrels or gallons). Use the internal cross-sectional area multiplied by internal height.	
9A. Tank Internal Diameter (ft)	9B. Tank Internal Height (or Length) (ft)
10A. Maximum Liquid Height (ft)	10B. Average Liquid Height (ft)
11A. Maximum Vapor Space Height (ft)	11B. Average Vapor Space Height (ft)
12. Nominal Capacity (specify barrels or gallons). This is also known as "working volume" and considers design liquid levels and overflow valve heights.	

13A. Maximum annual throughput (gal/yr) **180 gal/yr**	13B. Maximum daily throughput (gal/day)
14. Number of Turnovers per year (annual net throughput/maximum tank liquid volume)	
15. Maximum tank fill rate (gal/min)	
16. Tank fill method ☐ Submerged ☐ Splash ☐ Bottom Loading	
17. Complete 17A and 17B for Variable Vapor Space Tank Systems ☐ Does Not Apply	
17A. Volume Expansion Capacity of System (gal)	17B. Number of transfers into system per year

18. Type of tank (check all that apply):

☐ Fixed Roof ___ vertical ___ horizontal ___ flat roof ___ cone roof ___ dome roof
___ other (describe)

☐ External Floating Roof ___ pontoon roof ___ double deck roof

☐ Domed External (or Covered) Floating Roof

☐ Internal Floating Roof ___ vertical column support ___ self-supporting

☐ Variable Vapor Space ___ lifter roof ___ diaphragm

☐ Pressurized ___ spherical ___ cylindrical

☐ Underground

☐ Other (describe)

Attachment L
EMISSIONS UNIT DATA SHEET
STORAGE TANKS

Provide the following information for each new or modified bulk liquid storage tank as shown on the *Equipment List Form* and other parts of this application. A tank is considered modified if the material to be stored in the tank is different from the existing stored liquid.

IF USING US EPA'S TANKS EMISSION ESTIMATION PROGRAM (AVAILABLE AT www.epa.gov/tnn/tanks.html), APPLICANT MAY ATTACH THE SUMMARY SHEETS IN LIEU OF COMPLETING SECTIONS III, IV, & V OF THIS FORM. HOWEVER, SECTIONS I, II, AND VI OF THIS FORM MUST BE COMPLETED. US EPA'S AP-42, SECTION 7.1, "ORGANIC LIQUID STORAGE TANKS," MAY ALSO BE USED TO ESTIMATE VOC AND HAP EMISSIONS (http://www.epa.gov/tnn/chief/).

I. GENERAL INFORMATION (required)

1. Bulk Storage Area Name	2. Tank Name **Thermal Oil Drain Tank - Rockfon**
3. Tank Equipment Identification No. (as assigned on *Equipment List Form*) **TK-TO2**	4. Emission Point Identification No. (as assigned on *Equipment List Form*) **TK-TO2**
5. Date of Commencement of Construction (for existing tanks) **2021**	
6. Type of change ☐ New Construction ☐ New Stored Material ☒ Other Tank Modification	
7. Description of Tank Modification (if applicable) **Updating emission calculations to AP42 methodology.**	
7A. Does the tank have more than one mode of operation? (e.g. Is there more than one product stored in the tank?) ☐ Yes ☒ No	
7B. If YES, explain and identify which mode is covered by this application (Note: A separate form must be completed for each mode). **NA**	
7C. Provide any limitations on source operation affecting emissions, any work practice standards (e.g. production variation, etc.): **NA**	

II. TANK INFORMATION (required) - See Attached Emission Master Report for the following information

8. Design Capacity (specify barrels or gallons). Use the internal cross-sectional area multiplied by internal height.	
9A. Tank Internal Diameter (ft)	9B. Tank Internal Height (or Length) (ft)
10A. Maximum Liquid Height (ft)	10B. Average Liquid Height (ft)
11A. Maximum Vapor Space Height (ft)	11B. Average Vapor Space Height (ft)
12. Nominal Capacity (specify barrels or gallons). This is also known as "working volume" and considers design liquid levels and overflow valve heights.	

13A. Maximum annual throughput (gal/yr) **180 gal/yr**	13B. Maximum daily throughput (gal/day)
14. Number of Turnovers per year (annual net throughput/maximum tank liquid volume)	
15. Maximum tank fill rate (gal/min)	
16. Tank fill method ☐ Submerged ☐ Splash ☐ Bottom Loading	
17. Complete 17A and 17B for Variable Vapor Space Tank Systems ☐ Does Not Apply	
17A. Volume Expansion Capacity of System (gal)	17B. Number of transfers into system per year

18. Type of tank (check all that apply):

☐ Fixed Roof ___ vertical ___ horizontal ___ flat roof ___ cone roof ___ dome roof
___ other (describe)

☐ External Floating Roof ___ pontoon roof ___ double deck roof

☐ Domed External (or Covered) Floating Roof

☐ Internal Floating Roof ___ vertical column support ___ self-supporting

☐ Variable Vapor Space ___ lifter roof ___ diaphragm

☐ Pressurized ___ spherical ___ cylindrical

☐ Underground

☐ Other (describe)

Tank ID	Storage Tank Paramenters										Material Stored			Annual Standing Storage Losses (Uncontrolled)					Annual Working Losses (Uncontrolled)								Loading Operation			Annual Emissions		Annual Emissions	
	Vessel Type	Diameter	Straight Side	Roof Height	Effective Tank Height	Void Volume	Maximum Working Volume	Isothermal Yes/No	Conservation Vent Low	Conservation Vent High	Paint Solar Absorptance	Material Type	Material Name	Composition Reference	Vapor Space Vv	Vapor Density Wv	Vapor Space Expansion Factor KE	Vented Vapor Saturation Factor Ks	VOC Standing Losses Ls	Tla	Vapor Molecular Weight Mv	VP at Tla Pva	Throughput Q	Throughput Q	Turnover Factor Kn	Crude Oil Factor Kp	Working Losses VOC Lw	Pump-In Rate	VOC Rate Uncontrolled	VOC Rate Controlled	Uncontrolled VOC	Controlled VOC	Uncontrolled VOC	Controlled VOC
		D (ft)	(ft)	(ft)	(ft)	(gal)	(gal)		(psig)	(psig)	dimensonless				(ft^3)	(lb/ft^3)	dimensionless	dimensionless	(lb/yr)	(°F)	(lb/lb-mole)	(psia)	(gal/yr)	(bbl/yr)	dimensionless	dimensionless	(lb/yr)	(gph)	(lb/hr)	(lb/hr)	(lb)	(lb)	(tpy)	(tpy)
TK-AD Additive Storage Tank	Cone Roof Storage	3.6	6	1.206	6.402	487.46	396 Normal		-0.03	0.03	0.25	Mixture	Additive	composition link	32.582	8.61E-04	0.039491667	0.959341667	0.0405	54.95463333	19.10742776	0.25324	17171	408.8333	0.8586	1	0.1594				0.200	0.200	0.000	0.000
TK-ADB1 Additive Buffer Tank	Cone Roof Storage	3.6	6	1.206	6.402	487.46	396 Normal		-0.03	0.03	0.25	Mixture	Additive	composition link	32.582	8.61E-04	0.039491667	0.959341667	0.0405	54.95463333	19.10742776	0.25324	65000	1547.619	0.3495	1	0.2457				0.286	0.286	0.000	0.000
TK-ADB2 Additive Buffer Tank	Cone Roof Storage	2.6	4	0.559	4.186	166.25	132 Normal		-0.03	0.03	0.25	Mixture	Additive	composition link	11.1122	8.61E-04	0.039491667	0.972925	0.0141	54.95463333	19.10742776	0.25324	21667	515.881	0.3495	1	0.0819				0.096	0.096	0.000	0.000
TK-BS (1-3) Binder Storage Containe	Dome Roof Storage	3.6	7.8	0.4823	8.047	612.72	264 Normal		-0.03	0.03	0.25	Mixture	Binder Circulating	composition link	40.9544	9.22E-04	0.03965	0.946325	0.0743	54.95463333	19.06139819	0.27048	130325	3102.9762	0.2274	1	0.4991				0.573	0.573	0.000	0.000
TK-CA Coupling Agent Storage Tank	Cone Roof Storage	3.6	6	1.206	6.402	487.46	396 Normal		-0.03	0.03	0.25	Mixture	Additive	composition link	32.582	8.61E-04	0.039491667	0.959341667	0.0405	54.95463333	19.10742776	0.25324	4227	100.6429	1	1	0.0457				0.086	0.086	0.000	0.000
TK-DF Diesel Fuel Tank	Horizontal Storage	4.39	16.44	N/A	N/A		1861.45 1204 Normal		-0.03	0.03	0.25	Compound	Distillate Fuel Oil No. 2	composition link	124.4716	1.45E-04	0.0331	0.999441667	0.2361	54.95463333	130	0.00623	52834	1257.9524	0.8504	1	0.8666				1.103	1.103	0.001	0.001
TK-DOD De-dust oil day tank	Cone Roof Storage	3	5	1.005	5.335	282.1	264 Normal		-0.03	0.03	0.25	Compound	Distillate Fuel Oil No. 2	composition link	18.8556	1.45E-04	0.0331	0.999116667	0.0358	54.95463333	130	0.00623	52834	1257.9524	0.3166	1	0.3226				0.358	0.358	0.000	0.000
TK-GLY - Glycol Tank	Horizontal Storage	3.6	6	N/A	N/A	456.85	396 Normal		-0.03	0.03	0.25	Compound	Ethylene Glycol	composition link	30.5569	1.41E-05	0.032991667	0.999916667	0.0058	54.95463333	62.07	1.28E-03	4752	113.1429	1	1	0.009				0.015	0.015	0.000	0.000
TK-RS (1-6) Resin Tank	Cone Roof Storage	11.41	23	0	23	17592.22	13314 Isothermal		0	0	0.25	Mixture	Rockwool Resin	composition link	1175.8689	1.50E-03			0	18.0153	20.08691506	0.3767	1902042	45286.7143	0.3767	1	35.3894				35.389	35.389	0.018	0.018
TK-TO1 Thermal Oil Expansion Tank	Horizontal Storage	3	6.5	N/A	N/A	343.7	212 Isothermal		0	0	0.25	Compound	Paratherm Compound	composition link	22.973	0.1608			0	0	194	3.8678	180	4.2857	1	1	0				0.000	0.000	0.000	0.000
TK-TO2 Thermal Oil Drain Tank	Horizontal Storage	3	6.5	N/A	N/A	343.7	159 Isothermal		0	0	0.25	Paratherm	Compound Power	composition link	22.973	0.1608			0	0	194	3.8678	180	4.2857	1	1	0				0.000	0.000	0.000	0.000
TK-TO3 Thermal Oil Tank	Horizontal Storage	6.56	21	N/A	N/A	5309.44	5283 Isothermal		0	0	0.25	Steering Fluid	Compound Power	composition link	354.8844	0.0468			0	0	194.27	4.3669	698	16.619	1	1	0				0.000	0.000	0.000	0.000
TK-TO4 Thermal Oil Expansion Tank	Horizontal Storage	5.249	12.95	N/A	N/A	2096.26	1928 Isothermal		0	0	0.25	Steering Fluid		composition link	140.1146	0.0468			0	0	194.27	4.3669	698	16.619	1	1	0				0.000	0.000	0.000	0.000

Activity Title	TK-AD Additive Storage Tank From 1/1/2021 to 12/31/2021														
Climate:	Pennsylvania, Harrisburg														
pa	14.5725 psia														
Equipment Tag	TK-AD Additive Storage Tank														
Storage Vessel Style	Cone Roof Storage														
Calculation Type	Normal Storage Tank (11/2019 Rev.)														
	Working and Breathing Loss Calculation														
Void Space Volume	487.46 gal														
Working Volume	396 gal														
Working Volume	52.9375 ft^3														
Shell Diameter	3.6 ft														
Straight Side Height	6 ft														
Hro	0.402 ft														
Paint Solar Absorptance	0.25														
Roof Color / Condition	white / average														
Shell Color / Condition	white / average														
pbp	0.03														
pbv	-0.03														
Equipment Comment															
Activity Comment	Imported from Excel on 2:55:56 PM, 5/19/2022.														
Pi (constant)	3.1416														
R (constant)	998.9														

Vessel Contents	243.730 gal	68.000 °F	2012.565 lb	109.002 lb-M			
Mixture Name:	Additive						
	[Liquid]	mmHg	lb	W[i]	lb-M	X[i]	A[i]	X*Pi*Ai (mmHg)
	Ethanol	42.925	80.2423	0.039871	1.7417	0.015979	1	0.6859
	Water	17.3515	1932.3231	0.960129	107.2599	0.984021	1	17.0742
Kp (product factor)	1							
Hl	3.201 ft							

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Q	(gal)	1458.359	1317.2274	1458.359	1411.3151	1458.359	1411.315	1458.359	1458.359	1411.315	1458.359	1411.315	1458.359	17171 (sum)
Vq	(ft^3)	194.9542	176.0877	194.9542	188.6654	194.9542	188.6654	194.9542	194.9542	188.6654	194.9542	188.6654	194.9542	2295.429 (sum)
N (period)	(number)	3.6827	3.3263	3.6827	3.5639	3.6827	3.5639	3.6827	3.6827	3.5639	3.6827	3.5639	3.6827	43.3608 (sum)
N (scaled to annual)	(number)	43.3611	43.3611	43.3611	43.3611	43.3611	43.3611	43.3611	43.3611	43.3611	43.3611	43.3611	43.3611	
Kn	(number)	0.8585	0.8585	0.8585	0.8585	0.8585	0.8585	0.8585	0.8585	0.8585	0.8585	0.8585	0.8585	0.8585 (avg)
Days	(number)	31	28	31	30	31	30	31	31	30	31	30	31	365 (sum)
Compound Molecular Weights (lb/lb-M)														
Ethanol	(Mv)	46.07	46.07	46.07	46.07	46.07	46.07	46.07	46.07	46.07	46.07	46.07	46.07	46.07 (lb/lb-mole)
Water	(Mv)	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153 (lb/lb-mole)
Compound Vapor Pressures (Pva)														
Ethanol	(mmHg)	0.1712	0.1934	0.2871	0.4274	0.616	0.8405	0.978	0.917	0.7019	0.461	0.3121	0.2069	0.509375 (avg)
Water	(mmHg)	3.965	4.5127	6.8494	10.4065	15.2596	21.1045	24.712	23.1091	17.4902	11.2678	7.4783	4.845	12.58334 (avg)
Working Loss Calculations (Uncontrolled)														
tLa	(°F)	29.6088	32.7413	43.1801	54.1927	64.7897	74.1836	78.9011	76.8843	68.6939	56.3522	45.446	34.4819	54.95463 (average)
tLn	(°F)	26.2578	28.8623	38.4849	48.6463	58.8464	68.1642	73.0123	71.3878	63.5422	51.5831	41.7526	31.3834	50.16028 (average)
tLx	(°F)	32.9598	36.6204	47.8754	59.7391	70.733	80.203	84.7898	82.3809	73.8456	61.1213	49.1393	37.5803	59.74899 (average)
tb	(°R)	488.6871	491.5779	501.7157	512.4138	522.789	532.0187	536.7822	534.9704	527.082	515.071	504.5035	493.6591	513.4392 (average)
pC	(psia)	0.08	0.091	0.138	0.2095	0.3071	0.4245	0.4969	0.4647	0.3519	0.2269	0.1507	0.0977	0.253242 (average)
pNc	(psia)	14.4925	14.4815	14.4345	14.363	14.2654	14.148	14.0756	14.1078	14.2206	14.3456	14.4218	14.4748	14.31926 (average)
pVa	(psia)	0.08	0.091	0.138	0.2095	0.3071	0.4245	0.4969	0.4647	0.3519	0.2269	0.1507	0.0977	0.253242 (average)
hVo	(ft)	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201 (average)
Vv	(ft^3)	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582 (average)
wVnc	(number)	0.0799	0.0794	0.0775	0.0754	0.0734	0.0715	0.0705	0.071	0.0726	0.075	0.0771	0.0791	0.0752 (average)
kE	(number)	0.0248	0.0294	0.0367	0.045	0.0502	0.0531	0.0533	0.0488	0.0436	0.0383	0.0281	0.0226	0.039492 (average)
tv	(°R)	489.7614	493.0912	503.7757	515.0447	525.8226	535.3506	540.0304	537.8465	529.4096	516.7982	505.6156	494.5539	515.5917 (average)
taa	(°R)	488.22	490.92	500.82	511.27	521.47	530.57	535.37	533.72	526.07	514.32	504.02	493.27	512.5033 (average)
kb	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
kn	(number)	0.8585	0.8585	0.8585	0.8585	0.8585	0.8585	0.8585	0.8585	0.8585	0.8585	0.8585	0.8585	0.8585 (average)
n	(number)	3.6827	3.3263	3.6827	3.5639	3.6827	3.5639	3.6827	3.6827	3.5639	3.6827	3.5639	3.6827	43.3608 (sum)
Compound Vapor Density (vW(i))														
Ethanol	(lb/ft^3)	2.90E-05	3.26E-05	4.73E-05	6.89E-05	9.72E-05	1.00E-04	2.00E-04	1.00E-04	1.00E-04	7.41E-05	5.12E-05	3.47E-05	7.79E-05 (avg)
Water	(lb/ft^3)	3.00E-04	3.00E-04	4.00E-04	7.00E-04	9.00E-04	0.0013	0.0015	0.0014	0.0011	7.00E-04	5.00E-04	3.00E-04	7.83E-04 (avg)
Working Losses (Lw)														
Air	(lb)	13.3804	11.9995	12.9672	12.2191	12.2873	11.5856	11.8061	11.8776	11.766	12.5584	12.4817	13.2323	148.1612 (sum)
Ethanol	(lb)	0.0049	0.0049	0.0079	0.0112	0.0163	0.0211	0.0252	0.0237	0.0178	0.0124	0.0083	0.0058	0.1595 (sum)
Water	(lb)	0.044	0.0449	0.0739	0.1062	0.1577	0.2073	0.2486	0.2335	0.1737	0.1185	0.0778	0.0532	1.5393 (sum)
Breathing Loss Calculations (Uncontrolled)														
tan	(°R)	480.87	482.97	491.67	500.87	510.77	520.27	525.27	523.97	516.17	504.27	495.77	486.27	503.2617 (avg)
taa	(°R)	488.22	490.92	500.82	511.27	521.47	530.57	535.37	533.72	526.07	514.32	504.02	493.27	512.5033 (avg)
tax	(°R)	495.57	498.87	509.97	521.67	532.17	540.87	545.47	543.47	535.97	524.37	512.27	500.27	521.745 (avg)
tLn	(°F)	26.2578	28.8623	38.4849	48.6463	58.8464	68.1642	73.0123	71.3878	63.5422	51.5831	41.7526	31.3834	50.16028 (avg)
tLa	(°F)	29.6088	32.7413	43.1801	54.1927	64.7897	74.1836	78.9011	76.8843	68.6939	56.3522	45.446	34.4819	54.95463 (avg)
tLx	(°F)	32.9598	36.6204	47.8754	59.7391	70.733	80.203	84.7898	82.3809	73.8456	61.1213	49.1393	37.5803	59.74899 (avg)
i	(Btu/ft²day)	622.801	877.2515	1194.204	1525.1169	1758.628	1931.54	1882.997	1667.254	1349.349	1001.304	644.6926	518.7364	1247.823 (avg)
tb	(°R)	488.6871	491.5779	501.7157	512.4138	522.789	532.0187	536.7822	534.9704	527.082	515.071	504.5035	493.6591	513.4392 (avg)
pC	(psia)	0.08	0.091	0.138	0.2095	0.3071	0.4245	0.4969	0.4647	0.3519	0.2269	0.1507	0.0977	0.253242 (avg)
pNc	(psia)	14.4925	14.4815	14.4345	14.363	14.2654	14.148	14.0756	14.1078	14.2206	14.3456	14.4218	14.4748	14.31926 (avg)
pVa	(psia)	0.08	0.091	0.138	0.2095	0.3071	0.4245	0.4969	0.4647	0.3519	0.2269	0.1507	0.0977	0.253242 (avg)
dPv	(psia)	0.0223	0.029	0.0506	0.0863	0.1291	0.1732	0.1942	0.171	0.1258	0.0794	0.0429	0.0246	0.094033 (avg)
dPb	(psia)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06 (avg)
dTv	(°R)	13.404	15.5163	18.781	22.1856	23.7731	24.0777	23.555	21.9863	20.6067	19.0765	14.7735	12.3937	19.17745 (avg)
hVo	(ft)	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201 (avg)
ks	(number)	0.9866	0.9848	0.9771	0.9657	0.9505	0.9328	0.9223	0.9269	0.9437	0.9629	0.9751	0.9837	0.959342 (avg)
Vv	(ft^3)	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582 (avg)
wVnc	(number)	0.0799	0.0794	0.0775	0.0754	0.0734	0.0715	0.0705	0.071	0.0726	0.075	0.0771	0.0791	0.0752 (avg)
kE	(number)	0.0248	0.0294	0.0367	0.045	0.0502	0.0531	0.0533	0.0488	0.0436	0.0383	0.0281	0.0226	0.039492 (avg)
tv	(°R)	489.7614	493.0912	503.7757	515.0447	525.8226	535.3506	540.0304	537.8465	529.4096	516.7982	505.6156	494.5539	515.5917 (avg)
plx	(psia)	0.0918	0.1065	0.1654	0.2565	0.3775	0.5187	0.6022	0.557	0.4196	0.2696	0.1735	0.1107	0.304083 (avg)
pln	(psia)	0.0695	0.0776	0.1148	0.1703	0.2484	0.3455	0.408	0.386	0.2938	0.1902	0.1306	0.0861	0.210067 (avg)
Compound Vapor Density (wV(i))														
Ethanol	(lb/ft^3)	2.90E-05	3.26E-05	4.73E-05	6.89E-05	9.72E-05	1.00E-04	2.00E-04	1.00E-04	1.00E-04	7.41E-05	5.12E-05	3.47E-05	7.79E-05 (avg)
Water	(lb/ft^3)	3.00E-04	3.00E-04	4.00E-04	7.00E-04	9.00E-04	0.0013	0.0015	0.0014	0.0011	7.00E-04	5.00E-04	3.00E-04	7.83E-04 (avg)
Breathing Losses (Ls)														
Air	(lb)	2.0021	2.1266	2.8717	3.3184	3.7201	3.7127	3.7954	3.5009	3.0978	2.9042	2.1138	1.8074	34.9711 (sum)
Ethanol	(lb)	7.00E-04	9.00E-04	0.0017	0.0029	0.0047	0.0063	0.0075	0.0065	0.0044	0.0028	0.0014	8.00E-04	4.06E-02 (sum)
Water	(lb)	0.0065	0.0078	0.016	0.0279	0.0454	0.062	0.0737	0.0638	0.0432	0.0264	0.0128	0.0072	0.3927 (sum)
Total Losses (Lt)														
Air	(lb)	15.3826	14.1261	15.8389	15.5375	16.0074	15.2983	15.6015	15.3785	14.8638	15.4626	14.5955	15.0398	183.1325 (sum)
Ethanol	(lb)	0.0056	0.0058	0.0096	0.0141	0.021	0.0274	0.0326	0.0302	0.0223	0.0152	0.0097	0.0066	0.2001 (sum)
Water	(lb)	0.0505	0.0528	0.0899	0.1341	0.2031	0.2693	0.3224	0.2972	0.2169	0.1448	0.0906	0.0604	1.932 (sum)
														2.1321

Activity Title	TK-ADB1 Additive Buffer Tank From 1/1/2021 to 12/31/2021														
Climate:	Pennsylvania, Harrisburg														
pa	14.5725 psia														
Equipment Tag	TK-ADB1 Additive Buffer Tank														
Storage Vessel Style	Cone Roof Storage														
Calculation Type	Normal Storage Tank (11/2019 Rev.)														
	Working and Breathing Loss Calculation														
Void Space Volume	487.46 gal														
Working Volume	396 gal														
Working Volume	52.9375 ft^3														
Shell Diameter	3.6 ft														
Straight Side Height	6 ft														
Hro	0.402 ft														
Paint Solar Absorptance	0.25														
Roof Color / Condition	white / average														
Shell Color / Condition	white / average														
pbp	0.03														
pbv	-0.03														
Equipment Comment															
Activity Comment	Imported from Excel on 2:55:57 PM, 5/19/2022.														
Pi (constant)	3.1416														
R (constant)	998.9														

Vessel Contents	243.730 gal	68.000 °F	2012.565 lb	109.002 lb-M			
Mixture Name:	Additive						
	[Liquid]	mmHg	lb	W[i]	lb-M	X[i]	A[i]	X*Pi*Ai (mmHg)
	Ethanol	42.925	80.2423	0.039871	1.7417	0.015979	1	0.6859
	Water	17.3515	1932.3231	0.960129	107.2599	0.984021	1	17.0742
Kp (product factor)	1							
Hl	3.201 ft							

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Q	(gal)	5520.548	4986.3014	5520.548	5342.4658	5520.548	5342.466	5520.548	5520.548	5342.466	5520.548	5342.466	5520.548	65000 (sum)
Vq	(ft^3)	737.9899	666.5715	737.9899	714.1838	737.9899	714.1838	737.9899	737.9899	714.1838	737.9899	714.1838	737.9899	8689.236 (sum)
N (period)	(number)	13.9408	12.5917	13.9408	13.4911	13.9408	13.4911	13.9408	13.9408	13.4911	13.9408	13.4911	13.9408	164.1417 (sum)
N (scaled to annual)	(number)	164.1414	164.1414	164.1414	164.1414	164.1414	164.1414	164.1414	164.1414	164.1414	164.1414	164.1414	164.1414	
Kn	(number)	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494 (avg)
Days	(number)	31	28	31	30	31	30	31	31	30	31	30	31	365 (sum)
Compound Molecular Weights (lb/lb-M)														
Ethanol	(Mv)	46.07	46.07	46.07	46.07	46.07	46.07	46.07	46.07	46.07	46.07	46.07	46.07	46.07 (lb/lb-mole)
Water	(Mv)	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153 (lb/lb-mole)
Compound Vapor Pressures (Pva)														
Ethanol	(mmHg)	0.1712	0.1934	0.2871	0.4274	0.616	0.8405	0.978	0.917	0.7019	0.461	0.3121	0.2069	0.509375 (avg)
Water	(mmHg)	3.965	4.5127	6.8494	10.4065	15.2596	21.1045	24.712	23.1091	17.4902	11.2678	7.4783	4.845	12.58334 (avg)
Working Loss Calculations (Uncontrolled)														
tLa	(°F)	29.6088	32.7413	43.1801	54.1927	64.7897	74.1836	78.9011	76.8843	68.6939	56.3522	45.446	34.4819	54.95463 (average)
tLn	(°F)	26.2578	28.8623	38.4849	48.6463	58.8464	68.1642	73.0123	71.3878	63.5422	51.5831	41.7526	31.3834	50.16028 (average)
tLx	(°F)	32.9598	36.6204	47.8754	59.7391	70.733	80.203	84.7898	82.3809	73.8456	61.1213	49.1393	37.5803	59.74899 (average)
tb	(°R)	488.6871	491.5779	501.7157	512.4138	522.789	532.0187	536.7822	534.9704	527.082	515.071	504.5035	493.6591	513.4392 (average)
pC	(psia)	0.08	0.091	0.138	0.2095	0.3071	0.4245	0.4969	0.4647	0.3519	0.2269	0.1507	0.0977	0.253242 (average)
pNc	(psia)	14.4925	14.4815	14.4345	14.363	14.2654	14.148	14.0756	14.1078	14.2206	14.3456	14.4218	14.4748	14.31926 (average)
pVa	(psia)	0.08	0.091	0.138	0.2095	0.3071	0.4245	0.4969	0.4647	0.3519	0.2269	0.1507	0.0977	0.253242 (average)
hVo	(ft)	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201 (average)
Vv	(ft^3)	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582 (average)
wVnc	(number)	0.0799	0.0794	0.0775	0.0754	0.0734	0.0715	0.0705	0.071	0.0726	0.075	0.0771	0.0791	0.0752 (average)
kE	(number)	0.0248	0.0294	0.0367	0.045	0.0502	0.0531	0.0533	0.0488	0.0436	0.0383	0.0281	0.0226	0.039492 (average)
tv	(°R)	489.7614	493.0912	503.7757	515.0447	525.8226	535.3506	540.0304	537.8465	529.4096	516.7982	505.6156	494.5539	515.5917 (average)
taa	(°R)	488.22	490.92	500.82	511.27	521.47	530.57	535.37	533.72	526.07	514.32	504.02	493.27	512.5033 (average)
kb	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
kn	(number)	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494 (average)
n	(number)	13.9408	12.5917	13.9408	13.4911	13.9408	13.4911	13.9408	13.9408	13.4911	13.9408	13.4911	13.9408	164.1417 (sum)
Compound Vapor Density (vW(i))														
Ethanol	(lb/ft^3)	2.90E-05	3.26E-05	4.73E-05	6.89E-05	9.72E-05	1.00E-04	2.00E-04	1.00E-04	1.00E-04	7.41E-05	5.12E-05	3.47E-05	7.79E-05 (avg)
Water	(lb/ft^3)	3.00E-04	3.00E-04	4.00E-04	7.00E-04	9.00E-04	0.0013	0.0015	0.0014	0.0011	7.00E-04	5.00E-04	3.00E-04	7.83E-04 (avg)
Working Losses (Lw)														
Air	(lb)	20.6158	18.4882	19.9791	18.8265	18.9315	17.8504	18.1902	18.3003	18.1284	19.3493	19.231	20.3875	228.2782 (sum)
Ethanol	(lb)	0.0075	0.0076	0.0122	0.0172	0.0251	0.0325	0.0388	0.0365	0.0275	0.0191	0.0128	0.009	0.2458 (sum)
Water	(lb)	0.0678	0.0692	0.1138	0.1637	0.2429	0.3194	0.3831	0.3597	0.2677	0.1825	0.1198	0.082	2.3716 (sum)
Breathing Loss Calculations (Uncontrolled)														
tan	(°R)	480.87	482.97	491.67	500.87	510.77	520.27	525.27	523.97	516.17	504.27	495.77	486.27	503.2617 (avg)
taa	(°R)	488.22	490.92	500.82	511.27	521.47	530.57	535.37	533.72	526.07	514.32	504.02	493.27	512.5033 (avg)
tax	(°R)	495.57	498.87	509.97	521.67	532.17	540.87	545.47	543.47	535.97	524.37	512.27	500.27	521.745 (avg)
tLn	(°F)	26.2578	28.8623	38.4849	48.6463	58.8464	68.1642	73.0123	71.3878	63.5422	51.5831	41.7526	31.3834	50.16028 (avg)
tLa	(°F)	29.6088	32.7413	43.1801	54.1927	64.7897	74.1836	78.9011	76.8843	68.6939	56.3522	45.446	34.4819	54.95463 (avg)
tLx	(°F)	32.9598	36.6204	47.8754	59.7391	70.733	80.203	84.7898	82.3809	73.8456	61.1213	49.1393	37.5803	59.74899 (avg)
i	(Btu/ft²day)	622.801	877.2515	1194.204	1525.1169	1758.628	1931.54	1882.997	1667.254	1349.349	1001.304	644.6926	518.7364	1247.823 (avg)
tb	(°R)	488.6871	491.5779	501.7157	512.4138	522.789	532.0187	536.7822	534.9704	527.082	515.071	504.5035	493.6591	513.4392 (avg)
pC	(psia)	0.08	0.091	0.138	0.2095	0.3071	0.4245	0.4969	0.4647	0.3519	0.2269	0.1507	0.0977	0.253242 (avg)
pNc	(psia)	14.4925	14.4815	14.4345	14.363	14.2654	14.148	14.0756	14.1078	14.2206	14.3456	14.4218	14.4748	14.31926 (avg)
pVa	(psia)	0.08	0.091	0.138	0.2095	0.3071	0.4245	0.4969	0.4647	0.3519	0.2269	0.1507	0.0977	0.253242 (avg)
dPv	(psia)	0.0223	0.029	0.0506	0.0863	0.1291	0.1732	0.1942	0.171	0.1258	0.0794	0.0429	0.0246	0.094033 (avg)
dPb	(psia)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06 (avg)
dTv	(°R)	13.404	15.5163	18.781	22.1856	23.7731	24.0777	23.555	21.9863	20.6067	19.0765	14.7735	12.3937	19.17745 (avg)
hVo	(ft)	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201 (avg)
ks	(number)	0.9866	0.9848	0.9771	0.9657	0.9505	0.9328	0.9223	0.9269	0.9437	0.9629	0.9751	0.9837	0.959342 (avg)
Vv	(ft^3)	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582 (avg)
wVnc	(number)	0.0799	0.0794	0.0775	0.0754	0.0734	0.0715	0.0705	0.071	0.0726	0.075	0.0771	0.0791	0.0752 (avg)
kE	(number)	0.0248	0.0294	0.0367	0.045	0.0502	0.0531	0.0533	0.0488	0.0436	0.0383	0.0281	0.0226	0.039492 (avg)
tv	(°R)	489.7614	493.0912	503.7757	515.0447	525.8226	535.3506	540.0304	537.8465	529.4096	516.7982	505.6156	494.5539	515.5917 (avg)
plx	(psia)	0.0918	0.1065	0.1654	0.2565	0.3775	0.5187	0.6022	0.557	0.4196	0.2696	0.1735	0.1107	0.304083 (avg)
pln	(psia)	0.0695	0.0776	0.1148	0.1703	0.2484	0.3455	0.408	0.386	0.2938	0.1902	0.1306	0.0861	0.210067 (avg)
Compound Vapor Density (wV(i))														
Ethanol	(lb/ft^3)	2.90E-05	3.26E-05	4.73E-05	6.89E-05	9.72E-05	1.00E-04	2.00E-04	1.00E-04	1.00E-04	7.41E-05	5.12E-05	3.47E-05	7.79E-05 (avg)
Water	(lb/ft^3)	3.00E-04	3.00E-04	4.00E-04	7.00E-04	9.00E-04	0.0013	0.0015	0.0014	0.0011	7.00E-04	5.00E-04	3.00E-04	7.83E-04 (avg)
Breathing Losses (Ls)														
Air	(lb)	2.0021	2.1266	2.8717	3.3184	3.7201	3.7127	3.7954	3.5009	3.0978	2.9042	2.1138	1.8074	34.9711 (sum)
Ethanol	(lb)	7.00E-04	9.00E-04	0.0017	0.0029	0.0047	0.0063	0.0075	0.0065	0.0044	0.0028	0.0014	8.00E-04	4.06E-02 (sum)
Water	(lb)	0.0065	0.0078	0.016	0.0279	0.0454	0.062	0.0737	0.0638	0.0432	0.0264	0.0128	0.0072	0.3927 (sum)
Total Losses (Lt)														
Air	(lb)	22.6179	20.6148	22.8508	22.1449	22.6516	21.5631	21.9856	21.8012	21.2261	22.2534	21.3448	22.195	263.2492 (sum)
Ethanol	(lb)	0.0082	0.0084	0.0139	0.0201	0.0298	0.0388	0.0462	0.043	0.0319	0.0219	0.0142	0.0097	0.2861 (sum)
Water	(lb)	0.0743	0.077	0.1298	0.1916	0.2883	0.3813	0.4568	0.4235	0.3108	0.2089	0.1327	0.0892	2.7642 (sum)
														3.0503

Activity Title	TK-ADB2 Additive Buffer Tank From 1/1/2021 to 12/31/2021														
Climate:	Pennsylvania, Harrisburg														
pa	14.5725 psia														
Equipment Tag	TK-ADB2 Additive Buffer Tank														
Storage Vessel Style	Cone Roof Storage														
Calculation Type	Normal Storage Tank (11/2019 Rev.)														
	Working and Breathing Loss Calculation														
Void Space Volume	166.25 gal														
Working Volume	132 gal														
Working Volume	17.6458 ft^3														
Shell Diameter	2.6 ft														
Straight Side Height	4 ft														
Hro	0.186 ft														
Paint Solar Absorptance	0.25														
Roof Color / Condition	white / average														
Shell Color / Condition	white / average														
pbp	0.03														
pbv	-0.03														
Equipment Comment															
Activity Comment	Imported from Excel on 2:55:57 PM, 5/19/2022.														
Pi (constant)	3.1416														
R (constant)	998.9														

Vessel Contents	83.125 gal	68.000 °F	686.393 lb	37.175 lb-M			
Mixture Name:	Additive						
	[Liquid]	mmHg	lb	W[i]	lb-M	X[i]	A[i]	X*Pi*Ai (mmHg)
	Ethanol	42.925	27.3669	0.039871	0.594	0.015979	1	0.6859
	Water	17.3515	659.0258	0.960129	36.5814	0.984021	1	17.0742
Kp (product factor)	1							
Hl	2.0932 ft							

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Q	(gal)	1840.211	1662.126	1840.211	1780.8493	1840.211	1780.849	1840.211	1840.211	1780.849	1840.211	1780.849	1840.211	21667 (sum)
Vq	(ft^3)	246.0004	222.1939	246.0004	238.0649	246.0004	238.0649	246.0004	246.0004	238.0649	246.0004	238.0649	246.0004	2896.456 (sum)
N (period)	(number)	13.941	12.5919	13.941	13.4913	13.941	13.4913	13.941	13.941	13.4913	13.941	13.4913	13.941	164.1441 (sum)
N (scaled to annual)	(number)	164.1439	164.1439	164.1439	164.1439	164.1439	164.1439	164.1439	164.1439	164.1439	164.1439	164.1439	164.1439	
Kn	(number)	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494 (avg)
Days	(number)	31	28	31	30	31	30	31	31	30	31	30	31	365 (sum)
Compound Molecular Weights (lb/lb-M)														
Ethanol	(Mv)	46.07	46.07	46.07	46.07	46.07	46.07	46.07	46.07	46.07	46.07	46.07	46.07	46.07 (lb/lb-mole)
Water	(Mv)	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153 (lb/lb-mole)
Compound Vapor Pressures (Pva)														
Ethanol	(mmHg)	0.1712	0.1934	0.2871	0.4274	0.616	0.8405	0.978	0.917	0.7019	0.461	0.3121	0.2069	0.509375 (avg)
Water	(mmHg)	3.965	4.5127	6.8494	10.4065	15.2596	21.1045	24.712	23.1091	17.4902	11.2678	7.4783	4.845	12.58334 (avg)
Working Loss Calculations (Uncontrolled)														
tLa	(°F)	29.6088	32.7413	43.1801	54.1927	64.7897	74.1836	78.9011	76.8843	68.6939	56.3522	45.446	34.4819	54.95463 (average)
tLn	(°F)	26.2578	28.8623	38.4849	48.6463	58.8464	68.1642	73.0123	71.3878	63.5422	51.5831	41.7526	31.3834	50.16028 (average)
tLx	(°F)	32.9598	36.6204	47.8754	59.7391	70.733	80.203	84.7898	82.3809	73.8456	61.1213	49.1393	37.5803	59.74899 (average)
tb	(°R)	488.6871	491.5779	501.7157	512.4138	522.789	532.0187	536.7822	534.9704	527.082	515.071	504.5035	493.6591	513.4392 (average)
pC	(psia)	0.08	0.091	0.138	0.2095	0.3071	0.4245	0.4969	0.4647	0.3519	0.2269	0.1507	0.0977	0.253242 (average)
pNc	(psia)	14.4925	14.4815	14.4345	14.363	14.2654	14.148	14.0756	14.1078	14.2206	14.3456	14.4218	14.4748	14.31926 (average)
pVa	(psia)	0.08	0.091	0.138	0.2095	0.3071	0.4245	0.4969	0.4647	0.3519	0.2269	0.1507	0.0977	0.253242 (average)
hVo	(ft)	2.0932	2.0932	2.0932	2.0932	2.0932	2.0932	2.0932	2.0932	2.0932	2.0932	2.0932	2.0932	2.0932 (average)
Vv	(ft^3)	11.1122	11.1122	11.1122	11.1122	11.1122	11.1122	11.1122	11.1122	11.1122	11.1122	11.1122	11.1122	11.1122 (average)
wVnc	(number)	0.0799	0.0794	0.0775	0.0754	0.0734	0.0715	0.0705	0.071	0.0726	0.075	0.0771	0.0791	0.0752 (average)
kE	(number)	0.0248	0.0294	0.0367	0.045	0.0502	0.0531	0.0533	0.0488	0.0436	0.0383	0.0281	0.0226	0.039492 (average)
tv	(°R)	489.7614	493.0912	503.7757	515.0447	525.8226	535.3506	540.0304	537.8465	529.4096	516.7982	505.6156	494.5539	515.5917 (average)
taa	(°R)	488.22	490.92	500.82	511.27	521.47	530.57	535.37	533.72	526.07	514.32	504.02	493.27	512.5033 (average)
kb	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
kn	(number)	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494	0.3494 (average)
n	(number)	13.941	12.5919	13.941	13.4913	13.941	13.4913	13.941	13.941	13.4913	13.941	13.4913	13.941	164.1441 (sum)
Compound Vapor Density (vW(i))														
Ethanol	(lb/ft^3)	2.90E-05	3.26E-05	4.73E-05	6.89E-05	9.72E-05	1.00E-04	2.00E-04	1.00E-04	1.00E-04	7.41E-05	5.12E-05	3.47E-05	7.79E-05 (avg)
Water	(lb/ft^3)	3.00E-04	3.00E-04	4.00E-04	7.00E-04	9.00E-04	0.0013	0.0015	0.0014	0.0011	7.00E-04	5.00E-04	3.00E-04	7.83E-04 (avg)
Working Losses (Lw)														
Air	(lb)	6.872	6.1628	6.6597	6.2755	6.3106	5.9502	6.0634	6.1001	6.0428	6.4498	6.4104	6.7959	76.0932 (sum)
Ethanol	(lb)	0.0025	0.0025	0.0041	0.0057	0.0084	0.0108	0.0129	0.0122	0.0092	0.0064	0.0043	0.003	0.082 (sum)
Water	(lb)	0.0226	0.0231	0.0379	0.0546	0.081	0.1065	0.1277	0.1199	0.0892	0.0608	0.0399	0.0273	0.7905 (sum)
Breathing Loss Calculations (Uncontrolled)														
tan	(°R)	480.87	482.97	491.67	500.87	510.77	520.27	525.27	523.97	516.17	504.27	495.77	486.27	503.2617 (avg)
taa	(°R)	488.22	490.92	500.82	511.27	521.47	530.57	535.37	533.72	526.07	514.32	504.02	493.27	512.5033 (avg)
tax	(°R)	495.57	498.87	509.97	521.67	532.17	540.87	545.47	543.47	535.97	524.37	512.27	500.27	521.745 (avg)
tLn	(°F)	26.2578	28.8623	38.4849	48.6463	58.8464	68.1642	73.0123	71.3878	63.5422	51.5831	41.7526	31.3834	50.16028 (avg)
tLa	(°F)	29.6088	32.7413	43.1801	54.1927	64.7897	74.1836	78.9011	76.8843	68.6939	56.3522	45.446	34.4819	54.95463 (avg)
tLx	(°F)	32.9598	36.6204	47.8754	59.7391	70.733	80.203	84.7898	82.3809	73.8456	61.1213	49.1393	37.5803	59.74899 (avg)
i	(Btu/ft²day)	622.801	877.2515	1194.204	1525.1169	1758.628	1931.54	1882.997	1667.254	1349.349	1001.304	644.6926	518.7364	1247.823 (avg)
tb	(°R)	488.6871	491.5779	501.7157	512.4138	522.789	532.0187	536.7822	534.9704	527.082	515.071	504.5035	493.6591	513.4392 (avg)
pC	(psia)	0.08	0.091	0.138	0.2095	0.3071	0.4245	0.4969	0.4647	0.3519	0.2269	0.1507	0.0977	0.253242 (avg)
pNc	(psia)	14.4925	14.4815	14.4345	14.363	14.2654	14.148	14.0756	14.1078	14.2206	14.3456	14.4218	14.4748	14.31926 (avg)
pVa	(psia)	0.08	0.091	0.138	0.2095	0.3071	0.4245	0.4969	0.4647	0.3519	0.2269	0.1507	0.0977	0.253242 (avg)
dPv	(psia)	0.0223	0.029	0.0506	0.0863	0.1291	0.1732	0.1942	0.171	0.1258	0.0794	0.0429	0.0246	0.094033 (avg)
dPb	(psia)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06 (avg)
dTv	(°R)	13.404	15.5163	18.781	22.1856	23.7731	24.0777	23.555	21.9863	20.6067	19.0765	14.7735	12.3937	19.17745 (avg)
hVo	(ft)	2.0932	2.0932	2.0932	2.0932	2.0932	2.0932	2.0932	2.0932	2.0932	2.0932	2.0932	2.0932	2.0932 (avg)
ks	(number)	0.9912	0.99	0.9849	0.9773	0.9671	0.955	0.9478	0.951	0.9624	0.9755	0.9836	0.9893	0.972925 (avg)
Vv	(ft^3)	11.1122	11.1122	11.1122	11.1122	11.1122	11.1122	11.1122	11.1122	11.1122	11.1122	11.1122	11.1122	11.1122 (avg)
wVnc	(number)	0.0799	0.0794	0.0775	0.0754	0.0734	0.0715	0.0705	0.071	0.0726	0.075	0.0771	0.0791	0.0752 (avg)
kE	(number)	0.0248	0.0294	0.0367	0.045	0.0502	0.0531	0.0533	0.0488	0.0436	0.0383	0.0281	0.0226	0.039492 (avg)
tv	(°R)	489.7614	493.0912	503.7757	515.0447	525.8226	535.3506	540.0304	537.8465	529.4096	516.7982	505.6156	494.5539	515.5917 (avg)
plx	(psia)	0.0918	0.1065	0.1654	0.2565	0.3775	0.5187	0.6022	0.557	0.4196	0.2696	0.1735	0.1107	0.304083 (avg)
pln	(psia)	0.0695	0.0776	0.1148	0.1703	0.2484	0.3455	0.408	0.386	0.2938	0.1902	0.1306	0.0861	0.210067 (avg)
Compound Vapor Density (wV(i))														
Ethanol	(lb/ft^3)	2.90E-05	3.26E-05	4.73E-05	6.89E-05	9.72E-05	1.00E-04	2.00E-04	1.00E-04	1.00E-04	7.41E-05	5.12E-05	3.47E-05	7.79E-05 (avg)
Water	(lb/ft^3)	3.00E-04	3.00E-04	4.00E-04	7.00E-04	9.00E-04	0.0013	0.0015	0.0014	0.0011	7.00E-04	5.00E-04	3.00E-04	7.83E-04 (avg)
Breathing Losses (Ls)														
Air	(lb)	0.6828	0.7253	0.9794	1.1317	1.2687	1.2662	1.2944	1.194	1.0565	0.9905	0.7209	0.6164	11.9268 (sum)
Ethanol	(lb)	2.00E-04	3.00E-04	6.00E-04	0.001	0.0016	0.0022	0.0026	0.0023	0.0015	0.001	5.00E-04	3.00E-04	1.41E-02 (sum)
Water	(lb)	0.0022	0.0027	0.0055	0.0096	0.0157	0.0216	0.0258	0.0223	0.015	0.0091	0.0044	0.0025	0.1364 (sum)
Total Losses (Lt)														
Air	(lb)	7.5548	6.8881	7.6391	7.4073	7.5793	7.2164	7.3579	7.2941	7.0993	7.4403	7.1313	7.4123	88.0202 (sum)
Ethanol	(lb)	0.0027	0.0028	0.0047	0.0067	0.01	0.013	0.0155	0.0144	0.0107	0.0073	0.0047	0.0033	0.0958 (sum)
Water	(lb)	0.0248	0.0258	0.0434	0.0642	0.0967	0.1281	0.1535	0.1422	0.1042	0.07	0.0444	0.0298	0.9271 (sum)
														1.0229

Activity Title	TK-BS (1-3) Binder Storage Container From 1/1/2021 to 12/31/2021														
Climate:	Pennsylvania, Harrisburg														
pa	14.5725 psia														
Equipment Tag	TK-BS (1-3) Binder Storage Container														
Storage Vessel Style	Dome Roof Storage														
Calculation Type	Normal Storage Tank (11/2019 Rev.)														
	Working and Breathing Loss Calculation														
Void Space Volume	612.72 gal														
Working Volume	264 gal														
Working Volume	35.2917 ft^3														
Shell Diameter	3.6 ft														
Straight Side Height	7.8 ft														
Hro	0.247 ft														
Paint Solar Absorptance	0.25														
Roof Color / Condition	white / average														
Shell Color / Condition	white / average														
pbp	0.03														
pbv	-0.03														
Equipment Comment															
Activity Comment	Imported from Excel on 2:55:57 PM, 5/19/2022.														
Pi (constant)	3.1416														
R (constant)	998.9														

Vessel Contents	306.360 gal	68.000 °F	2556.013 lb		141.660 lb-M			
Mixture Name:	Binder Circulating							
	[Liquid]	mmHg	lb	W[i]	lb-M	X[i]	A[i]	X*Pi*Ai (mmHg)
	Formaldehyde	3003.344	2.0558	0.000804	0.0685	0.000483	1	1.4514
	Methanol	93.743	0.6071	0.000238	0.0189	0.000134	1	0.0125
	Phenol	0	3.5564	0.001391	0.0378	0.000267	1	0
	Water	17.3515	2549.7937	0.997567	141.5346	0.999116	1	17.3361
Kp (product factor)	1							
Hl	4.0216 ft							

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Q	(gal)	11068.7	9997.5342	11068.7	10711.6438	11068.7	10711.64	11068.7	11068.7	10711.64	11068.7	10711.64	11068.7	130325	(sum)
Vq	(ft^3)	1479.67	1336.4759	1479.67	1431.9385	1479.67	1431.939	1479.67	1479.67	1431.939	1479.67	1431.939	1479.67	17421.92	(sum)
N (period)	(number)	41.9269	37.8694	41.9269	40.5744	41.9269	40.5744	41.9269	41.9269	40.5744	41.9269	40.5744	41.9269	493.6553	(sum)
N (scaled to annual)	(number)	493.6553	493.6553	493.6553	493.6553	493.6553	493.6553	493.6553	493.6553	493.6553	493.6553	493.6553	493.6553		
Kn	(number)	0.2274	0.2274	0.2274	0.2274	0.2274	0.2274	0.2274	0.2274	0.2274	0.2274	0.2274	0.2274	0.2274	(avg)
Days	(number)	31	28	31	30	31	30	31	31	30	31	30	31	365	(sum)
Compound Molecular Weights (lb/lb-M)															
Formaldehyde	(Mv)	30.03	30.03	30.03	30.03	30.03	30.03	30.03	30.03	30.03	30.03	30.03	30.03	30.03	(lb/lb-mole)
Methanol	(Mv)	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	(lb/lb-mole)
Phenol	(Mv)	94.1128	94.1128	94.1128	94.1128	94.1128	94.1128	94.1128	94.1128	94.1128	94.1128	94.1128	94.1128	94.1128	(lb/lb-mole)
Water	(Mv)	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	(lb/lb-mole)
Compound Vapor Pressures (Pva)															
Formaldehyde	(mmHg)	0.7188	0.7644	0.9329	1.141	1.374	1.6101	1.7398	1.6834	1.4686	1.1858	0.9731	0.7907	1.19855	(avg)
Methanol	(mmHg)	0.0036	0.004	0.0057	0.0082	0.0114	0.0151	0.0173	0.0163	0.0128	0.0088	0.0062	0.0043	0.009475	(avg)
Phenol	(mmHg)	0	0	0	0	0	0	0	0	0	0	0	0	0	(avg)
Water	(mmHg)	4.0258	4.582	6.9544	10.5661	15.4937	21.4282	25.0911	23.4636	17.7585	11.4407	7.593	4.9193	12.77637	(avg)
Working Loss Calculations (Uncontrolled)															
tLa	(°F)	29.6088	32.7413	43.1801	54.1927	64.7897	74.1836	78.9011	76.8843	68.6939	56.3522	45.446	34.4819	54.95463	(average)
tLn	(°F)	26.2578	28.8623	38.4849	48.6463	58.8464	68.1642	73.0123	71.3878	63.5422	51.5831	41.7526	31.3834	50.16028	(average)
tLx	(°F)	32.9598	36.6204	47.8754	59.7391	70.733	80.203	84.7898	82.3809	73.8456	61.1213	49.1393	37.5803	59.74899	(average)
tb	(°R)	488.6871	491.5779	501.7157	512.4138	522.789	532.0187	536.7822	534.9704	527.082	515.071	504.5035	493.6591	513.4392	(average)
pC	(psia)	0.0918	0.1035	0.1527	0.2266	0.3265	0.4459	0.5193	0.4867	0.3721	0.2444	0.1658	0.1105	0.270483	(average)
pNc	(psia)	14.4807	14.469	14.4198	14.3459	14.246	14.1266	14.0532	14.0858	14.2004	14.3281	14.4067	14.462	14.30202	(average)
pVa	(psia)	0.0918	0.1035	0.1527	0.2266	0.3265	0.4459	0.5193	0.4867	0.3721	0.2444	0.1658	0.1105	0.270483	(average)
hVo	(ft)	4.0216	4.0216	4.0216	4.0216	4.0216	4.0216	4.0216	4.0216	4.0216	4.0216	4.0216	4.0216	4.0216	(average)
Vv	(ft^3)	40.9544	40.9544	40.9544	40.9544	40.9544	40.9544	40.9544	40.9544	40.9544	40.9544	40.9544	40.9544	40.9544	(average)
wVnc	(number)	0.0799	0.0793	0.0774	0.0753	0.0733	0.0714	0.0704	0.0709	0.0725	0.0749	0.077	0.079	0.075108	(average)
kE	(number)	0.0249	0.0295	0.0368	0.0452	0.0504	0.0533	0.0535	0.049	0.0438	0.0385	0.0282	0.0227	0.03965	(average)
tv	(°R)	489.7614	493.0912	503.7757	515.0447	525.8226	535.3506	540.0304	537.8465	529.4096	516.7982	505.6156	494.5539	515.5917	(average)
taa	(°R)	488.22	490.92	500.82	511.27	521.47	530.57	535.37	533.72	526.07	514.32	504.02	493.27	512.5033	(average)
kb	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1	(average)
kn	(number)	0.2274	0.2274	0.2274	0.2274	0.2274	0.2274	0.2274	0.2274	0.2274	0.2274	0.2274	0.2274	0.2274	(average)
n	(number)	41.9269	37.8694	41.9269	40.5744	41.9269	40.5744	41.9269	41.9269	40.5744	41.9269	40.5744	41.9269	493.6553	(sum)
Compound Vapor Density (vW(i))															
Formaldehyde	(lb/ft^3)	7.94E-05	8.39E-05	1.00E-04	1.00E-04	1.00E-04	2.00E-04	2.00E-04	2.00E-04	2.00E-04	1.00E-04	1.00E-04	8.65E-05	1.29E-04	(avg)
Methanol	(lb/ft^3)	4.26E-07	4.71E-07	6.57E-07	9.18E-07	1.25E-06	1.62E-06	1.85E-06	1.75E-06	1.40E-06	9.79E-07	7.05E-07	4.99E-07	1.04E-06	(avg)
Phenol	(lb/ft^3)	0	0	0	0	0	0	0	0	0	0	0	0	0	(avg)
Water	(lb/ft^3)	3.00E-04	3.00E-04	4.00E-04	7.00E-04	0.001	0.0013	0.0015	0.0014	0.0011	7.00E-04	5.00E-04	3.00E-04	7.92E-04	(avg)
Working Losses (Lw)															
Air	(lb)	26.8816	24.1063	26.0462	24.5393	24.672	23.2594	23.7004	23.8446	23.6237	25.2199	25.0701	26.5821	297.5456	(sum)
Formaldehyde	(lb)	0.0267	0.0255	0.0337	0.039	0.0476	0.053	0.0587	0.057	0.0489	0.0418	0.0339	0.0291	0.4949	(sum)
Methanol	(lb)	1.00E-04	1.00E-04	2.00E-04	3.00E-04	4.00E-04	5.00E-04	6.00E-04	6.00E-04	5.00E-04	3.00E-04	2.00E-04	2.00E-04	4.00E-03	(sum)
Phenol	(lb)	0	0	0	0	0	0	0	0	0	0	0	0	0	(sum)
Water	(lb)	0.0898	0.0917	0.1508	0.2169	0.3219	0.4232	0.5076	0.4766	0.3546	0.2419	0.1588	0.1087	3.1425	(sum)
Breathing Loss Calculations (Uncontrolled)															
tan	(°R)	480.87	482.97	491.67	500.87	510.77	520.27	525.27	523.97	516.17	504.27	495.77	486.27	503.2617	(avg)
taa	(°R)	488.22	490.92	500.82	511.27	521.47	530.57	535.37	533.72	526.07	514.32	504.02	493.27	512.5033	(avg)
tax	(°R)	495.57	498.87	509.97	521.67	532.17	540.87	545.47	543.47	535.97	524.37	512.27	500.27	521.745	(avg)
tLn	(°F)	26.2578	28.8623	38.4849	48.6463	58.8464	68.1642	73.0123	71.3878	63.5422	51.5831	41.7526	31.3834	50.16028	(avg)
tLa	(°F)	29.6088	32.7413	43.1801	54.1927	64.7897	74.1836	78.9011	76.8843	68.6939	56.3522	45.446	34.4819	54.95463	(avg)
tLx	(°F)	32.9598	36.6204	47.8754	59.7391	70.733	80.203	84.7898	82.3809	73.8456	61.1213	49.1393	37.5803	59.74899	(avg)
i	(Btu/ft²day)	622.801	877.2515	1194.204	1525.1169	1758.628	1931.54	1882.997	1667.254	1349.349	1001.304	644.6926	518.7364	1247.823	(avg)
tb	(°R)	488.6871	491.5779	501.7157	512.4138	522.789	532.0187	536.7822	534.9704	527.082	515.071	504.5035	493.6591	513.4392	(avg)
pC	(psia)	0.0918	0.1035	0.1527	0.2266	0.3265	0.4459	0.5193	0.4867	0.3721	0.2444	0.1658	0.1105	0.270483	(avg)
pNc	(psia)	14.4807	14.469	14.4198	14.3459	14.246	14.1266	14.0532	14.0858	14.2004	14.3281	14.4067	14.462	14.30202	(avg)
pVa	(psia)	0.0918	0.1035	0.1527	0.2266	0.3265	0.4459	0.5193	0.4867	0.3721	0.2444	0.1658	0.1105	0.270483	(avg)
dPv	(psia)	0.0236	0.0305	0.0526	0.0887	0.1317	0.1757	0.1965	0.1732	0.128	0.0815	0.0445	0.0259	0.096033	(avg)
dPb	(psia)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	(avg)
dTv	(°R)	13.404	15.5163	18.781	22.1856	23.7731	24.0777	23.555	21.9863	20.6067	19.0765	14.7735	12.3937	19.17745	(avg)
hVo	(ft)	4.0216	4.0216	4.0216	4.0216	4.0216	4.0216	4.0216	4.0216	4.0216	4.0216	4.0216	4.0216	4.0216	(avg)
ks	(number)	0.9808	0.9784	0.9685	0.9539	0.9349	0.9132	0.9003	0.906	0.9265	0.9505	0.9659	0.977	0.946325	(avg)
Vv	(ft^3)	40.9544	40.9544	40.9544	40.9544	40.9544	40.9544	40.9544	40.9544	40.9544	40.9544	40.9544	40.9544	40.9544	(avg)
wVnc	(number)	0.0799	0.0793	0.0774	0.0753	0.0733	0.0714	0.0704	0.0709	0.0725	0.0749	0.077	0.079	0.075108	(avg)
kE	(number)	0.0249	0.0295	0.0368	0.0452	0.0504	0.0533	0.0535	0.049	0.0438	0.0385	0.0282	0.0227	0.03965	(avg)
tv	(°R)	489.7614	493.0912	503.7757	515.0447	525.8226	535.3506	540.0304	537.8465	529.4096	516.7982	505.6156	494.5539	515.5917	(avg)
plx	(psia)	0.1043	0.1198	0.181	0.2748	0.3982	0.5413	0.6257	0.5801	0.441	0.2882	0.1894	0.1241	0.322325	(avg)
pln	(psia)	0.0807	0.0892	0.1284	0.1861	0.2665	0.3656	0.4292	0.4069	0.313	0.2066	0.1449	0.0983	0.226283	(avg)
Compound Vapor Density (wV(i))															
Formaldehyde	(lb/ft^3)	7.94E-05	8.39E-05	1.00E-04	1.00E-04	1.00E-04	2.00E-04	2.00E-04	2.00E-04	2.00E-04	1.00E-04	1.00E-04	8.65E-05	1.29E-04	(avg)
Methanol	(lb/ft^3)	4.26E-07	4.71E-07	6.57E-07	9.18E-07	1.25E-06	1.62E-06	1.85E-06	1.75E-06	1.40E-06	9.79E-07	7.05E-07	4.99E-07	1.04E-06	(avg)
Phenol	(lb/ft^3)	0	0	0	0	0	0	0	0	0	0	0	0	0	(avg)
Water	(lb/ft^3)	3.00E-04	3.00E-04	4.00E-04	7.00E-04	0.001	0.0013	0.0015	0.0014	0.0011	7.00E-04	5.00E-04	3.00E-04	7.92E-04	(avg)
Breathing Losses (Ls)															
Air	(lb)	2.5235	2.6804	3.6196	4.1822	4.6874	4.6763	4.7792	4.409	3.9028	3.6603	2.6646	2.2784	44.0637	(sum)
Formaldehyde	(lb)	0.0025	0.0028	0.0045	0.0063	0.0085	0.0097	0.0107	0.0095	0.0075	0.0058	0.0035	0.0024	0.0737	(sum)
Methanol	(lb)	1.32E-05	1.56E-05	2.97E-05	4.86E-05	7.47E-05	9.71E-05	1.00E-04	9.86E-05	6.96E-05	4.55E-05	2.36E-05	1.41E-05	6.30E-04	(sum)
Phenol	(lb)	0	0	0	0	0	0	0	0	0	0	0	0	0	(sum)
Water	(lb)	0.0083	0.01	0.0203	0.0353	0.0572	0.0777	0.0922	0.0798	0.0543	0.0334	0.0163	0.0091	0.4939	(sum)
Total Losses (Lt)															
Air	(lb)	29.4051	26.7866	29.6658	28.7216	29.3594	27.9357	28.4796	28.2536	27.5266	28.8801	27.7347	28.8605	341.6093	(sum)
Formaldehyde	(lb)	0.0292	0.0283	0.0383	0.0454	0.056	0.0627	0.0693	0.0665	0.0564	0.0475	0.0374	0.0316	0.5686	(sum)
Methanol	(lb)	2.00E-04	2.00E-04	3.00E-04	3.00E-04	5.00E-04	6.00E-04	7.00E-04	7.00E-04	5.00E-04	4.00E-04	3.00E-04	2.00E-04	4.90E-03	(sum)
Phenol	(lb)	0	0	0	0	0	0	0	0	0	0	0	0	0	(sum)
Water	(lb)	0.0981	0.1017	0.1711	0.2522	0.3791	0.5009	0.5998	0.5564	0.4089	0.2752	0.1751	0.1178	3.6363	(sum)

4.2098

Activity Title	TK-CA Coupling Agent Storage Tank From 1/1/2021 to 12/31/2021														
Climate:	Pennsylvania, Harrisburg														
pa	14.5725 psia														
Equipment Tag	TK-CA Coupling Agent Storage Tank														
Storage Vessel Style	Cone Roof Storage														
Calculation Type	Normal Storage Tank (11/2019 Rev.)														
	Working and Breathing Loss Calculation														
Void Space Volume	487.46 gal														
Working Volume	396 gal														
Working Volume	52.9375 ft^3														
Shell Diameter	3.6 ft														
Straight Side Height	6 ft														
Hro	0.402 ft														
Paint Solar Absorptance	0.25														
Roof Color / Condition	white / average														
Shell Color / Condition	white / average														
pbp	0.03														
pbv	-0.03														
Equipment Comment															
Activity Comment	Imported from Excel on 2:55:57 PM, 5/19/2022.														
Pi (constant)	3.1416														
R (constant)	998.9														

Vessel Contents	243.730 gal	68.000 °F	2012.565 lb	109.002 lb-M			
Mixture Name:	Additive						
	[Liquid]	mmHg	lb	W[i]	lb-M	X[i]	A[i]	X*Pi*Ai (mmHg)
	Ethanol	42.925	80.2423	0.039871	1.7417	0.015979	1	0.6859
	Water	17.3515	1932.3231	0.960129	107.2599	0.984021	1	17.0742
Kp (product factor)	1							
Hl	3.201 ft							

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Q	(gal)	359.0055	324.263	359.0055	347.4247	359.0055	347.4247	359.0055	359.0055	347.4247	359.0055	347.4247	359.0055	4227 (sum)
Vq	(ft^3)	47.9921	43.3477	47.9921	46.4439	47.9921	46.4439	47.9921	47.9921	46.4439	47.9921	46.4439	47.9921	565.068 (sum)
N (period)	(number)	0.9066	0.8188	0.9066	0.8773	0.9066	0.8773	0.9066	0.9066	0.8773	0.9066	0.8773	0.9066	10.6742 (sum)
N (scaled to annual)	(number)	10.6742	10.6742	10.6742	10.6742	10.6742	10.6742	10.6742	10.6742	10.6742	10.6742	10.6742	10.6742	
Kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (avg)
Days	(number)	31	28	31	30	31	30	31	31	30	31	30	31	365 (sum)
Compound Molecular Weights (lb/lb-M)														
Ethanol	(Mv)	46.07	46.07	46.07	46.07	46.07	46.07	46.07	46.07	46.07	46.07	46.07	46.07	46.07 (lb/lb-mole)
Water	(Mv)	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153 (lb/lb-mole)
Compound Vapor Pressures (Pva)														
Ethanol	(mmHg)	0.1712	0.1934	0.2871	0.4274	0.616	0.8405	0.978	0.917	0.7019	0.461	0.3121	0.2069	0.509375 (avg)
Water	(mmHg)	3.965	4.5127	6.8494	10.4065	15.2596	21.1045	24.712	23.1091	17.4902	11.2678	7.4783	4.845	12.58334 (avg)
Working Loss Calculations (Uncontrolled)														
tLa	(°F)	29.6088	32.7413	43.1801	54.1927	64.7897	74.1836	78.9011	76.8843	68.6939	56.3522	45.446	34.4819	54.95463 (average)
tLn	(°F)	26.2578	28.8623	38.4849	48.6463	58.8464	68.1642	73.0123	71.3878	63.5422	51.5831	41.7526	31.3834	50.16028 (average)
tLx	(°F)	32.9598	36.6204	47.8754	59.7391	70.733	80.203	84.7898	82.3809	73.8456	61.1213	49.1393	37.5803	59.74899 (average)
tb	(°R)	488.6871	491.5779	501.7157	512.4138	522.789	532.0187	536.7822	534.9704	527.082	515.071	504.5035	493.6591	513.4392 (average)
pC	(psia)	0.08	0.091	0.138	0.2095	0.3071	0.4245	0.4969	0.4647	0.3519	0.2269	0.1507	0.0977	0.253242 (average)
pNc	(psia)	14.4925	14.4815	14.4345	14.363	14.2654	14.148	14.0756	14.1078	14.2206	14.3456	14.4218	14.4748	14.31926 (average)
pVa	(psia)	0.08	0.091	0.138	0.2095	0.3071	0.4245	0.4969	0.4647	0.3519	0.2269	0.1507	0.0977	0.253242 (average)
hVo	(ft)	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201 (average)
Vv	(ft^3)	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582 (average)
wVnc	(number)	0.0799	0.0794	0.0775	0.0754	0.0734	0.0715	0.0705	0.071	0.0726	0.075	0.0771	0.0791	0.0752 (average)
kE	(number)	0.0248	0.0294	0.0367	0.045	0.0502	0.0531	0.0533	0.0488	0.0436	0.0383	0.0281	0.0226	0.039492 (average)
tv	(°R)	489.7614	493.0912	503.7757	515.0447	525.8226	535.3506	540.0304	537.8465	529.4096	516.7982	505.6156	494.5539	515.5917 (average)
taa	(°R)	488.22	490.92	500.82	511.27	521.47	530.57	535.37	533.72	526.07	514.32	504.02	493.27	512.5033 (average)
kb	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
n	(number)	0.9066	0.8188	0.9066	0.8773	0.9066	0.8773	0.9066	0.9066	0.8773	0.9066	0.8773	0.9066	10.6742 (sum)
Compound Vapor Density (vW(i))														
Ethanol	(lb/ft^3)	2.90E-05	3.26E-05	4.73E-05	6.89E-05	9.72E-05	1.00E-04	2.00E-04	1.00E-04	1.00E-04	7.41E-05	5.12E-05	3.47E-05	7.79E-05 (avg)
Water	(lb/ft^3)	3.00E-04	3.00E-04	4.00E-04	7.00E-04	9.00E-04	0.0013	0.0015	0.0014	0.0011	7.00E-04	5.00E-04	3.00E-04	7.83E-04 (avg)
Working Losses (Lw)														
Air	(lb)	3.8366	3.4407	3.7181	3.5036	3.5232	3.322	3.3852	3.4057	3.3737	3.6009	3.5789	3.7942	42.4828 (sum)
Ethanol	(lb)	0.0014	0.0014	0.0023	0.0032	0.0047	0.0061	0.0072	0.0068	0.0051	0.0036	0.0024	0.0017	0.0459 (sum)
Water	(lb)	0.0126	0.0129	0.0212	0.0305	0.0452	0.0594	0.0713	0.0669	0.0498	0.034	0.0223	0.0153	0.4414 (sum)
Breathing Loss Calculations (Uncontrolled)														
tan	(°R)	480.87	482.97	491.67	500.87	510.77	520.27	525.27	523.97	516.17	504.27	495.77	486.27	503.2617 (avg)
taa	(°R)	488.22	490.92	500.82	511.27	521.47	530.57	535.37	533.72	526.07	514.32	504.02	493.27	512.5033 (avg)
tax	(°R)	495.57	498.87	509.97	521.67	532.17	540.87	545.47	543.47	535.97	524.37	512.27	500.27	521.745 (avg)
tLn	(°F)	26.2578	28.8623	38.4849	48.6463	58.8464	68.1642	73.0123	71.3878	63.5422	51.5831	41.7526	31.3834	50.16028 (avg)
tLa	(°F)	29.6088	32.7413	43.1801	54.1927	64.7897	74.1836	78.9011	76.8843	68.6939	56.3522	45.446	34.4819	54.95463 (avg)
tLx	(°F)	32.9598	36.6204	47.8754	59.7391	70.733	80.203	84.7898	82.3809	73.8456	61.1213	49.1393	37.5803	59.74899 (avg)
i	(Btu/ft²day)	622.801	877.2515	1194.204	1525.1169	1758.628	1931.54	1882.997	1667.254	1349.349	1001.304	644.6926	518.7364	1247.823 (avg)
tb	(°R)	488.6871	491.5779	501.7157	512.4138	522.789	532.0187	536.7822	534.9704	527.082	515.071	504.5035	493.6591	513.4392 (avg)
pC	(psia)	0.08	0.091	0.138	0.2095	0.3071	0.4245	0.4969	0.4647	0.3519	0.2269	0.1507	0.0977	0.253242 (avg)
pNc	(psia)	14.4925	14.4815	14.4345	14.363	14.2654	14.148	14.0756	14.1078	14.2206	14.3456	14.4218	14.4748	14.31926 (avg)
pVa	(psia)	0.08	0.091	0.138	0.2095	0.3071	0.4245	0.4969	0.4647	0.3519	0.2269	0.1507	0.0977	0.253242 (avg)
dPv	(psia)	0.0223	0.029	0.0506	0.0863	0.1291	0.1732	0.1942	0.171	0.1258	0.0794	0.0429	0.0246	0.094033 (avg)
dPb	(psia)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06 (avg)
dTv	(°R)	13.404	15.5163	18.781	22.1856	23.7731	24.0777	23.555	21.9863	20.6067	19.0765	14.7735	12.3937	19.17745 (avg)
hVo	(ft)	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201	3.201 (avg)
ks	(number)	0.9866	0.9848	0.9771	0.9657	0.9505	0.9328	0.9223	0.9269	0.9437	0.9629	0.9751	0.9837	0.959342 (avg)
Vv	(ft^3)	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582	32.582 (avg)
wVnc	(number)	0.0799	0.0794	0.0775	0.0754	0.0734	0.0715	0.0705	0.071	0.0726	0.075	0.0771	0.0791	0.0752 (avg)
kE	(number)	0.0248	0.0294	0.0367	0.045	0.0502	0.0531	0.0533	0.0488	0.0436	0.0383	0.0281	0.0226	0.039492 (avg)
tv	(°R)	489.7614	493.0912	503.7757	515.0447	525.8226	535.3506	540.0304	537.8465	529.4096	516.7982	505.6156	494.5539	515.5917 (avg)
plx	(psia)	0.0918	0.1065	0.1654	0.2565	0.3775	0.5187	0.6022	0.557	0.4196	0.2696	0.1735	0.1107	0.304083 (avg)
pln	(psia)	0.0695	0.0776	0.1148	0.1703	0.2484	0.3455	0.408	0.386	0.2938	0.1902	0.1306	0.0861	0.210067 (avg)
Compound Vapor Density (wV(i))														
Ethanol	(lb/ft^3)	2.90E-05	3.26E-05	4.73E-05	6.89E-05	9.72E-05	1.00E-04	2.00E-04	1.00E-04	1.00E-04	7.41E-05	5.12E-05	3.47E-05	7.79E-05 (avg)
Water	(lb/ft^3)	3.00E-04	3.00E-04	4.00E-04	7.00E-04	9.00E-04	0.0013	0.0015	0.0014	0.0011	7.00E-04	5.00E-04	3.00E-04	7.83E-04 (avg)
Breathing Losses (Ls)														
Air	(lb)	2.0021	2.1266	2.8717	3.3184	3.7201	3.7127	3.7954	3.5009	3.0978	2.9042	2.1138	1.8074	34.9711 (sum)
Ethanol	(lb)	7.00E-04	9.00E-04	0.0017	0.0029	0.0047	0.0063	0.0075	0.0065	0.0044	0.0028	0.0014	8.00E-04	4.06E-02 (sum)
Water	(lb)	0.0065	0.0078	0.016	0.0279	0.0454	0.062	0.0737	0.0638	0.0432	0.0264	0.0128	0.0072	0.3927 (sum)
Total Losses (Lt)														
Air	(lb)	5.8387	5.5673	6.5899	6.822	7.2433	7.0347	7.1806	6.9066	6.4715	6.5051	5.6928	5.6016	77.4541 (sum)
Ethanol	(lb)	0.0021	0.0023	0.004	0.0061	0.0094	0.0124	0.0147	0.0133	0.0095	0.0063	0.0038	0.0024	0.0863 (sum)
Water	(lb)	0.0191	0.0207	0.0372	0.0583	0.0906	0.1214	0.145	0.1307	0.093	0.0603	0.0351	0.0224	0.8338 (sum)
														0.9201

Activity Title	TK-DF Diesel Fuel Tank From 1/1/2021 to 12/31/2021
Climate:	Pennsylvania, Harrisburg
pa	14.5725 psia
Equipment Tag	TK-DF Diesel Fuel Tank
Storage Vessel Style	Horizontal Storage
Calculation Type	Normal Storage Tank (11/2019 Rev.)
	Working and Breathing Loss Calculation
Void Space Volume	1861.45 gal
Working Volume	1204 gal
Working Volume	160.9514 ft^3
Shell Diameter	4.39 ft
Straight Side Height	16.44 ft
Paint Solar Absorptance	0.25
Roof Color / Condition	white / average
Shell Color / Condition	white / average
pbp	0.03
pbv	-0.03
Equipment Comment	
Activity Comment	Imported from Excel on 2:55:56 PM, 5/19/2022.
Pi (constant)	3.1416
R (constant)	998.9

Vessel Contents	930.725 gal	68.000 °F	6608.144 lb		50.832 lb-M			
Mixture Name:	Mixture							
	[Liquid]	mmHg	lb	W[i]	lb-M	X[i]	A[i]	X*Pi*Ai (mmHg)
	Distillate Fuel Oil No.	0.4359	6608.144	1	50.8319	1	1	0.4359
Kp (product factor)		1						

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Q	(gal)	4487.271	4053.0192	4487.271	4342.5205	4487.271	4342.521	4487.271	4487.271	4342.521	4487.271	4342.521	4487.271	52834 (sum)
Vq	(ft^3)	599.8609	541.8099	599.8609	580.5106	599.8609	580.5106	599.8609	599.8609	580.5106	599.8609	580.5106	599.8609	7062.879 (sum)
N (period)	(number)	3.727	3.3663	3.727	3.6067	3.727	3.6067	3.727	3.727	3.6067	3.727	3.6067	3.727	43.8821 (sum)
N (scaled to annual)	(number)	43.8821	43.8821	43.8821	43.8821	43.8821	43.8821	43.8821	43.8821	43.8821	43.8821	43.8821	43.8821	
Kn	(number)	0.8503	0.8503	0.8503	0.8503	0.8503	0.8503	0.8503	0.8503	0.8503	0.8503	0.8503	0.8503	0.8503 (avg)
Days	(number)	31	28	31	30	31	30	31	31	30	31	30	31	365 (sum)
Compound Molecular Weights (lb/lb-M)														
Distillate Fuel Oil No. 2	(Mv)	130	130	130	130	130	130	130	130	130	130	130	130	130 (lb/lb-mole)
Compound Vapor Pressures (Pva)														
Distillate Fuel Oil No. 2	(mmHg)	0.1054	0.12	0.1812	0.2719	0.392	0.532	0.6164	0.5791	0.4459	0.2935	0.1974	0.1288	0.321967 (avg)
Working Loss Calculations (Uncontrolled)														
tLa	(°F)	29.6088	32.7413	43.1801	54.1927	64.7897	74.1836	78.9011	76.8843	68.6939	56.3522	45.446	34.4819	54.95463 (average)
tLn	(°F)	26.2578	28.8623	38.4849	48.6463	58.8464	68.1642	73.0123	71.3878	63.5422	51.5831	41.7526	31.3834	50.16028 (average)
tLx	(°F)	32.9598	36.6204	47.8754	59.7391	70.733	80.203	84.7898	82.3809	73.8456	61.1213	49.1393	37.5803	59.74899 (average)
tb	(°R)	488.6871	491.5779	501.7157	512.4138	522.789	532.0187	536.7822	534.9704	527.082	515.071	504.5035	493.6591	513.4392 (average)
pC	(psia)	0.002	0.0023	0.0035	0.0053	0.0076	0.0103	0.0119	0.0112	0.0086	0.0057	0.0038	0.0025	0.006225 (average)
pNc	(psia)	14.5705	14.5702	14.569	14.5672	14.5649	14.5622	14.5606	14.5613	14.5639	14.5668	14.5687	14.57	14.56628 (average)
pVa	(psia)	0.002	0.0023	0.0035	0.0053	0.0076	0.0103	0.0119	0.0112	0.0086	0.0057	0.0038	0.0025	0.006225 (average)
hVo	(ft)	1.7239	1.7239	1.7239	1.7239	1.7239	1.7239	1.7239	1.7239	1.7239	1.7239	1.7239	1.7239	1.7239 (average)
Vv	(ft^3)	124.4716	124.4716	124.4716	124.4716	124.4716	124.4716	124.4716	124.4716	124.4716	124.4716	124.4716	124.4716	124.4716 (average)
wVnc	(number)	0.0804	0.0799	0.0782	0.0765	0.075	0.0736	0.073	0.0732	0.0744	0.0762	0.0778	0.0796	0.076483 (average)
kE	(number)	0.0233	0.0274	0.0333	0.0392	0.0414	0.0413	0.0399	0.0371	0.0351	0.033	0.0252	0.021	0.0331 (average)
tv	(°R)	489.7614	493.0912	503.7757	515.0447	525.8226	535.3506	540.0304	537.8465	529.4096	516.7982	505.6156	494.5539	515.5917 (average)
taa	(°R)	488.22	490.92	500.82	511.27	521.47	530.57	535.37	533.72	526.07	514.32	504.02	493.27	512.5033 (average)
kb	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
kn	(number)	0.8503	0.8503	0.8503	0.8503	0.8503	0.8503	0.8503	0.8503	0.8503	0.8503	0.8503	0.8503	0.8503 (average)
n	(number)	3.727	3.3663	3.727	3.6067	3.727	3.6067	3.727	3.727	3.6067	3.727	3.6067	3.727	43.8821 (sum)
Compound Vapor Density (vW(i))														
Distillate Fuel Oil No. 2	(lb/ft^3)	5.04E-05	5.70E-05	8.42E-05	1.00E-04	2.00E-04	2.00E-04	3.00E-04	3.00E-04	2.00E-04	1.00E-04	9.15E-05	6.10E-05	1.45E-04 (avg)
Working Losses (Lw)														
Air	(lb)	40.9962	36.7926	39.8858	37.7674	38.2316	36.3406	37.2188	37.3606	36.7223	38.8618	38.4251	40.5907	459.1935 (sum)
Distillate Fuel Oil No. 2	(lb)	0.0257	0.0263	0.043	0.0611	0.0891	0.1149	0.1364	0.1286	0.0974	0.0679	0.0451	0.0311	0.8666 (sum)
Breathing Loss Calculations (Uncontrolled)														
tan	(°R)	480.87	482.97	491.67	500.87	510.77	520.27	525.27	523.97	516.17	504.27	495.77	486.27	503.2617 (avg)
taa	(°R)	488.22	490.92	500.82	511.27	521.47	530.57	535.37	533.72	526.07	514.32	504.02	493.27	512.5033 (avg)
tax	(°R)	495.57	498.87	509.97	521.67	532.17	540.87	545.47	543.47	535.97	524.37	512.27	500.27	521.745 (avg)
tLn	(°F)	26.2578	28.8623	38.4849	48.6463	58.8464	68.1642	73.0123	71.3878	63.5422	51.5831	41.7526	31.3834	50.16028 (avg)
tLa	(°F)	29.6088	32.7413	43.1801	54.1927	64.7897	74.1836	78.9011	76.8843	68.6939	56.3522	45.446	34.4819	54.95463 (avg)
tLx	(°F)	32.9598	36.6204	47.8754	59.7391	70.733	80.203	84.7898	82.3809	73.8456	61.1213	49.1393	37.5803	59.74899 (avg)
i	(Btu/ft²day)	622.801	877.2515	1194.204	1525.1169	1758.628	1931.54	1882.997	1667.254	1349.349	1001.304	644.6926	518.7364	1247.823 (avg)
tb	(°R)	488.6871	491.5779	501.7157	512.4138	522.789	532.0187	536.7822	534.9704	527.082	515.071	504.5035	493.6591	513.4392 (avg)
pC	(psia)	0.002	0.0023	0.0035	0.0053	0.0076	0.0103	0.0119	0.0112	0.0086	0.0057	0.0038	0.0025	0.006225 (avg)
pNc	(psia)	14.5705	14.5702	14.569	14.5672	14.5649	14.5622	14.5606	14.5613	14.5639	14.5668	14.5687	14.57	14.56628 (avg)
pVa	(psia)	0.002	0.0023	0.0035	0.0053	0.0076	0.0103	0.0119	0.0112	0.0086	0.0057	0.0038	0.0025	0.006225 (avg)
dPv	(psia)	6.00E-04	7.00E-04	0.0013	0.0021	0.003	0.0039	0.0043	0.0038	0.0029	0.0019	0.0011	6.00E-04	2.18E-03 (avg)
dPb	(psia)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06 (avg)
dTv	(°R)	13.404	15.5163	18.781	22.1856	23.7731	24.0777	23.555	21.9863	20.6067	19.0765	14.7735	12.3937	19.17745 (avg)
hVo	(ft)	1.7239	1.7239	1.7239	1.7239	1.7239	1.7239	1.7239	1.7239	1.7239	1.7239	1.7239	1.7239	1.7239 (avg)
ks	(number)	0.9998	0.9998	0.9997	0.9995	0.9993	0.9991	0.9989	0.999	0.9992	0.9995	0.9997	0.9998	0.999442 (avg)
Vv	(ft^3)	124.4716	124.4716	124.4716	124.4716	124.4716	124.4716	124.4716	124.4716	124.4716	124.4716	124.4716	124.4716	124.4716 (avg)
wVnc	(number)	0.0804	0.0799	0.0782	0.0765	0.075	0.0736	0.073	0.0732	0.0744	0.0762	0.0778	0.0796	0.076483 (avg)
kE	(number)	0.0233	0.0274	0.0333	0.0392	0.0414	0.0413	0.0399	0.0371	0.0351	0.033	0.0252	0.021	0.0331 (avg)
tv	(°R)	489.7614	493.0912	503.7757	515.0447	525.8226	535.3506	540.0304	537.8465	529.4096	516.7982	505.6156	494.5539	515.5917 (avg)
plx	(psia)	0.0023	0.0027	0.0042	0.0064	0.0092	0.0124	0.0142	0.0133	0.0102	0.0067	0.0044	0.0028	0.0074 (avg)
pln	(psia)	0.0018	0.002	0.0029	0.0043	0.0062	0.0085	0.0099	0.0094	0.0073	0.0048	0.0033	0.0022	0.005217 (avg)
Compound Vapor Density (wV(i))														
Distillate Fuel Oil No. 2	(lb/ft^3)	5.04E-05	5.70E-05	8.42E-05	1.00E-04	2.00E-04	2.00E-04	3.00E-04	3.00E-04	2.00E-04	1.00E-04	9.15E-05	6.10E-05	1.45E-04 (avg)
Breathing Losses (Ls)														
Air	(lb)	7.2312	7.6383	10.0528	11.1992	11.9784	11.3404	11.2377	10.4912	9.7455	9.6957	7.3258	6.45	114.3862 (sum)
Distillate Fuel Oil No. 2	(lb)	0.0045	0.0055	0.0108	0.0181	0.0279	0.0358	0.0411	0.0361	0.0258	0.0169	0.0086	0.0049	0.236 (sum)
Total Losses (Lt)														
Air	(lb)	48.2274	44.4309	49.9386	48.9665	50.2101	47.681	48.4565	47.8517	46.4678	48.5576	45.7509	47.0407	573.5797 (sum)
Distillate Fuel Oil No. 2	(lb)	0.0303	0.0317	0.0538	0.0791	0.117	0.1507	0.1775	0.1647	0.1232	0.0848	0.0538	0.0361	1.1027 (sum)

1.1027

Activity Title	TK-DOD De-dust oil day tank From 1/1/2021 to 12/31/2021														
Climate:	Pennsylvania, Harrisburg														
pa	14.5725 psia														
Equipment Tag	TK-DOD De-dust oil day tank														
Storage Vessel Style	Cone Roof Storage														
Calculation Type	Normal Storage Tank (11/2019 Rev.)														
	Working and Breathing Loss Calculation														
Void Space Volume	282.1 gal														
Working Volume	264 gal														
Working Volume	35.2917 ft^3														
Shell Diameter	3 ft														
Straight Side Height	5 ft														
Hro	0.335 ft														
Paint Solar Absorptance	0.25														
Roof Color / Condition	white / average														
Shell Color / Condition	white / average														
pbp	0.03														
pbv	-0.03														
Equipment Comment															
Activity Comment	Imported from Excel on 2:55:57 PM, 5/19/2022.														
Pi (constant)	3.1416														
R (constant)	998.9														

Vessel Contents	141.050 gal	68.000 °F	1001.454 lb	7.703 lb-M			
Mixture Name:	Mixture						
	[Liquid]	mmHg	lb	W[i]	lb-M	X[i]	A[i]	X*Pi*Ai (mmHg)
	Distillate Fuel Oil No	0.4359	1001.4545	1	7.7035	1	1	0.4359
Kp (product factor)	1							
Hl	2.6675 ft							

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Q	(gal)	4487.271	4053.0192	4487.271	4342.5205	4487.271	4342.521	4487.271	4487.271	4342.521	4487.271	4342.521	4487.271	52834 (sum)
Vq	(ft^3)	599.8609	541.8099	599.8609	580.5106	599.8609	580.5106	599.8609	599.8609	580.5106	599.8609	580.5106	599.8609	7062.879 (sum)
N (period)	(number)	16.9972	15.3523	16.9972	16.4489	16.9972	16.4489	16.9972	16.9972	16.4489	16.9972	16.4489	16.9972	200.1283 (sum)
N (scaled to annual)	(number)	200.1288	200.1288	200.1288	200.1288	200.1288	200.1288	200.1288	200.1288	200.1288	200.1288	200.1288	200.1288	
Kn	(number)	0.3166	0.3166	0.3166	0.3166	0.3166	0.3166	0.3166	0.3166	0.3166	0.3166	0.3166	0.3166	0.3166 (avg)
Days	(number)	31	28	31	30	31	30	31	31	30	31	30	31	365 (sum)
Compound Molecular Weights (lb/lb-M)														
Distillate Fuel Oil No. 2	(Mv)	130	130	130	130	130	130	130	130	130	130	130	130	130 (lb/lb-mole)
Compound Vapor Pressures (Pva)														
Distillate Fuel Oil No. 2	(mmHg)	0.1054	0.12	0.1812	0.2719	0.392	0.532	0.6164	0.5791	0.4459	0.2935	0.1974	0.1288	0.321967 (avg)
Working Loss Calculations (Uncontrolled)														
tLa	(°F)	29.6088	32.7413	43.1801	54.1927	64.7897	74.1836	78.9011	76.8843	68.6939	56.3522	45.446	34.4819	54.95463 (average)
tLn	(°F)	26.2578	28.8623	38.4849	48.6463	58.8464	68.1642	73.0123	71.3878	63.5422	51.5831	41.7526	31.3834	50.16028 (average)
tLx	(°F)	32.9598	36.6204	47.8754	59.7391	70.733	80.203	84.7898	82.3809	73.8456	61.1213	49.1393	37.5803	59.74899 (average)
tb	(°R)	488.6871	491.5779	501.7157	512.4138	522.789	532.0187	536.7822	534.9704	527.082	515.071	504.5035	493.6591	513.4392 (average)
pC	(psia)	0.002	0.0023	0.0035	0.0053	0.0076	0.0103	0.0119	0.0112	0.0086	0.0057	0.0038	0.0025	0.006225 (average)
pNc	(psia)	14.5705	14.5702	14.569	14.5672	14.5649	14.5622	14.5606	14.5613	14.5639	14.5668	14.5687	14.57	14.56628 (average)
pVa	(psia)	0.002	0.0023	0.0035	0.0053	0.0076	0.0103	0.0119	0.0112	0.0086	0.0057	0.0038	0.0025	0.006225 (average)
hVo	(ft)	2.6675	2.6675	2.6675	2.6675	2.6675	2.6675	2.6675	2.6675	2.6675	2.6675	2.6675	2.6675	2.6675 (average)
Vv	(ft^3)	18.8556	18.8556	18.8556	18.8556	18.8556	18.8556	18.8556	18.8556	18.8556	18.8556	18.8556	18.8556	18.8556 (average)
wVnc	(number)	0.0804	0.0799	0.0782	0.0765	0.075	0.0736	0.073	0.0732	0.0744	0.0762	0.0778	0.0796	0.076483 (average)
kE	(number)	0.0233	0.0274	0.0333	0.0392	0.0414	0.0413	0.0399	0.0371	0.0351	0.033	0.0252	0.021	0.0331 (average)
tv	(°R)	489.7614	493.0912	503.7757	515.0447	525.8226	535.3506	540.0304	537.8465	529.4096	516.7982	505.6156	494.5539	515.5917 (average)
taa	(°R)	488.22	490.92	500.82	511.27	521.47	530.57	535.37	533.72	526.07	514.32	504.02	493.27	512.5033 (average)
kb	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
kn	(number)	0.3166	0.3166	0.3166	0.3166	0.3166	0.3166	0.3166	0.3166	0.3166	0.3166	0.3166	0.3166	0.3166 (average)
n	(number)	16.9972	15.3523	16.9972	16.4489	16.9972	16.4489	16.9972	16.9972	16.4489	16.9972	16.4489	16.9972	200.1283 (sum)
Compound Vapor Density (vW(i))														
Distillate Fuel Oil No. 2	(lb/ft^3)	5.04E-05	5.70E-05	8.42E-05	1.00E-04	2.00E-04	2.00E-04	3.00E-04	3.00E-04	2.00E-04	1.00E-04	9.15E-05	6.10E-05	1.45E-04 (avg)
Working Losses (Lw)														
Air	(lb)	15.2627	13.6977	14.8493	14.0607	14.2335	13.5295	13.8564	13.9092	13.6716	14.4681	14.3055	15.1118	170.956 (sum)
Distillate Fuel Oil No. 2	(lb)	0.0096	0.0098	0.016	0.0227	0.0332	0.0428	0.0508	0.0479	0.0363	0.0253	0.0168	0.0116	0.3228 (sum)
Breathing Loss Calculations (Uncontrolled)														
tan	(°R)	480.87	482.97	491.67	500.87	510.77	520.27	525.27	523.97	516.17	504.27	495.77	486.27	503.2617 (avg)
taa	(°R)	488.22	490.92	500.82	511.27	521.47	530.57	535.37	533.72	526.07	514.32	504.02	493.27	512.5033 (avg)
tax	(°R)	495.57	498.87	509.97	521.67	532.17	540.87	545.47	543.47	535.97	524.37	512.27	500.27	521.745 (avg)
tLn	(°F)	26.2578	28.8623	38.4849	48.6463	58.8464	68.1642	73.0123	71.3878	63.5422	51.5831	41.7526	31.3834	50.16028 (avg)
tLa	(°F)	29.6088	32.7413	43.1801	54.1927	64.7897	74.1836	78.9011	76.8843	68.6939	56.3522	45.446	34.4819	54.95463 (avg)
tLx	(°F)	32.9598	36.6204	47.8754	59.7391	70.733	80.203	84.7898	82.3809	73.8456	61.1213	49.1393	37.5803	59.74899 (avg)
i	(Btu/ft²day)	622.801	877.2515	1194.204	1525.1169	1758.628	1931.54	1882.997	1667.254	1349.349	1001.304	644.6926	518.7364	1247.823 (avg)
tb	(°R)	488.6871	491.5779	501.7157	512.4138	522.789	532.0187	536.7822	534.9704	527.082	515.071	504.5035	493.6591	513.4392 (avg)
pC	(psia)	0.002	0.0023	0.0035	0.0053	0.0076	0.0103	0.0119	0.0112	0.0086	0.0057	0.0038	0.0025	0.006225 (avg)
pNc	(psia)	14.5705	14.5702	14.569	14.5672	14.5649	14.5622	14.5606	14.5613	14.5639	14.5668	14.5687	14.57	14.56628 (avg)
pVa	(psia)	0.002	0.0023	0.0035	0.0053	0.0076	0.0103	0.0119	0.0112	0.0086	0.0057	0.0038	0.0025	0.006225 (avg)
dPv	(psia)	6.00E-04	7.00E-04	0.0013	0.0021	0.003	0.0039	0.0043	0.0038	0.0029	0.0019	0.0011	6.00E-04	2.18E-03 (avg)
dPb	(psia)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06 (avg)
dTv	(°R)	13.404	15.5163	18.781	22.1856	23.7731	24.0777	23.555	21.9863	20.6067	19.0765	14.7735	12.3937	19.17745 (avg)
hVo	(ft)	2.6675	2.6675	2.6675	2.6675	2.6675	2.6675	2.6675	2.6675	2.6675	2.6675	2.6675	2.6675	2.6675 (avg)
ks	(number)	0.9997	0.9997	0.9995	0.9993	0.9989	0.9985	0.9983	0.9984	0.9988	0.9992	0.9995	0.9996	0.999117 (avg)
Vv	(ft^3)	18.8556	18.8556	18.8556	18.8556	18.8556	18.8556	18.8556	18.8556	18.8556	18.8556	18.8556	18.8556	18.8556 (avg)
wVnc	(number)	0.0804	0.0799	0.0782	0.0765	0.075	0.0736	0.073	0.0732	0.0744	0.0762	0.0778	0.0796	0.076483 (avg)
kE	(number)	0.0233	0.0274	0.0333	0.0392	0.0414	0.0413	0.0399	0.0371	0.0351	0.033	0.0252	0.021	0.0331 (avg)
tv	(°R)	489.7614	493.0912	503.7757	515.0447	525.8226	535.3506	540.0304	537.8465	529.4096	516.7982	505.6156	494.5539	515.5917 (avg)
plx	(psia)	0.0023	0.0027	0.0042	0.0064	0.0092	0.0124	0.0142	0.0133	0.0102	0.0067	0.0044	0.0028	0.0074 (avg)
pln	(psia)	0.0018	0.002	0.0029	0.0043	0.0062	0.0085	0.0099	0.0094	0.0073	0.0048	0.0033	0.0022	0.005217 (avg)
Compound Vapor Density (wV(i))														
Distillate Fuel Oil No. 2	(lb/ft^3)	5.04E-05	5.70E-05	8.42E-05	1.00E-04	2.00E-04	2.00E-04	3.00E-04	3.00E-04	2.00E-04	1.00E-04	9.15E-05	6.10E-05	1.45E-04 (avg)
Breathing Losses (Ls)														
Air	(lb)	1.0954	1.1571	1.5229	1.6965	1.8146	1.7179	1.7023	1.5893	1.4763	1.4688	1.1098	0.9771	17.328 (sum)
Distillate Fuel Oil No. 2	(lb)	7.00E-04	8.00E-04	0.0016	0.0027	0.0042	0.0054	0.0062	0.0055	0.0039	0.0026	0.0013	7.00E-04	3.56E-02 (sum)
Total Losses (Lt)														
Air	(lb)	16.3582	14.8548	16.3722	15.7572	16.0481	15.2474	15.5588	15.4985	15.1479	15.9369	15.4153	16.0888	188.2841 (sum)
Distillate Fuel Oil No. 2	(lb)	0.0103	0.0106	0.0176	0.0255	0.0374	0.0482	0.057	0.0534	0.0402	0.0278	0.0181	0.0123	0.3584 (sum)
														0.3584

Activity Title	TK-GLY - Glycol Tank From 1/1/2021 to 12/31/2021
Climate:	Pennsylvania, Harrisburg
pa	14.5725 psia
Equipment Tag	TK-GLY - Glycol Tank
Storage Vessel Style	Horizontal Storage
Calculation Type	Normal Storage Tank (11/2019 Rev.)
	Working and Breathing Loss Calculation
Void Space Volume	456.85 gal
Working Volume	396 gal
Working Volume	52.9375 ft^3
Shell Diameter	3.6 ft
Straight Side Height	6 ft
Paint Solar Absorptance	0.25
Roof Color / Condition	white / average
Shell Color / Condition	white / average
pbp	0.03
pbv	-0.03
Equipment Comment	
Activity Comment	Imported from Excel on 2:55:56 PM, 5/19/2022.
Pi (constant)	3.1416
R (constant)	998.9

Vessel Contents	228.425 gal	68.000 °F	2122.663 lb		34.198 lb-M			
Mixture Name:	Mixture							
	[Liquid]	mmHg	lb	W[i]	lb-M	X[i]	A[i]	X*Pi*Ai (mmHg)
	Ethylene Glycol	0.0925	2122.6628	1	34.1979	1	1	0.0925
Kp (product factor)		1						

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Q	(gal)	403.5945	364.537	403.5945	390.5753	403.5945	390.5753	403.5945	403.5945	390.5753	403.5945	390.5753	403.5945	4752 (sum)
Vq	(ft^3)	53.9527	48.7315	53.9527	52.2123	53.9527	52.2123	53.9527	53.9527	52.2123	53.9527	52.2123	53.9527	635.2496 (sum)
N (period)	(number)	1.0192	0.9205	1.0192	0.9863	1.0192	0.9863	1.0192	1.0192	0.9863	1.0192	0.9863	1.0192	12.0001 (sum)
N (scaled to annual)	(number)	12	12	12	12	12	12	12	12	12	12	12	12	
Kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (avg)
Days	(number)	31	28	31	30	31	30	31	31	30	31	30	31	365 (sum)
Compound Molecular Weights (lb/lb-M)														
Ethylene Glycol	(Mv)	62.07	62.07	62.07	62.07	62.07	62.07	62.07	62.07	62.07	62.07	62.07	62.07	62.07 (lb/lb-mole)
Compound Vapor Pressures (Pva)														
Ethylene Glycol	(mmHg)	0.0149	0.0174	0.0292	0.0494	0.0801	0.1213	0.1485	0.1362	0.0953	0.0546	0.0326	0.019	0.066542 (avg)
Working Loss Calculations (Uncontrolled)														
tLa	(°F)	29.6088	32.7413	43.1801	54.1927	64.7897	74.1836	78.9011	76.8843	68.6939	56.3522	45.446	34.4819	54.95463 (average)
tLn	(°F)	26.2578	28.8623	38.4849	48.6463	58.8464	68.1642	73.0123	71.3878	63.5422	51.5831	41.7526	31.3834	50.16028 (average)
tLx	(°F)	32.9598	36.6204	47.8754	59.7391	70.733	80.203	84.7898	82.3809	73.8456	61.1213	49.1393	37.5803	59.74899 (average)
tb	(°R)	488.6871	491.5779	501.7157	512.4138	522.789	532.0187	536.7822	534.9704	527.082	515.071	504.5035	493.6591	513.4392 (average)
pC	(psia)	3.00E-04	3.00E-04	6.00E-04	0.001	0.0015	0.0023	0.0029	0.0026	0.0018	0.0011	6.00E-04	4.00E-04	1.28E-03 (average)
pNc	(psia)	14.5722	14.5722	14.5719	14.5715	14.571	14.5702	14.5696	14.5699	14.5707	14.5714	14.5719	14.5721	14.57122 (average)
pVa	(psia)	3.00E-04	3.00E-04	6.00E-04	0.001	0.0015	0.0023	0.0029	0.0026	0.0018	0.0011	6.00E-04	4.00E-04	1.28E-03 (average)
hVo	(ft)	1.4137	1.4137	1.4137	1.4137	1.4137	1.4137	1.4137	1.4137	1.4137	1.4137	1.4137	1.4137	1.4137 (average)
Vv	(ft^3)	30.5569	30.5569	30.5569	30.5569	30.5569	30.5569	30.5569	30.5569	30.5569	30.5569	30.5569	30.5569	30.5569 (average)
wVnc	(number)	0.0804	0.0799	0.0782	0.0765	0.075	0.0737	0.073	0.0733	0.0744	0.0762	0.0779	0.0796	0.076508 (average)
kE	(number)	0.0233	0.0274	0.0332	0.0391	0.0413	0.0411	0.0397	0.0369	0.0349	0.0329	0.0251	0.021	0.032992 (average)
tv	(°R)	489.7614	493.0912	503.7757	515.0447	525.8226	535.3506	540.0304	537.8465	529.4096	516.7982	505.6156	494.5539	515.5917 (average)
taa	(°R)	488.22	490.92	500.82	511.27	521.47	530.57	535.37	533.72	526.07	514.32	504.02	493.27	512.5033 (average)
kb	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
n	(number)	1.0192	0.9205	1.0192	0.9863	1.0192	0.9863	1.0192	1.0192	0.9863	1.0192	0.9863	1.0192	12.0001 (sum)
Compound Vapor Density (vW(i))														
Ethylene Glycol	(lb/ft^3)	3.40E-06	3.96E-06	6.49E-06	1.07E-05	1.70E-05	2.53E-05	3.08E-05	2.83E-05	2.01E-05	1.18E-05	7.22E-06	4.30E-06	1.41E-05 (avg)
Working Losses (Lw)														
Air	(lb)	4.3369	3.8923	4.2198	3.996	4.0456	3.846	3.9393	3.9541	3.8861	4.1119	4.0653	4.2941	48.5874 (sum)
Ethylene Glycol	(lb)	2.00E-04	2.00E-04	4.00E-04	6.00E-04	9.00E-04	0.0013	0.0017	0.0015	0.0011	6.00E-04	4.00E-04	2.00E-04	9.10E-03 (sum)
Breathing Loss Calculations (Uncontrolled)														
tan	(°R)	480.87	482.97	491.67	500.87	510.77	520.27	525.27	523.97	516.17	504.27	495.77	486.27	503.2617 (avg)
taa	(°R)	488.22	490.92	500.82	511.27	521.47	530.57	535.37	533.72	526.07	514.32	504.02	493.27	512.5033 (avg)
tax	(°R)	495.57	498.87	509.97	521.67	532.17	540.87	545.47	543.47	535.97	524.37	512.27	500.27	521.745 (avg)
tLn	(°F)	26.2578	28.8623	38.4849	48.6463	58.8464	68.1642	73.0123	71.3878	63.5422	51.5831	41.7526	31.3834	50.16028 (avg)
tLa	(°F)	29.6088	32.7413	43.1801	54.1927	64.7897	74.1836	78.9011	76.8843	68.6939	56.3522	45.446	34.4819	54.95463 (avg)
tLx	(°F)	32.9598	36.6204	47.8754	59.7391	70.733	80.203	84.7898	82.3809	73.8456	61.1213	49.1393	37.5803	59.74899 (avg)
i	(Btu/ft²day)	622.801	877.2515	1194.204	1525.1169	1758.628	1931.54	1882.997	1667.254	1349.349	1001.304	644.6926	518.7364	1247.823 (avg)
tb	(°R)	488.6871	491.5779	501.7157	512.4138	522.789	532.0187	536.7822	534.9704	527.082	515.071	504.5035	493.6591	513.4392 (avg)
pC	(psia)	3.00E-04	3.00E-04	6.00E-04	0.001	0.0015	0.0023	0.0029	0.0026	0.0018	0.0011	6.00E-04	4.00E-04	1.28E-03 (avg)
pNc	(psia)	14.5722	14.5722	14.5719	14.5715	14.571	14.5702	14.5696	14.5699	14.5707	14.5714	14.5719	14.5721	14.57122 (avg)
pVa	(psia)	3.00E-04	3.00E-04	6.00E-04	0.001	0.0015	0.0023	0.0029	0.0026	0.0018	0.0011	6.00E-04	4.00E-04	1.28E-03 (avg)
dPv	(psia)	9.89E-05	1.00E-04	3.00E-04	5.00E-04	8.00E-04	0.0012	0.0015	0.0013	8.00E-04	5.00E-04	2.00E-04	1.00E-04	6.17E-04 (avg)
dPb	(psia)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06 (avg)
dTv	(°R)	13.404	15.5163	18.781	22.1856	23.7731	24.0777	23.555	21.9863	20.6067	19.0765	14.7735	12.3937	19.17745 (avg)
hVo	(ft)	1.4137	1.4137	1.4137	1.4137	1.4137	1.4137	1.4137	1.4137	1.4137	1.4137	1.4137	1.4137	1.4137 (avg)
ks	(number)	1	1	1	0.9999	0.9999	0.9998	0.9998	0.9998	0.9999	0.9999	1	1	0.999917 (avg)
Vv	(ft^3)	30.5569	30.5569	30.5569	30.5569	30.5569	30.5569	30.5569	30.5569	30.5569	30.5569	30.5569	30.5569	30.5569 (avg)
wVnc	(number)	0.0804	0.0799	0.0782	0.0765	0.075	0.0737	0.073	0.0733	0.0744	0.0762	0.0779	0.0796	0.076508 (avg)
kE	(number)	0.0233	0.0274	0.0332	0.0391	0.0413	0.0411	0.0397	0.0369	0.0349	0.0329	0.0251	0.021	0.032992 (avg)
tv	(°R)	489.7614	493.0912	503.7757	515.0447	525.8226	535.3506	540.0304	537.8465	529.4096	516.7982	505.6156	494.5539	515.5917 (avg)
plx	(psia)	3.00E-04	4.00E-04	7.00E-04	0.0012	0.002	0.003	0.0037	0.0033	0.0023	0.0013	8.00E-04	4.00E-04	1.62E-03 (avg)
pln	(psia)	2.00E-04	3.00E-04	4.00E-04	7.00E-04	0.0012	0.0018	0.0022	0.0021	0.0015	8.00E-04	5.00E-04	3.00E-04	1.00E-03 (avg)
Compound Vapor Density (wV(i))														
Ethylene Glycol	(lb/ft^3)	3.40E-06	3.96E-06	6.49E-06	1.07E-05	1.70E-05	2.53E-05	3.08E-05	2.83E-05	2.01E-05	1.18E-05	7.22E-06	4.30E-06	1.41E-05 (avg)
Breathing Losses (Ls)														
Air	(lb)	1.773	1.8726	2.4634	2.7426	2.9313	2.7732	2.747	2.5648	2.384	2.3739	1.7948	1.5811	28.0017 (sum)
Ethylene Glycol	(lb)	7.49E-05	9.27E-05	2.00E-04	4.00E-04	7.00E-04	0.001	0.0012	0.001	6.00E-04	4.00E-04	2.00E-04	8.55E-05	5.95E-03 (sum)
Total Losses (Lt)														
Air	(lb)	6.1099	5.7649	6.6831	6.7386	6.9769	6.6192	6.6862	6.519	6.2701	6.4858	5.8601	5.8752	76.589 (sum)
Ethylene Glycol	(lb)	3.00E-04	3.00E-04	6.00E-04	9.00E-04	0.0016	0.0023	0.0028	0.0025	0.0017	0.001	5.00E-04	3.00E-04	1.48E-02 (sum)

1.48E-02

Activity Title	TK-RS (1-6) Resin Tank From 1/1/2021 to 12/31/2021
Climate:	Pennsylvania, Harrisburg
pa	14.5725 psia
Equipment Tag	TK-RS (1-6) Resin Tank
Storage Vessel Style	Cone Roof Storage
Calculation Type	Isothermal Storage Tank (11/2019 Rev.)
	Working Loss Calculation
Void Space Volume	17592.22 gal
Working Volume	13314 gal
Working Volume	1779.8229 ft^3
Shell Diameter	11.41 ft
Straight Side Height	23 ft
Hro	0 ft
Paint Solar Absorptance	0.25
Roof Color / Condition	white / average
Shell Color / Condition	white / average
pbp	0
pbv	0
Equipment Comment	
Activity Comment	Imported from Excel on 2:55:56 PM, 5/19/2022.
Pi (constant)	3.1416
R (constant)	998.9

Vessel Contents	8796.110 gal	68.000 °F	73359.990 lb	4056.247 lb-M

Mixture Name: Rockwool Resin

[Liquid]	mmHg	lb	W[i]	lb-M	X[i]	A[i]	X*Pi*Ai (mmHg)
Formaldehyde	3003.344	144.869	0.001975	4.8241	0.001189	1	3.5719
Methanol	93.743	40.6671	0.000554	1.2693	0.000313	1	0.0293
Phenol	0	259.1744	0.003533	2.7539	0.000679	1	0
Water	17.3515	72915.279	0.993938	4047.3995	0.997819	1	17.3136

Kp (product factor)	1	
Hl	11.5 ft	

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Q	(gal)	161543.3	145910.071	161543.3	156332.2192	161543.3	156332.2	161543.3	161543.3	156332.2	161543.3	156332.2	161543.3	1902042 (sum)
Vq	(ft^3)	21595.2	19505.3393	21595.2	20898.5778	21595.2	20898.58	21595.2	21595.2	20898.58	21595.2	20898.58	21595.2	254266 (sum)
N (period)	(number)	12.1333	10.9591	12.1333	11.7419	12.1333	11.7419	12.1333	12.1333	11.7419	12.1333	11.7419	12.1333	142.8598 (sum)
N (scaled to annual)	(number)	142.8603	142.8603	142.8603	142.8603	142.8603	142.8603	142.8603	142.8603	142.8603	142.8603	142.8603	142.8603	
Kn	(number)	0.3767	0.3767	0.3767	0.3767	0.3767	0.3767	0.3767	0.3767	0.3767	0.3767	0.3767	0.3767	0.3767 (avg)
Days	(number)	31	28	31	30	31	30	31	31	30	31	30	31	365 (sum)
Compound Molecular Weights (lb/lb-M)														
Formaldehyde	(Mv)	30.03	30.03	30.03	30.03	30.03	30.03	30.03	30.03	30.03	30.03	30.03	30.03	30.03 (lb/lb-mole
Methanol	(Mv)	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04 (lb/lb-mole
Phenol	(Mv)	94.1128	94.1128	94.1128	94.1128	94.1128	94.1128	94.1128	94.1128	94.1128	94.1128	94.1128	94.1128	94.1128 (lb/lb-mole
Water	(Mv)	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153 (lb/lb-mole
Working Loss Calculations (Uncontrolled)														
kb	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
kn	(number)	0.3767	0.3767	0.3767	0.3767	0.3767	0.3767	0.3767	0.3767	0.3767	0.3767	0.3767	0.3767	0.3767 (average)
n	(number)	12.1333	10.9591	12.1333	11.7419	12.1333	11.7419	12.1333	12.1333	11.7419	12.1333	11.7419	12.1333	142.8598 (sum)
Compound Vapor Density (vW(i))														
Formaldehyde	(lb/ft^3)	4.00E-04	4.00E-04	4.00E-04	4.00E-04	4.00E-04	4.00E-04	4.00E-04	4.00E-04	4.00E-04	4.00E-04	4.00E-04	4.00E-04	4.00E-04 (avg)
Methanol	(lb/ft^3)	3.21E-06	3.21E-06	3.21E-06	3.21E-06	3.21E-06	3.21E-06	3.21E-06	3.21E-06	3.21E-06	3.21E-06	3.21E-06	3.21E-06	3.21E-06 (avg)
Phenol	(lb/ft^3)	0	0	0	0	0	0	0	0	0	0	0	0	0 (avg)
Water	(lb/ft^3)	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011 (avg)
Working Losses (Lw)														
Air	(lb)	589.4531	532.4092	589.4531	570.4385	589.4531	570.4385	589.4531	589.4531	570.4385	589.4531	570.4385	589.4531	6940.335 (sum)
Formaldehyde	(lb)	2.9796	2.6912	2.9796	2.8835	2.9796	2.8835	2.9796	2.9796	2.8835	2.9796	2.8835	2.9796	35.0824 (sum)
Methanol	(lb)	0.0261	0.0236	0.0261	0.0253	0.0261	0.0253	0.0261	0.0261	0.0253	0.0261	0.0253	0.0261	0.3075 (sum)
Phenol	(lb)	0	0	0	0	0	0	0	0	0	0	0	0	0 (sum)
Water	(lb)	8.6642	7.8257	8.6642	8.3847	8.6642	8.3847	8.6642	8.6642	8.3847	8.6642	8.3847	8.6642	102.0139 (sum)
Total Losses (Lt)														
Air	(lb)	589.4531	532.4092	589.4531	570.4385	589.4531	570.4385	589.4531	589.4531	570.4385	589.4531	570.4385	589.4531	6940.335 (sum)
Formaldehyde	(lb)	2.9796	2.6912	2.9796	2.8835	2.9796	2.8835	2.9796	2.9796	2.8835	2.9796	2.8835	2.9796	35.0824 (sum)
Methanol	(lb)	0.0261	0.0236	0.0261	0.0253	0.0261	0.0253	0.0261	0.0261	0.0253	0.0261	0.0253	0.0261	0.3075 (sum)
Phenol	(lb)	0	0	0	0	0	0	0	0	0	0	0	0	0 (sum)
Water	(lb)	8.6642	7.8257	8.6642	8.3847	8.6642	8.3847	8.6642	8.6642	8.3847	8.6642	8.3847	8.6642	102.0139 (sum)
														137.4038

Activity Title	TK-TO1 Thermal Oil Expansion Tank From 1/1/2021 to 12/31/2021
Climate:	N/A
pa	N/A
Equipment Tag	TK-TO1 Thermal Oil Expansion Tank
Storage Vessel Style	Horizontal Storage
Calculation Type	Isothermal Storage Tank (11/2019 Rev.)
	Working Loss Calculation
Void Space Volume	343.7 gal
Working Volume	212 gal
Working Volume	28.3403 ft^3
Shell Diameter	3 ft
Straight Side Height	6.5 ft
Paint Solar Absorptance	0.25
Roof Color / Condition	white / average
Shell Color / Condition	white / average
pbp	0
pbv	0
Equipment Comment	
Activity Comment	Imported from Excel on 2:55:56 PM, 5/19/2022.
Pi (constant)	3.1416
R (constant)	998.9

Vessel Contents	171.850 gal	572.000 °F	1266.361 lb	6.528 lb-M
Mixture Name:	Mixture			

	[Liquid]	mmHg	lb	W[i]	lb-M	X[i]	A[i]	X*Pi*Ai (mmHg)
	Paratherm	474.4084	1266.3606	1	6.5276	1	1	474.4084

Kp (product factor)	1

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Q	(gal)	15.2877	13.8082	15.2877	14.7945	15.2877	14.7945	15.2877	15.2877	14.7945	15.2877	14.7945	15.2877	180.0001	(sum)
Vq	(ft^3)	2.0437	1.8459	2.0437	1.9777	2.0437	1.9777	2.0437	2.0437	1.9777	2.0437	1.9777	2.0437	24.0626	(sum)
N (period)	(number)	0.0721	0.0651	0.0721	0.0698	0.0721	0.0698	0.0721	0.0721	0.0698	0.0721	0.0698	0.0721	0.849	(sum)
N (scaled to annual)	(number)	0.8491	0.8491	0.8491	0.8491	0.8491	0.8491	0.8491	0.8491	0.8491	0.8491	0.8491	0.8491		
Kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1	(avg)
Days	(number)	31	28	31	30	31	30	31	31	30	31	30	31	365	(sum)
Compound Molecular Weights (lb/lb-M)															
Paratherm	(Mv)	194	194	194	194	194	194	194	194	194	194	194	194	194	(lb/lb-mole
Working Loss Calculations (Uncontrolled)															
kb	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1	(average)
kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1	(average)
n	(number)	0.0721	0.0651	0.0721	0.0698	0.0721	0.0698	0.0721	0.0721	0.0698	0.0721	0.0698	0.0721	0.849	(sum)
Compound Vapor Density (vW(i))															
Paratherm	(lb/ft^3)	0.1608	0.1608	0.1608	0.1608	0.1608	0.1608	0.1608	0.1608	0.1608	0.1608	0.1608	0.1608	0.1608	(avg)
Working Losses (Lw)															
Air	(lb)	0.0295	0.0267	0.0295	0.0286	0.0295	0.0286	0.0295	0.0295	0.0286	0.0295	0.0286	0.0295	0.3476	(sum)
Paratherm	(lb)	0.3285	0.2967	0.3285	0.3179	0.3285	0.3179	0.3285	0.3285	0.3179	0.3285	0.3179	0.3285	3.8678	(sum)
Total Losses (Lt)															
Air	(lb)	0.0295	0.0267	0.0295	0.0286	0.0295	0.0286	0.0295	0.0295	0.0286	0.0295	0.0286	0.0295	0.3476	(sum)
Paratherm	(lb)	0.3285	0.2967	0.3285	0.3179	0.3285	0.3179	0.3285	0.3285	0.3179	0.3285	0.3179	0.3285	3.8678	(sum)
														3.8678	

Activity Title	TK-TO2 Thermal Oil Drain Tank From 1/1/2021 to 12/31/2021
Climate:	N/A
pa	N/A
Equipment Tag	TK-TO2 Thermal Oil Drain Tank
Storage Vessel Style	Horizontal Storage
Calculation Type	Isothermal Storage Tank (11/2019 Rev.)
	Working Loss Calculation
Void Space Volume	343.7 gal
Working Volume	159 gal
Working Volume	21.2552 ft^3
Shell Diameter	3 ft
Straight Side Height	6.5 ft
Paint Solar Absorptance	0.25
Roof Color / Condition	white / average
Shell Color / Condition	white / average
pbp	0
pbv	0
Equipment Comment	
Activity Comment	Imported from Excel on 2:55:56 PM, 5/19/2022.
Pi (constant)	3.1416
R (constant)	998.9

Vessel Contents	171.850 gal	572.000 °F	1266.361 lb	6.528 lb-M
Mixture Name:	Mixture			

[Liquid]	mmHg	lb	W[i]	lb-M	X[i]	A[i]	X*Pi*Ai (mmHg)
Paratherm	474.4084	1266.3606	1	6.5276	1	1	474.4084

Kp (product factor)	1

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Q	(gal)	15.2877	13.8082	15.2877	14.7945	15.2877	14.7945	15.2877	15.2877	14.7945	15.2877	14.7945	15.2877	180.0001 (sum)
Vq	(ft^3)	2.0437	1.8459	2.0437	1.9777	2.0437	1.9777	2.0437	2.0437	1.9777	2.0437	1.9777	2.0437	24.0626 (sum)
N (period)	(number)	0.0961	0.0868	0.0961	0.093	0.0961	0.093	0.0961	0.0961	0.093	0.0961	0.093	0.0961	1.1315 (sum)
N (scaled to annual)	(number)	1.1321	1.1321	1.1321	1.1321	1.1321	1.1321	1.1321	1.1321	1.1321	1.1321	1.1321	1.1321	
Kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (avg)
Days	(number)	31	28	31	30	31	30	31	31	30	31	30	31	365 (sum)
Compound Molecular Weights (lb/lb-M)														
Paratherm	(Mv)	194	194	194	194	194	194	194	194	194	194	194	194	194 (lb/lb-mole
Working Loss Calculations (Uncontrolled)														
kb	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
n	(number)	0.0961	0.0868	0.0961	0.093	0.0961	0.093	0.0961	0.0961	0.093	0.0961	0.093	0.0961	1.1315 (sum)
Compound Vapor Density (vW(i))														
Paratherm	(lb/ft^3)	0.1608	0.1608	0.1608	0.1608	0.1608	0.1608	0.1608	0.1608	0.1608	0.1608	0.1608	0.1608	0.1608 (avg)
Working Losses (Lw)														
Air	(lb)	0.0295	0.0267	0.0295	0.0286	0.0295	0.0286	0.0295	0.0295	0.0286	0.0295	0.0286	0.0295	0.3476 (sum)
Paratherm	(lb)	0.3285	0.2967	0.3285	0.3179	0.3285	0.3179	0.3285	0.3285	0.3179	0.3285	0.3179	0.3285	3.8678 (sum)
Total Losses (Lt)														
Air	(lb)	0.0295	0.0267	0.0295	0.0286	0.0295	0.0286	0.0295	0.0295	0.0286	0.0295	0.0286	0.0295	0.3476 (sum)
Paratherm	(lb)	0.3285	0.2967	0.3285	0.3179	0.3285	0.3179	0.3285	0.3285	0.3179	0.3285	0.3179	0.3285	3.8678 (sum)
														3.8678

Activity Title	TK-TO3 Thermal Oil Tank From 1/1/2021 to 12/31/2021														
Climate:	N/A														
pa	N/A														
Equipment Tag	TK-TO3 Thermal Oil Tank														
Storage Vessel Style	Horizontal Storage														
Calculation Type	Isothermal Storage Tank (11/2019 Rev.)														
	Working Loss Calculation														
Void Space Volume	5309.44 gal														
Working Volume	5283 gal														
Working Volume	706.2344 ft^3														
Shell Diameter	6.56 ft														
Straight Side Height	21 ft														
Paint Solar Absorptance	0.25														
Roof Color / Condition	white / average														
Shell Color / Condition	white / average														
pbp	0														
pbv	0														
Equipment Comment															
Activity Comment	Imported from Excel on 2:55:56 PM, 5/19/2022.														
Pi (constant)	3.1416														
R (constant)	998.9														
Vessel Contents	2654.720 gal	392.000 °F	19562.601 lb		100.698 lb-M										
Mixture Name:	Mixture														
	[Liquid]	mmHg	lb	W[i]	lb-M	X[i]	A[i]	X*Pi*Ai (mmHg)							
	Power Steering Fluic	113.8539	19562.6005	1	100.698	1	1	113.8539							
Kp (product factor)	1														

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Q	(gal)	59.2822	53.5452	59.2822	57.3699	59.2822	57.3699	59.2822	59.2822	57.3699	59.2822	57.3699	59.2822	698.0002	(sum)
Vq	(ft^3)	7.9249	7.158	7.9249	7.6692	7.9249	7.6692	7.9249	7.9249	7.6692	7.9249	7.6692	7.9249	93.3091	(sum)
N (period)	(number)	0.0112	0.0101	0.0112	0.0109	0.0112	0.0109	0.0112	0.0112	0.0109	0.0112	0.0109	0.0112	0.1321	(sum)
N (scaled to annual)	(number)	0.1321	0.1321	0.1321	0.1321	0.1321	0.1321	0.1321	0.1321	0.1321	0.1321	0.1321	0.1321		
Kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1	(avg)
Days	(number)	31	28	31	30	31	30	31	31	30	31	30	31	365	(sum)
Compound Molecular Weights (lb/lb-M)															
Power Steering Fluid	(Mv)	194.27	194.27	194.27	194.27	194.27	194.27	194.27	194.27	194.27	194.27	194.27	194.27	194.27	(lb/lb-mol
Working Loss Calculations (Uncontrolled)															
kb	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1	(average)
kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1	(average)
n	(number)	0.0112	0.0101	0.0112	0.0109	0.0112	0.0109	0.0112	0.0112	0.0109	0.0112	0.0109	0.0112	0.1321	(sum)
Compound Vapor Density (vW(i))															
Power Steering Fluid	(lb/ft^3)	0.0468	0.0468	0.0468	0.0468	0.0468	0.0468	0.0468	0.0468	0.0468	0.0468	0.0468	0.0468	0.0468	(avg)
Working Losses (Lw)															
Air	(lb)	0.3139	0.2835	0.3139	0.3037	0.3139	0.3037	0.3139	0.3139	0.3037	0.3139	0.3037	0.3139	3.6956	(sum)
Power Steering Fluid	(lb)	0.3709	0.335	0.3709	0.3589	0.3709	0.3589	0.3709	0.3709	0.3589	0.3709	0.3589	0.3709	4.3669	(sum)
Total Losses (Lt)															
Air	(lb)	0.3139	0.2835	0.3139	0.3037	0.3139	0.3037	0.3139	0.3139	0.3037	0.3139	0.3037	0.3139	3.6956	(sum)
Power Steering Fluid	(lb)	0.3709	0.335	0.3709	0.3589	0.3709	0.3589	0.3709	0.3709	0.3589	0.3709	0.3589	0.3709	4.3669	(sum)
														4.3669	

Activity Title	TK-TO4 Thermal Oil Expansion Tank From 1/1/2021 to 12/31/2021														
Climate:	N/A														
pa	N/A														
Equipment Tag	TK-TO4 Thermal Oil Expansion Tank														
Storage Vessel Style	Horizontal Storage														
Calculation Type	Isothermal Storage Tank (11/2019 Rev.)														
	Working Loss Calculation														
Void Space Volume	2096.26 gal														
Working Volume	1928 gal														
Working Volume	257.7361 ft^3														
Shell Diameter	5.249 ft														
Straight Side Height	12.95 ft														
Paint Solar Absorptance	0.25														
Roof Color / Condition	white / average														
Shell Color / Condition	white / average														
pbp	0														
pbv	0														
Equipment Comment															
Activity Comment	Imported from Excel on 2:55:56 PM, 5/19/2022.														
Pi (constant)	3.1416														
R (constant)	998.9														
Vessel Contents	1048.130 gal	392.000 °F	7723.658 lb	39.757 lb-M											
Mixture Name:	Mixture														
	[Liquid]	mmHg	lb	W[i]	lb-M	X[i]	A[i]	X*Pi*Ai (mmHg)							
	Power Steering Fluic	113.8539	7723.6577	1	39.7573	1	1	113.8539							
Kp (product factor)	1														

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Q	(gal)	59.2822	53.5452	59.2822	57.3699	59.2822	57.3699	59.2822	59.2822	57.3699	59.2822	57.3699	59.2822	698.0002	(sum)
Vq	(ft^3)	7.9249	7.158	7.9249	7.6692	7.9249	7.6692	7.9249	7.9249	7.6692	7.9249	7.6692	7.9249	93.3091	(sum)
N (period)	(number)	0.0307	0.0278	0.0307	0.0298	0.0307	0.0298	0.0307	0.0307	0.0298	0.0307	0.0298	0.0307	0.3619	(sum)
N (scaled to annual)	(number)	0.362	0.362	0.362	0.362	0.362	0.362	0.362	0.362	0.362	0.362	0.362	0.362		
Kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1	(avg)
Days	(number)	31	28	31	30	31	30	31	31	30	31	30	31	365	(sum)
Compound Molecular Weights (lb/lb-M)															
Power Steering Fluid	(Mv)	194.27	194.27	194.27	194.27	194.27	194.27	194.27	194.27	194.27	194.27	194.27	194.27	194.27	(lb/lb-mole
Working Loss Calculations (Uncontrolled)															
kb	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1	(average)
kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1	(average)
n	(number)	0.0307	0.0278	0.0307	0.0298	0.0307	0.0298	0.0307	0.0307	0.0298	0.0307	0.0298	0.0307	0.3619	(sum)
Compound Vapor Density (vW(i))															
Power Steering Fluid	(lb/ft^3)	0.0468	0.0468	0.0468	0.0468	0.0468	0.0468	0.0468	0.0468	0.0468	0.0468	0.0468	0.0468	0.0468	(avg)
Working Losses (Lw)															
Air	(lb)	0.3139	0.2835	0.3139	0.3037	0.3139	0.3037	0.3139	0.3139	0.3037	0.3139	0.3037	0.3139	3.6956	(sum)
Power Steering Fluid	(lb)	0.3709	0.335	0.3709	0.3589	0.3709	0.3589	0.3709	0.3709	0.3589	0.3709	0.3589	0.3709	4.3669	(sum)
Total Losses (Lt)															
Air	(lb)	0.3139	0.2835	0.3139	0.3037	0.3139	0.3037	0.3139	0.3139	0.3037	0.3139	0.3037	0.3139	3.6956	(sum)
Power Steering Fluid	(lb)	0.3709	0.335	0.3709	0.3589	0.3709	0.3589	0.3709	0.3709	0.3589	0.3709	0.3589	0.3709	4.3669	(sum)
														4.3669	

Attachment L
FUGITIVE EMISSIONS FROM PAVED HAULROADS

INDUSTRIAL PAVED HAULROADS (including all equipment traffic involved in process, haul trucks, endloaders, etc.)

Item Number	Description	Mean Vehicle Weight (tons)	Miles per Trip	Maximum Trips per Day	Maximum Trips per Year	Control Device ID Number	Control Efficiency (%)
1	Truck - Binder Oil	Claimed Confidential	0.46	Claimed Confidential		All roads at the RAN facility will be paved. ROCKWOOL will operate a streetsweeper on an as needed basis to minimize the generation of dusts from road traffic.	75%
2	Truck - Oxygen		0.46				
3	Truck - Raw Material to 210		0.46				
4	Truck - DeSOx and Binder		0.46				
5	Truck - Waste		0.46				
6	Truck – Pallet and Foil		0.76				
7	Truck – Finished Goods		0.76				
8	FEL – Diverted Melt from Bldg 300 to Pit Waste (170)		0.27				
9	FEL – Crushed Melt from 170 to 210		0.10				
10	FEL – Raw Material from 210 to Feed Hopper		0.06				
11	FEL – Raw Material from Stockpile to 210		0.16				
12	Truck – Raw Material from Stockpile to 210		0.27				

Source: *AP-42 Fifth Edition – 11.2.6 Industrial Paved Roads*

$E = [k \times (sL)^{0.91} \times (W)^{1.02}] \times [1 - P/(4N)]$ = lb/Vehicle Mile Traveled (VMT)

Where:

k =	Particle size multiplier (lb/VMT)	**PM – 0.011** **PM_{10} – 0.0022** **$PM_{2.5}$ – 0.00054**
sL =	Road surface silt loading (g/m^2)	**Finished product road surface silt loading – 0.2** **Raw materials road surface silt loading – 8.2**
P =	Number of "wet" days with at least 0.01 in of precipitation during the averaging period	**148**
N =	Number of days in the averaging period	**365**
W =	Average vehicle weight traveling the road (tons)	**See table above**

For lb/hr: [lb ÷ VMT] × [VMT ÷ trip] × [Trips ÷ Hour] = lb/hr

For TPY: [lb ÷ VMT] × [VMT ÷ trip] × [Trips ÷ Hour] × [Ton ÷ 2000 lb] = Tons/year

SUMMARY OF PAVED HAULROAD EMISSIONS

Item No.	Uncontrolled PM_{10}		Controlled PM_{10}	
	lb/hr	ton/yr	lb/hr	ton/yr
1	<0.01	<0.01	<0.01	<0.01
2	<0.01	0.04	<0.01	0.01
3	<0.01	0.55	<0.01	0.14
4	<0.01	0.05	<0.01	0.01
5	<0.01	0.02	<0.01	<0.01
6	<0.01	0.01	<0.01	<0.01
7	<0.01	0.05	<0.01	0.01
8	<0.01	0.42	<0.01	0.10
9	<0.01	0.16	<0.01	0.04
10	<0.01	0.24	<0.01	0.06
11	<0.01	0.08	<0.01	0.02
12	<0.01	0.05	<0.01	0.01
TOTALS	**0.01**	**1.61**	**<0.01**	**0.40**

Item No.	Uncontrolled $PM_{2.5}$		Controlled $PM_{2.5}$	
	lb/hr	ton/yr	lb/hr	ton/yr
1	<0.01	<0.01	<0.01	<0.01
2	<0.01	0.01	<0.01	<0.01
3	<0.01	0.13	<0.01	0.03
4	<0.01	0.01	<0.01	<0.01
5	<0.01	<0.01	<0.01	<0.01
6	<0.01	<0.01	<0.01	<0.01
7	<0.01	0.01	<0.01	<0.01
8	<0.01	0.10	<0.01	0.03
9	<0.01	0.04	<0.01	0.01
10	<0.01	0.06	<0.01	0.01
11	<0.01	0.02	<0.01	0.01
12	<0.01	0.01	<0.01	<0.01
TOTALS	**<0.01**	**0.39**	**<0.01**	**0.10**

Attachment M

Attachment M
Air Pollution Control Device Sheet
(AFTERBURNER SYSTEM)

Control Device ID No. (must match Emission Units Table): **CO-AB – The afterburner is routed through HE01.**

Equipment Information

1. Manufacturer: **Bromkamp** Model No.	2. ☐ Thermal Energy Recovery ☒ Recuperative (Conventional) ☐ Catalytic
3. Provide diagram(s) of unit describing capture system with duct arrangement and size of duct, air volume, capacity, horsepower of movers. If applicable, state hood face velocity and hood collection efficiency.	
4. Combustion chamber dimensions: Length: ft Diameter: ft Cross-sectional area: ft^2	5. Stack Dimensions: Height: **212.66** ft Diameter: **12.93** ft
6. Combustion (destruction) efficiency: Estimated: **95** % Minimum guaranteed: **95** %	7. Retention or residence time of materials in combustion chamber: Maximum: sec Minimum: sec
8. Throat diameter: ft	9. Combustion Chamber Volume: ft^3
10. Fuel used in burners: ☒ Natural Gas ☐ Fuel Oil, Number: ☐ Other, specify:	11. Burners per afterburner: Number of burners: **1** BTU/hr for burner: **9,860,000**
12. Fuel heating value of natural gas: **1026** BTU/scf	13. Flow rate of natural gas: ft^3/min
14. Is a catalyst material used?: ☐ Yes ☒ No If yes, catalyst material used:	15. Expected frequency of catalyst replacement: yr(s) 16. Date catalyst was last replaced: Month/Year:
17. Space Velocity of the catalyst material used: 1/hour	18. Catalyst area: ft^2 19. Volume of catalyst bed: ft^3
20. Minimum loading: Maximum loading:	21. Temperature catalyst bed inlet: °F Temperature catalyst bed outlet: °F
22. Explain degradation or performance indicator criteria determining catalyst replacement:	
23. Heat exchanger used? ☐ Yes ☐ No Describe heat exchanger:	24. Heat exchanger surface area? ft^2 25. Average thermal efficiency: %
26. Temperature of gases: After preheat: °F	Before preheat: °F
27. Dilution air flow rate: ft^3/minute	

28. Describe method of gas mixing used:

Waste Gas (Emission Stream) to be Burned

29.

Name	Quantity Grains of H_2S/100 ft^2	Quantity-Density (LB/hr, ft^3/hr, etc)	Source of Material

30. Estimate total combustibles to afterburner 18,950 scfm (capacity)

31. Estimated total flow rate to afterburner or catalyst including materials to be burned, carrier gases, auxiliary fuel, etc.: lb/hr, ACF/hr, or scfm

Total flow rate = Flue gas flow rate

32. Afterburner operating parameters:	During maximum operation of feeding unit(s)	During typical operation of feeding unit(s)	During minimum operation of feeding unit(s)
Combustion chamber temperature in °F		**1472**	
Emission stream gas temperature in °F		**482**	
Combined gas stream entering catalyst bed in			
Flue stream leaving the catalyst bed			
Emission stream flow rate (scfm)		**18,950**	
Efficiency (VOC Reduction)	%	**95 %**	%
Efficiency (Other; specify contaminant)	%	%	%

33. Inlet Emission stream parameters:

	Maximum	Typical
Pressure (mmHg):		
Heat Content (BTU/scf):		
Oxygen Content (%):		
Moisture Content (%):		

Are halogenated organics present? ☐ Yes ☒ No
Are particulates present? ☒ Yes ☐ No
Are metals present? ☐ Yes ☒ No

34. For thermal afterburners, is the combustion chamber temperature continuously monitored and recorded?
☒ Yes ☐ No

35. For catalytic afterburners, is the temperature rise across the catalyst bed continuously monitored and recorded? ☐ Yes ☐ No

36. Is the VOC concentration of exhaust monitored and recorded? ☐ Yes ☒ No

37. Describe any air pollution control device inlet and outlet gas conditioning processes (e.g., gas cooling, gas reheating, gas humidification):

38. Describe the collection material disposal system:

39. Have you included ***Afterburner Control Device*** in the Emissions Points Data Summary Sheet?

40. **Proposed Monitoring, Recordkeeping, Reporting, and Testing**
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING:	RECORDKEEPING:
Not impacted by updates.	**Not impacted by updates.**
REPORTING:	TESTING:
Not impacted by updates.	**Not impacted by updates.**

MONITORING:	Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment or air control device.
RECORDKEEPING:	Please describe the proposed recordkeeping that will accompany the monitoring.
REPORTING:	Please describe any proposed emissions testing for this process equipment on air pollution control device.
TESTING:	Please describe any proposed emissions testing for this process equipment on air pollution control device.

41. Manufacturer's Guaranteed Capture Efficiency for each air pollutant.

42. Manufacturer's Guaranteed Control Efficiency for each air pollutant.

95% minimum control efficiency

43. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.

Attachment N

Roxul USA Inc. dba ROCKWOOL
Ranson, West Virginia
Summary of Facility Emissions

Updated/added to reflect post-construction updates

		US												METRIC									
Source ID	**Source Description**	**NOx** (ton/yr)	**SO2** (ton/yr)	**CO** (ton/yr)	**VOC** (ton/yr)	**Total PM** (ton/yr)	**Filt. PM** (ton/yr)	**PM10** (ton/yr)	**PM2.5** (ton/yr)	**CO2e** (ton/yr)	**H2SO4** (ton/yr)	**Lead** (ton/yr)	**Total HAP** (ton/yr)	**NOx** (tonne/yr)	**SO2** (tonne/yr)	**CO** (tonne/yr)	**VOC** (tonne/yr)	**Total PM** (tonne/yr)	**Filt. PM** (tonne/yr)	**PM10** (tonne/yr)	**PM2.5** (tonne/yr)	**CO2e** (tonne/yr)	**H2SO4** (tonne/yr)	**Lead** (tonne/yr)	**Total HAP** (tonne/yr)
Minwool Line																									
B210/211	Raw Material Storage (B210/211)	--	--	--	--	0.28	0.28	0.13	0.02	--	--	--	--	--	--	--	--	0.26	0.26	0.12	0.02	--	--	--	--
B215	Raw Material Loading Hopper (B215)	--	--	--	--	5.62E-02	5.62E-02	2.66E-02	4.03E-03	--	--	--	--	--	--	--	--	5.10E-02	5.10E-02	2.41E-02	3.65E-03	--	--	--	--
IMF11	Conveyor Transition Point (B215 to B220)	--	--	--	--	0.02	0.02	0.02	0.01	--	--	--	--	--	--	--	--	0.02	0.02	0.02	0.01	--	--	--	--
IMF17	B220 Material Handling	--	--	--	--	1.49	1.49	0.61	0.56	--	--	--	--	--	--	--	--	1.35	1.35	0.55	0.51	--	--	--	--
IMF12	Conveyor Transfer Point (B215)	--	--	--	--	0.06	0.06	0.02	0.02	--	--	--	--	--	--	--	--	0.06	0.06	0.02	0.02	--	--	--	--
IMF16	Conveyor Transfer Point (B300)	--	--	--	--	0.06	0.06	0.02	0.02	--	--	--	--	--	--	--	--	0.06	0.06	0.02	0.02	--	--	--	--
IMF15	Outside B220 Transfer Points	--	--	--	--	0.08	0.08	0.03	0.03	--	--	--	--	--	--	--	--	0.07	0.07	0.03	0.03	--	--	--	--
RM_REJ	Raw Material Reject Collection Drop	--	--	--	--	1.12E-03	1.12E-03	5.32E-04	8.05E-05	--	--	--	--	--	--	--	--	1.02E-03	1.02E-03	4.83E-04	7.31E-05	--	--	--	--
IMF21	Charging Building Vacuum Cleaning Filter	--	--	--	--	2.41E-02	2.41E-02	2.41E-02	1.21E-02	--	--	--	--	--	--	--	--	2.19E-02	2.19E-02	2.19E-02	1.10E-02	--	--	--	--
IMF24	Pre-heat Burner	1.58	0.01	1.84	0.12	0.17	0.04	0.17	0.17	2,627.41	--	1.09E-05	0.04	1.44	0.01	1.67	0.11	0.15	0.04	0.15	0.15	2,383.55	--	9.92E-06	0.04
IMF01	Melting Furnace	163.67	147.31	14.06	51.08	42.88	10.15	36.01	32.73	95,546.59	16.37	1.64E-04	15.04	148.48	133.63	12.76	46.34	38.90	9.21	32.67	29.70	86,678.51	14.85	1.48E-04	13.64
IMF07	One (1) Storage Silo (Filter Fines Day)	--	--	--	--	0.01	0.01	0.01	0.01	--	--	--	--	--	--	--	--	0.01	0.01	0.01	0.01	--	--	--	--
IMF10	Filter Fines Recieving Silo	--	--	--	--	0.06	0.06	0.06	0.03	--	--	--	--	--	--	--	--	0.05	0.05	0.05	0.03	--	--	--	--
IMF08	Sorbent Silo	--	--	--	--	0.06	0.06	0.06	0.03	--	--	--	--	--	--	--	--	0.05	0.05	0.05	0.03	--	--	--	--
IMF09	Spent Sorbent Silo	--	--	--	--	0.06	0.06	0.06	0.03	--	--	--	--	--	--	--	--	0.05	0.05	0.05	0.03	--	--	--	--
DI	Dry Ice Cleaning	--	--	--	--	--	--	--	--	1,593.28	--	--	--	--	--	--	--	--	--	--	--	1,445.40	--	--	--
CM12	Fleece Application Vent 1	--	--	--	28.58	--	--	--	--	--	--	--	28.58	--	--	--	25.93	--	--	--	--	--	--	--	25.93
CM13	Fleece Application Vent 2	--	--	--		--	--	--	--	--	--	--		--	--	--		--	--	--	--	--	--	--	
HE01	WESP	63.73	0.05	43.01	341.71	171.34	91.35	91.35	79.99	37,198.32	--	--	336.01	57.82	0.05	39.01	309.99	155.44	82.87	82.87	72.57	33,745.79	--	--	304.83
CE01	De-dusting Baghouse	--	--	--	--	6.76	6.76	3.38	3.38	--	--	--	3.38	--	--	--	--	6.13	6.13	3.07	3.07	--	--	--	3.07
CE02	Vacuum Cleaning Baghouse	--	--	--	--	1.93	1.93	0.97	0.97	--	--	--	0.97	--	--	--	--	1.75	1.75	0.88	0.88	--	--	--	0.88
P_MARK	Product Marking	0.17	1.02E-03	0.14	9.49	1.30E-02	3.24E-03	0.01	0.01	205.16	--	8.54E-07	3.22E-03	0.15	9.29E-04	0.13	8.61	1.18E-02	2.94E-03	0.01	0.01	186.11	--	7.75E-07	2.93E-03
CM10	Recycle Plant Building Vent 1	--	--	--	--	2.90	2.90	2.90	1.45	--	--	--	--	--	--	--	--	2.63	2.63	2.63	1.31	--	--	--	--
CM11	Recycle Plant Building Vent 2	--	--	--	--	2.90	2.90	2.90	1.45	--	--	--	--	--	--	--	--	2.63	2.63	2.63	1.31	--	--	--	--
CM08	Recycle Plant Building Vent 3	--	--	--	--	0.24	0.24	0.24	0.12	--	--	--	--	--	--	--	--	0.22	0.22	0.22	0.11	--	--	--	--
CM09	Recycle Plant Building Vent 4	--	--	--	--	0.24	0.24	0.24	0.12	--	--	--	--	--	--	--	--	0.22	0.22	0.22	0.11	--	--	--	--
RMS	Raw Material Outdoor Stockpile	--	--	--	--	0.20	0.20	0.14	1.48E-02	--	--	--	--	--	--	--	--	0.18	0.18	0.09	1.35E-02	--	--	--	--
IMF14	Raw Material Reject Stockpile	--	--	--	--	1.71E-03	1.81E-03	8.51E-04	1.36E-04	--	--	--	--	--	--	--	--	1.64E-03	1.64E-03	7.72E-04	1.23E-04	--	--	--	--
B170	Melting Furnace Portable Crusher & Storage	--	--	--	--	0.59	0.59	0.27	0.06	--	--	--	--	--	--	--	--	0.53	0.53	0.25	0.05	--	--	--	--
Rockfon Line																									
RFNE1	IR Zone	--	--	--	7.48	0.08	0.04	0.08	0.06	--	--	--	0.10	--	--	--	6.78	0.07	0.04	0.07	0.06	--	--	--	0.09
RFNE2	Hot Press and Cure	--	--	--		0.08	0.04	0.08	0.06	--	--	--	0.10	--	--	--		0.07	0.04	0.07	0.06	--	--	--	0.09
RFNE3	High Oven A	1.17	0.01	0.98		0.51	0.25	0.51	0.38	1,400.04	--	5.83E-06	0.43	1.06	0.01	0.89		0.46	0.23	0.46	0.35	1,270.09	--	5.29E-06	0.39
RFNE9	High Oven B	1.17	0.01	0.98		0.51	0.25	0.51	0.38	1,400.04	--	5.83E-06	0.43	1.06	0.01	0.89		0.46	0.23	0.46	0.35	1,270.09	--	5.29E-06	0.39
RFNE4	Drying Oven 1	0.87	0.01	0.73	30.69	0.36	0.18	0.36	0.27	1,050.03	--	4.37E-06	0.34	0.79	0.00	0.67	27.84	0.32	0.16	0.32	0.24	952.57	--	3.96E-06	0.31
RFNE6	Drying Oven 2 & 3	2.04	0.01	1.71		0.55	0.28	0.55	0.41	2,450.07	--	1.02E-05	0.66	1.85	0.01	1.55		0.50	0.25	0.50	0.38	2,222.67	--	9.25E-06	0.60
RFNE5	Spray Paint Cabin	--	--	--		3.86	1.93	3.86	2.90	--	--	--	2.27	--	--	--		3.50	1.75	3.50	2.63	--	--	--	2.06
RFNE7	Cooling Zone	--	--	--		0.84	0.42	0.84	0.63	--	--	--	0.91	--	--	--		0.77	0.38	0.77	0.57	--	--	--	0.82
RFNE8	De-dusting Baghouse	--	--	--	--	1.49	1.49	1.49	0.75	--	--	--	1.49	--	--	--	--	1.35	1.35	1.35	0.68	--	--	--	1.35
Other Facility-wide Sources																									
CM03	Natural Gas Boiler 1	0.77	0.01	1.79	0.12	0.16	0.04	0.16	0.16	2,559.32	--	1.07E-05	0.04	0.70	0.01	1.62	0.11	0.15	0.04	0.15	0.15	2,321.77	--	9.66E-06	0.04
CM04	Natural Gas Boiler 2	0.77	0.01	1.79	0.12	0.16	0.04	0.16	0.16	2,559.32	--	1.07E-05	0.04	0.70	0.01	1.62	0.11	0.15	0.04	0.15	0.15	2,321.77	--	9.66E-06	0.04
RFN10	RFN Building Heat	0.79	0.01	1.84	0.12	0.17	0.04	0.17	0.17	2,627.41	--	1.09E-05	0.04	0.72	0.01	1.67	0.11	0.15	0.04	0.15	0.15	2,383.55	--	9.92E-06	0.04
EFP1	Emergency Fire Pump Engine	0.45	8.61E-04	0.10	0.01	0.02	0.01	0.02	0.02	90.50	--	--	2.14E-03	0.40	7.81E-04	0.09	0.01	0.02	0.01	0.02	0.02	82.10	--	--	1.95E-03
Rd_RM	Raw Material Paved Haul Roads	--	--	--	--	2.69	2.69	0.54	0.13	--	--	--	--	--	--	--	--	2.44	2.44	0.49	0.12	--	--	--	--
Rd_FP	Finished Product Paved Haul Road	--	--	--	--	0.07	0.07	0.01	0.00	--	--	--	--	--	--	--	--	0.06	0.06	0.01	0.00	--	--	--	--
TKS	Facility Storage Tanks	--	--	--	0.19	--	--	--	--	--	--	--	0.11	--	--	--	0.18	--	--	--	--	--	--	--	0.10
	Totals	**237.18**	**147.45**	**68.97**	**469.72**	**243.97**	**127.34**	**148.99**	**127.72**	**151,307**	**16.37**	**0.0002**	**390.98**	**215.17**	**133.76**	**62.57**	**426.12**		**115.52**	**135.12**	**115.87**	**137,264**	**14.85**	**0.0002**	**354.69**

Roxul USA Inc. dba ROCKWOOL
Ranson, West Virginia
Summary of Facility Emissions

Updated/added to reflect post-construction updates

		US															METRIC													
Source ID	**Source Description**	**HF (ton/yr)**	**HCl (ton/yr)**	**COS (ton/yr)**	**Formaldehyde (ton/yr)**	**Arsenic (ton/yr)**	**Lead (ton/yr)**	**Mercury (ton/yr)**	**Phenol (ton/yr)**	**Mineral Fiber (ton/yr)**	**Methanol (ton/yr)**	**Hexane (ton/yr)**	**Benzene (ton/yr)**	**Acetaldehyde (ton/yr)**	**Toluene (ton/yr)**	**Xylene (ton/yr)**	**PAH (ton/yr)**	**HF (tonne/yr)**	**HCl (tonne/yr)**	**COS (tonne/yr)**	**Formaldehyde (tonne/yr)**	**Arsenic (tonne/yr)**	**Lead (tonne/yr)**	**Mercury (tonne/yr)**	**Phenol (tonne/yr)**	**Mineral Fiber (tonne/yr)**	**Methanol (tonne/yr)**	**Hexane (tonne/yr)**	**Benzene (tonne/yr)**	**Acetaldehyde (tonne/yr)**	**Toluene (tonne/yr)**	**Xylene (tonne/yr)**	**PAH (tonne/yr)**
Minwool Line																																
B210/211	Raw Material Storage (B210/211)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B215	Raw Material Loading Hopper (B215)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IMF11	Conveyor Transition Point (B215 to B220)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IMF17	B220 Material Handling	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IMF12	Conveyor Transfer Point (B215)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IMF16	Conveyor Transfer Point (B300)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IMF15	Outside B220 Transfer Points	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
RM_REJ	Raw Material Reject Collection Drop	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IMF21	Charging Building Vacuum Cleaning Filter	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IMF24	Pre-heat Burner	--	--	--	--	--	1.09E-05	--	--	--	--	0.04	--	--	--	--	--	--	--	--	--	--	9.92E-06	--	--	--	--	0.04	--	--	--	--
IMF01	Melting Furnace	1.62	1.29	1.64	0.02	3.93E-04	1.64E-04	2.55E-03	0.33	10.15	--	--	--	--	--	--	--	1.47	1.17	1.48	0.01	3.56E-04	1.48E-04	2.32E-03	0.30	9.21	--	--	--	--	--	--
IMF07	One (1) Storage Silo (Filter Fines Day)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IMF10	Filter Fines Recieving Silo	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IMF08	Sorbent Silo	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IMF09	Spent Sorbent Silo	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DI	Dry Ice Cleaning	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
CM12	Fleece Application Vent 1	--	--	--	11.60	--	--	--	14.18	--	2.80	--	--	--	--	--	--	--	--	--	10.53	--	--	--	12.86	--	2.54	--	--	--	--	--
CM13	Fleece Application Vent 2						--					--	--	--	--	--	--						--						--	--	--	--	--
HE01	WESP	--	--	--	56.01	--	--	--	84.85	91.35	103.80	--	--	--	--	--	--	--	--	--	50.81	--	--	--	76.98	82.87	94.17	--	--	--	--	--
CE01	De-dusting Baghouse	--	--	--	--	--	--	--	--	3.38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.07	--	--	--	--	--	--
CE02	Vacuum Cleaning Baghouse	--	--	--	--	--	--	--	--	0.97	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.88	--	--	--	--	--	--
P_MARK	Product Marking	--	--	--	--	--	8.54E-07	--	--	--	--	3.22E-03	--	--	--	--	--	--	--	--	--	--	7.75E-07	--	--	--	--	2.93E-03	--	--	--	--
CM10	Recycle Plant Building Vent 1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
CM11	Recycle Plant Building Vent 2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
CM08	Recycle Plant Building Vent 3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
CM09	Recycle Plant Building Vent 4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
RMS	Raw Material Outdoor Stockpile	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IMF14	Raw Material Reject Stockpile	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B170	Melting Furnace Portable Crusher & Storage	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Rockfon Line																																
RFNE1	IR Zone	--	--	--	0.03	--	--	--	0.03	0.04	--	--	--	--	--	--	--	--	--	--	0.03	--	--	--	0.03	0.04	--	--	--	--	--	--
RFNE2	Hot Press and Cure	--	--	--	0.03	--	--	--	0.03	0.04	--	--	--	--	--	--	--	--	--	--	0.03	--	--	--	0.03	0.04	--	--	--	--	--	--
RFNE3	High Oven A	--	--	--	0.08	--	5.83E-06	--	0.08	0.25	--	0.02	--	--	--	--	--	--	--	--	0.07	--	5.29E-06	--	0.07	0.23	--	0.02	--	--	--	--
RFNE9	High Oven B	--	--	--	0.08	--	5.83E-06	--	0.08	0.25	--	0.02	--	--	--	--	--	--	--	--	0.07	--	5.29E-06	--	0.07	0.23	--	0.02	--	--	--	--
RFNE4	Drying Oven 1	--	--	--	0.10	--	4.37E-06	--	0.05	0.18	--	0.02	--	--	--	--	--	--	--	--	0.09	--	3.96E-06	--	0.04	0.16	--	0.01	--	--	--	--
RFNE6	Drying Oven 2 & 3	--	--	--	0.23	--	1.02E-05	--	0.12	0.28	--	0.04	--	--	--	--	--	--	--	--	0.21	--	9.25E-06	--	0.11	0.25	--	0.03	--	--	--	--
RFNE5	Spray Paint Cabin	--	--	--	0.10	--	--	--	0.24	1.93	--	--	--	--	--	--	--	--	--	--	0.09	--	--	--	0.22	1.75	--	--	--	--	--	--
RFNE7	Cooling Zone	--	--	--	0.24	--	--	--	0.24	0.42	--	--	--	--	--	--	--	--	--	--	0.22	--	--	--	0.22	0.38	--	--	--	--	--	--
RFNE8	De-dusting Baghouse	--	--	--	--	--	--	--	--	1.49	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.35	--	--	--	--	--	--
Other Facility-wide Sources																																
CM03	Natural Gas Boiler 1	--	--	--	--	--	1.07E-05	--	--	--	--	0.04	--	--	--	--	--	--	--	--	--	--	9.66E-06	--	--	--	--	0.03	--	--	--	--
CM04	Natural Gas Boiler 2	--	--	--	--	--	1.07E-05	--	--	--	--	0.04	--	--	--	--	--	--	--	--	--	--	9.66E-06	--	--	--	--	0.03	--	--	--	--
RFN10	RFN Building Heat	--	--	--	--	--	1.09E-05	--	--	--	--	0.04	--	--	--	--	--	--	--	--	--	--	9.92E-06	--	--	--	--	0.04	--	--	--	--
EFP1	Emergency Fire Pump Engine	--	--	--	6.53E-04	--	--	--	--	--	--	--	5.17E-04	4.25E-04	2.26E-04	1.58E-04	9.30E-05	--	--	--	5.93E-04	--	--	--	--	--	--	--	4.69E-04	3.85E-04	2.05E-04	1.43E-04	8.44E-05
Rd_RM	Raw Material Paved Haul Roads	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Rd_FP	Finished Product Paved Haul Road	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TKS	Facility Storage Tanks	--	--	--	0.11	--	--	--	--	--	9.30E-04	--	--	--	--	--	--	--	--	--	0.10	--	--	--	--	8.44E-04	--	--	--	--	--	--	--
	Totals	**1.62**	**1.29**	**1.64**	**68.61**	**3.93E-04**	**2.34E-04**	**2.55E-03**	**100.22**	**110.73**	**106.61**	**0.25**	**0.00**	**4.25E-04**	**2.26E-04**	**1.58E-04**	**9.30E-05**	**1.47**	**1.17**	**1.48**	**62.24**	**3.56E-04**	**2.12E-04**	**2.32E-03**	**90.92**	**100.45**	**96.71**	**0.23**	**0.00**	**3.85E-04**	**2.05E-04**	**1.43E-04**	**8.44E-05**

Roxul USA Inc. dba ROCKWOOL
Ranson, West Virginia
Summary of PTE Changes

Pollutant	Permitted Facility Emission Rate (tons/year)	Changes due to Updates (tons/year)	New Facility Emission Rate (tons/year)
CO	71.40	-2.43	68.97
NOx	238.96	-1.78	237.18
Total PM	250.87	-6.89	243.97
Filterable PM	129.23	-1.89	127.34
PM_{10}	153.19	-4.20	148.99
$PM_{2.5}$	133.41	-5.69	127.72
SO_2	147.45	-0.01	147.45
VOC	471.41	-1.69	469.72
CO_2e	152,934.82	-1,627.34	151,307.48
Formaldehyde	68.63	-1.50E-02	68.61
Methanol	106.61	+9.99E-05	106.61
H_2SO_4	16.37	No Change	16.37
Lead	2.47E-04	-1.34E-05	2.34E-04
Total HAP	392.59	-1.61E+00	390.98
HF	1.62	No Change	1.62
HCl	1.29	No Change	1.29
COS	1.64	No Change	1.64
Arsenic	3.93E-04	No Change	3.93E-04
Mercury	2.55E-03	No Change	2.55E-03
Phenol	100.22	No Change	100.22
Mineral Fiber	112.28	-1.54E+00	110.73
Methanol	106.61	+9.99E-05	106.61
Hexane	0.26	-2.04E-03	0.25
Benzene	0.05	-4.59E-02	5.17E-04

Roxul USA Inc. dba ROCKWOOL
Ranson, West Virginia
Categories of Emissions Changes

Reallocation of CO

Pollutant	Permitted Emission Rate for Affected Units (tons/year)	New Emission Rate for Affected Units (tons/year)	Change in Emission Rate for Affected Units (tons/year)
CO	57.07	57.07	**No Change**

Material Handling, Including Haul Roads

Pollutant	Permitted Emission Rate for Affected Units (tons/year)	New Emission Rate for Affected Units (tons/year)	Change in Emission Rate for Affected Units (tons/year)
Total PM	4.43	4.68	**+0.25**
Filterable PM	4.43	4.68	**+0.25**
PM_{10}	2.67	1.40	**-1.27**
$PM_{2.5}$	1.18	0.80	**-0.39**

Combustion Sources [1]

Pollutant	Permitted Emission Rate for Affected Units (tons/year)	New Emission Rate for Affected Units (tons/year)	Change in Emission Rate for Affected Units (tons/year)
CO	6.11	3.68	**-2.43**
NOx	3.76	1.99	**-1.78**
Total PM	1.68	0.34	**-1.33**
Filterable PM	0.64	0.10	**-0.54**
PM_{10}	1.68	0.34	**-1.33**
$PM_{2.5}$	1.41	0.34	**-1.07**
SO_2	0.09	0.08	**-0.01**
VOC	1.94	0.25	**-1.69**
CO_2e	44,034.79	42,407.45	**-1,627.34**
Total HAP	0.13	0.08	**-0.05**
Formaldehyde	<0.01	<0.01	**<0.01**
Lead	<0.01	<0.01	**-<0.01**
Hexane	0.08	0.08	**-<0.01**
Benzene	0.05	<0.01	**-0.05**
Acetaldehyde	<0.01	<0.01	**<0.01**
Toluene	<0.01	<0.01	**<0.01**
Xylene	<0.01	<0.01	**<0.01**
PAH	<0.01	<0.01	**<0.01**

[1]Includes changes to SO_2 and CO_2e due to resizing of the Curing Oven Afterburner

Storage Tanks

Pollutant	Permitted Emission Rate for Affected Units (tons/year)	New Emission Rate for Affected Units (tons/year)	Change in Emission Rate for Affected Units (tons/year)
VOC	0.19	0.19	**0.00**
Total HAP	0.12	0.11	**-0.02**
Methanol	<0.01	<0.01	**<0.01**
Formaldehyde	0.12	0.11	**-0.02**

Cooling Towers

Pollutant	Permitted Emission Rate for Affected Units (tons/year)	New Emission Rate for Affected Units (tons/year)	Change in Emission Rate for Affected Units (tons/year)
Total PM	0.05	0.00	**-0.05**
Filterable PM	0.05	0.00	**-0.05**
PM_{10}	0.05	0.00	**-0.05**
$PM_{2.5}$	0.03	0.00	**-0.03**

Roxul USA Inc. dba ROCKWOOL
Ranson, West Virginia
Source ID: Mineral Wool Line (L1) Emissions

Updated/added to reflect post-construction updates

						METRIC		US					
Stack ID(s)	**Source Description**	**Concentration**		**Flow Rate**		**Hourly Emissions**	**Annual Emissions**	**Hourly Emissions**	**Annual Emissions**	**Modeled Emission Rate**		**Notes**	**Control Device**
-	**Pollutants**	**(mg/Nm^3)**	**(gr/scf)**	**(Nm^3/h)**	**(scfm)**	**(kg/hr)**	**(tonne/yr)**	**(lb/hr)**	**(ton/year)**	**(g/s)**	**Averaging Period**	**-**	**-**
IMF01	**Melting Furnace**	-	-	-	-	-	-	-	-	-	-	-	-
	Filterable PM	31	0.013	33,900	21,414	1.05	9.21	2.32	10.15	-	-	Claimed CBI	Baghouse
	Total PM_{10}	110	-	33,900	21,414	3.73	32.67	8.22	36.01	1.04E+00	24-hr, Annual	Note 2 (1)	Baghouse
	Total $PM_{2.5}$	100	-	33,900	21,414	3.39	29.70	7.47	32.73	9.42E-01	24-hr, Annual	Note 2 (1)	Baghouse
	NOx	500	-	33,900	21,414	16.95	148.48	37.37	163.67	4.71E+00	1-hr (base), Annual	Note 2 (1)	SNCR and Oxy-fuel burners
	CO	150	-	33,900	21,414	1.46	12.76	3.21	14.06	4.05E-01	1-hr (base), 8-hr	Note 2 (6)	-
	SO_2	450	-	33,900	21,414	15.26	133.63	33.63	147.31	4.24E+00	1-hr (base), 3-hr, 24-hr, Annual	Note 2 (1)	Sorbent Injection System
	Non-HAP VOC	150	-	33,900	21,414	5.09	44.54	11.21	49.10	-	-	Note 2 (1)	-
	Total VOC	-	-	33,900	21,414	5.29	46.34	11.66	51.08	-	-	Note 2 (1)	-
	HF	4.9	-	33,900	21,414	0.17	1.47	0.37	1.62	-	-	Claimed CBI	Sorbent Injection System
	HCl	3.9	-	33,900	21,414	0.13	1.17	0.29	1.29	-	-	Claimed CBI	Sorbent Injection System
	COS	5	-	33,900	21,414	0.17	1.48	0.37	1.64	-	-	Note 2 (1-MAR)	-
	Formaldehyde	0.05	-	33,900	21,414	1.70E-03	0.01	3.74E-03	0.02	-	-	Note 2 (1-TOR)	-
	H_2SO_4 Mist	50	-	33,900	21,414	1.70	14.85	3.74	16.37	-	-	Note 2 (1-MAR)	Sorbent Injection System
	Fluorides	0.1	-	33,900	21,414	3.39E-03	0.03	0.01	0.03	-	-	Note 2 (1-TOR)	Baghouse
	Arsenic	0.0012	-	33,900	21,414	4.07E-05	3.56E-04	8.97E-05	3.93E-04	-	-	Note 2 (1-DOE10)	Baghouse
	Lead	0.0005	-	33,900	21,414	1.70E-05	1.48E-04	3.74E-05	1.64E-04	-	-	Note 2 (1-DOE10)	Baghouse
	Mercury	0.0078	-	33,900	21,414	2.64E-04	2.32E-03	5.83E-04	2.55E-03	-	-	Note 2 (1-DOE10)	Baghouse
	Phenol	1	-	33,900	21,414	0.03	0.30	0.07	0.33	-	-	Note 2 (1-TOR)	-
	Mineral Fiber	-	-	33,900	21,414	1.05	9.21	2.32	10.15	-	-	Note 4	Baghouse
	Total HAPs	-	-	33,900	21,414	1.56	13.64	3.43	15.04	-	-	-	Sorbent Injection System
	CO_2	290,156	-	33,900	21,414	9,836.28	86,165.80	21,685.26	94,981.42	-	-	Claimed CBI	-
	CH_4	25	-	33,900	21,414	0.86	7.54	1.90	8.31	-	-	Claimed CBI	-
	N_2O	4	-	33,900	21,414	0.12	1.09	0.27	1.20	-	-	Claimed CBI	-
	CO_2e	-	-	33,900	21,414	9,894.81	86,678.51	21,814.29	95,546.59	-	-	-	-
part of HE01	**Spinning Chamber**	-	-	-	-	-	-	-	-	-	-	-	-
	Filterable PM	-	;-	410,000	258,986	4.92	43.10	10.85	47.51	-	-	-	WESP
	Total PM_{10}	12	-	410,000	258,986	4.92	43.10	10.85	47.51	-	-	Note 1, Note 2 (1)	WESP
	Total $PM_{2.5}$	11.4	-	410,000	258,986	4.67	40.94	10.30	45.13	-	-	Note 1, Note 2 (1)	WESP
	Non-HAP VOC	15	-	410,000	258,986	6.15	53.87	13.56	59.39	-	-	Note 2 (1)	-
	Phenol	[redacted]	-	410,000	258,986	*Combined Collection/Curing*		*Combined Collection/Curing*		-	-	Claimed CBI	-
	Formaldehyde		-	410,000	258,986	*Combined Collection/Curing*		*Combined Collection/Curing*		-	-	Claimed CBI	-
	Methanol		-	410,000	258,986	*Combined Collection/Curing*		*Combined Collection/Curing*		-	-	Claimed CBI	-
	CO		-	410,000	258,986	*Combined Collection/Curing*		*Combined Collection/Curing*				Note 2 (6)	-
part of HE01	**Curing Oven**	-	-	-	-	-	-	-	-	-	-	-	-
	Filterable PM	-	-	30,000	18,950	1.50	13.14	3.31	14.48	-	-	-	WESP
	Total PM_{10}	50	-	30,000	18,950	1.50	13.14	3.31	14.48	-	-	Note 1, Note 2 (1)	WESP
	Total $PM_{2.5}$	19	-	30,000	18,950	0.57	4.99	1.26	5.50	-	-	Note 1, Note 2 (1)	WESP
	NO_x	200	-	30,000	18,950	6.00	52.56	13.23	57.94	-	-	Note 2 (1)	-
	CO	25	-	30,000	18,950	4.05	35.47	8.93	39.10	-	-	Note 2 (6)	Afterburner
	SO_2	0.19	-	30,000	18,950	5.70E-03	0.05	0.01	0.05	-	-	Claimed CBI	-
	Non-HAP VOC	50	-	30,000	18,950	1.50	13.14	3.31	14.48	-	-	Note 2 (1)	Afterburner
	Phenol	[redacted]	-	30,000	18,950	*Combined Collection/Curing*		*Combined Collection/Curing*		-	-	Claimed CBI	Afterburner
	Formaldehyde		-	30,000	18,950	*Combined Collection/Curing*		*Combined Collection/Curing*		-	-	Claimed CBI	Afterburner
	Methanol		-	30,000	18,950	*Combined Collection/Curing*		*Combined Collection/Curing*		-	-	Claimed CBI	Afterburner
	CO_2	37,976	-	30,000	18,950	1139.28	9,980.11	2,511.68	11,001.18	-	-	Claimed CBI	-
	CH_4	0.7	-	30,000	18,950	0.02	0.19	0.05	0.21	-	-	Claimed CBI	-
	N_2O	303	-	30,000	18,950	9.10	79.73	20.07	87.89	-	-	Claimed CBI	-
	CO_2e	-	-	30,000	18,950	3,852.26	33,745.79	8,492.77	37,198.32	-	-	-	-
part of HE01	**Curing Oven Hoods**	-	-	40,000	25,267	*Part of HE01*		*Part of HE01*		-	-	-	WESP
part of HE01	**Gutter Exhaust**	-	-	25,000	15,792	*Part of HE01*		*Part of HE01*		-	-	-	WESP
part of HE01	**Cooling Section**	-	-	-	-			-	-	-	-	-	-
	Filterable PM	-	-	80,000	50,534	3.04	26.63	6.70	29.35	-	-	Note 1	WESP
	Total PM_{10}	38	-	80,000	50,534	3.04	26.63	6.70	29.35	-	-	Note 1, Note 2 (1)	WESP
	Total $PM_{2.5}$	38	-	80,000	50,534	3.04	26.63	6.70	29.35	-	-	Note 1, Note 2 (1)	WESP
	NOx	-	-	80,000	50,534	0.60	5.26	1.32	5.79	-	-	Note 2 (4-10%Curing)	-
	CO	-	-	80,000	50,534	0.40	3.55	0.89	3.91	-	-	Note 2 (4-10%Curing)	-
	Non-HAP VOC	30	-	80,000	50,534	2.40	21.02	5.29	23.17	-	-	Note 2 (1)	-
	Phenol	10	-	80,000	50,534	0.80	7.01	1.76	7.72	-	-	Note 2 (1)	-
	Formaldehyde	5	-	80,000	50,534	0.40	3.50	0.88	3.86	-	-	Note 2 (1)	-
	Methanol	5	-	80,000	50,534	0.40	3.50	0.88	3.86	-	-	Note 2 (1)	-
HE01	**WESP**	-	-	-	-			-	-	-	-	-	-
	Filterable PM	-	-	585,000	369,529	9.46	82.87	20.86	91.35	-	-	-	WESP
	Total PM_{10}	-	-	585,000	369,529	9.46	82.87	20.86	91.35	2.63E+00	24-hr, Annual	-	WESP
	Total $PM_{2.5}$	-	-	585,000	369,529	8.28	72.57	18.26	79.99	2.30E+00	24-hr, Annual	-	WESP
	NOx	-	-	585,000	369,529	6.60	57.82	14.55	63.73	1.83E+00	1-hr, Annual	-	-
	CO	-	-	585,000	369,529	4.45	39.01	9.82	43.01	1.24E+00	1-hr, 8-hr	-	-
	SO_2	-	-	585,000	369,529	5.70E-03	0.05	0.01	0.05	1.58E-03	1-hr, 3-hr, 24-hr, Annual	-	-
	VOC	-	-	585,000	369,529	35.39	309.99	78.02	341.71	-	-	-	-
	Phenol	-	-	585,000	369,529	8.79	76.98	19.37	84.85	-	-	-	-
	Formaldehyde	-	-	585,000	369,529	5.80	50.81	12.79	56.01	-	-	-	-
	Methanol	-	-	585,000	369,529	10.75	94.17	23.70	103.80	-	-	-	-
	Mineral Fiber	-	-	585,000	369,529	9.46	82.87	20.86	91.35	-	-	-	WESP
	Total HAPs	-	-	585,000	369,529	34.80	304.83	76.72	336.01	-	-	-	-
	CO_2	-	-	585,000	369,529	1139.28	9,980.11	2,511.68	11,001.18	-	-	-	-
	CH_4	-	-	585,000	369,529	0.02	0.19	0.05	0.21	-	-	-	-
	N_2O	-	-	585,000	369,529	9.10	79.73	20.07	87.89	-	-	-	-
	CO_2e	-	-	585,000	369,529	3,852.26	33,745.79	8,492.77	37,198.32	-	-	-	-
CE01	**De-dusting Baghouse**	-	-	-	-	-	-	-	-	-	-	-	-
	Filterable PM	10	0.0041	70,000	44,217	0.70	6.13	1.54	6.76	-	-	Note 1	Baghouse
	Filterable PM_{10}	5	0.0020	70,000	44,217	0.35	3.07	0.77	3.38	9.72E-02	24-hr, Annual	Note 2 (1)	Baghouse
	Filterable $PM_{2.5}$	5	0.0020	70,000	44,217	0.35	3.07	0.77	3.38	9.72E-02	24-hr, Annual	Note 2 (1)	Baghouse
	Mineral Fiber	-	-	70,000	44,217	0.35	3.07	0.77	3.38	-	-	Note 4	Baghouse
	Total HAPs	-	-	70,000	44,217	0.35	3.07	0.77	3.38	-	-	-	-
CE02	**Vacuum Cleaning Baghouse**	-	-	-	-	-	-	-	-	-	-	-	-
	Filterable PM	10	0.0041	20,000	12,633	0.20	1.75	0.44	1.93	-	-	Note 1	Baghouse
	Filterable PM_{10}	5	0.0020	20,000	12,633	0.10	0.88	0.22	0.97	2.78E-02	24-hr, Annual	Note 2 (1)	Baghouse
	Filterable $PM_{2.5}$	5	0.0020	20,000	12,633	0.10	0.88	0.22	0.97	2.78E-02	24-hr, Annual	Note 2 (1)	Baghouse
	Mineral Fiber	-	-	20,000	12,633	0.10	0.88	0.22	0.97	-	-	Note 4	Baghouse
	Total HAPs	-	-	20,000	12,633	0.10	0.88	0.22	0.97	-	-	-	-

Notes:
1. Where data was not available, speciations of PM were conservatively estimated in accordance with the below: Filterable PM was conservatively assumed to be equal to Total PM10. For CE01 and CE02, Filterable PM assumed double Filterable PM10. For clarity,

Total PM10 = Filterable PM10 + Condensable PM.

Total PM2.5 = Filterable PM2.5 + Condensable PM

Filterable PM = Total PM10, with the exception of CE01 and CE02, where Filterable PM = 2X Filterable PM10

Total PM = Filterable PM + CPM (where CPM = Total PM2.5)

2. Calculation Method References:

1 - Stack Testing from similar facility, scaled as appropriate to RAN process.

Claimed CBI

4-Assumed 10% of the mass emissions of the Curing Oven for Cooling.

3. Proposed NESHAP Subpart DDD combines emission limits for formaldehyde, methanol, and phenol from spinning (collection) and curing.

4. Mineral Fiber emissions were conservatively assumed equal to Filterable PM emissions for sources that may contain rock wool fibers. The listed HAP, fine mineral fibers includes mineral fiber emissions from facilities manufacturing or processing glass, rock, or slag fibers (or other mineral derived fibers) of average diameter 1 micrometer or less.
5. Maximum g/s emissions do not vary based on model averaging period (i.e., source permitted to operate at maximum capacity 24 hr/day, 365 day/year).
6. Updated emission factor based upon stack testing from similar facility.

Sample Calculations:
Hourly Emissions (kg/hr) = Fan Flow Rate (Nm3/hr) * Exhaust Concentration (mg/Nm3) * 1,000,000 (mg/kg)□
Hourly Emission Rate Filterable PM = Concentration PM (gr/scf)*(1 lb/7,000 grains)*Flow Rate (scfm)* (60 min/hr)
Annual Emissions (ton/yr) = Hourly Emission Rate (lb/hr)*8,760 (hr/yr) / 2,000 (lb/ton)
Annual Emissions (tonne/yr) = Hourly Emissions (kg/hr) * 8,760 (hr/yr) / 1,000 (kg/tonne)□
CO2 Equivalent (CO2e) = CO2 + [GWP_{CH4} * CH4)] + [GWP_{N2O} * N2O]
Modeled Emission Rate (g/s) [for all Averaging Periods] = Hourly Emissions (lb/hr) * 453.59 (g/lb) / 3,600 (sec/hr)□

Roxul USA Inc. dba ROCKWOOL
Ranson, West Virginia
Material Handling Fugitives

Updated/added to reflect post-construction updates

Material Properties & Calculation Inputs

Raw Material	M-Moisture content[1] %
Rock/Slag/Minerals	Claimed Confidential
Reject Raw Material	
Melting Furnace Diverted Melt	

Pollutant	k-Particle Size Multiplier	E-Emission Factor[3] Rock/Slag/Minerals (lb/ton)	Reject Raw Material (lb/ton)	Diverted Melt (lb/ton)
PM	0.74	Claimed Confidential	Claimed Confidential	Claimed Confidential
PM10	0.35			
PM2.5	0.053			

Location	U-Wind Speed[2] (mph)	m/s
Outdoor	6.51	2.91

Notes:
1. Moisture content chosen as worst case among various materials handled.
2. Outdoor wind speed was set at 6.51 mph based on 2011-2015 average wind speed data from station ID 13734.
3. Material drops emission factor equation per AP-42 Section 13.2.4.

Sample Calculations:
E (lb/ton) = k (0.0032)[(U/5)^1.3] / [(M/2)^1.4] , where
k=Particle Size Multiplier,
U = wind speed, meters per second (miles per hour [mph]),
M = material moisture content (%)

1 Material Delivery and Front-end Loader Fugitive Emissions[3]

Source ID	Raw Material	Source Description	Loading Rate[1]	Enclosure Description	Control Efficiency[2] (%)	Pollutant	METRIC UNCONTROLLED Emissions (tonne/day)	METRIC UNCONTROLLED Emissions (tonne/year)	METRIC CONTROLLED Emissions (tonne/day)	METRIC CONTROLLED Emissions (tonne/year)	US UNCONTROLLED Emissions (ton/day)	US UNCONTROLLED Emissions (ton/year)	US CONTROLLED Emissions (ton/day)	US CONTROLLED Emissions (ton/year)	Modeled Emission Rate[4] 24-hr (g/s)	Modeled Emission Rate[4] Annual (g/s)	Class I AQRV Analysis (Q/d) ton/yr
RMS	Rock/Slag/Minerals	Raw Material Stockpile - Delivery to Stockpile [from offsite (by truck)]	Claimed Confidential	3-sided	50%	PM	7.56E-04	0.20	3.78E-04	0.10	8.34E-04	0.22	4.17E-04	0.11	-	-	-
						PM10	3.58E-04	0.10	1.79E-04	4.83E-02	3.94E-04	0.11	1.97E-04	5.32E-02	2.07E-03	1.53E-03	0.07
						PM2.5	5.42E-05	1.46E-02	2.71E-05	7.31E-03	5.97E-05	1.61E-02	2.99E-05	8.05E-03	3.13E-04	2.32E-04	-
B210/211	Rock/Slag/Minerals	Raw Material Storage - Delivery to 210 [from offsite (by truck) or from stockpile (by FEL)]		none	0%	PM	7.13E-04	0.20	7.13E-04	0.20	7.85E-04	0.22	7.85E-04	0.22	-	-	-
						PM10	3.37E-04	0.10	3.37E-04	0.10	3.71E-04	0.11	3.71E-04	0.11	-	-	-
						PM2.5	5.10E-05	0.01	5.10E-05	0.01	5.63E-05	0.02	5.63E-05	0.02	-	-	-
	Rock/Slag/Minerals	Raw Material Storage - Delivery into 210 enclosure		3-sided w/ cover	75%	PM	7.13E-04	0.20	1.78E-04	0.05	7.85E-04	0.22	1.96E-04	0.06	-	-	-
						PM10	3.37E-04	0.10	8.42E-05	0.02	3.71E-04	0.11	9.29E-05	0.03	-	-	-
						PM2.5	5.10E-05	0.01	1.28E-05	3.65E-03	5.63E-05	0.02	1.41E-05	4.03E-03	-	-	-
	Total			-	-	PM	1.43E-03	0.41	8.91E-04	0.26	1.57E-03	0.45	9.82E-04	0.28	-	-	-
						PM10	6.74E-04	0.19	4.21E-04	0.12	7.43E-04	0.21	4.64E-04	0.13	4.88E-03	3.83E-03	0.17
						PM2.5	1.02E-04	0.03	6.38E-05	0.02	1.13E-04	0.03	7.03E-05	0.02	7.38E-04	5.79E-04	-
B215	Rock/Slag/Minerals	Raw Material Loading Hopper		3-sided w/ cover	75%	PM	5.59E-04	0.20	1.40E-04	0.05	6.16E-04	0.22	1.54E-04	0.06	-	-	-
						PM10	2.64E-04	0.10	6.61E-05	0.02	2.91E-04	0.11	7.29E-05	0.03	7.65E-04	7.65E-04	0.03
						PM2.5	4.00E-05	0.01	1.00E-05	3.65E-03	4.41E-05	0.02	1.10E-05	4.03E-03	1.16E-04	1.16E-04	-
RM_REJ	Reject Raw Material	Raw Material Reject Collection Drop		4-sided rubber drop guards	75%	PM	5.48E-06	4.08E-03	1.37E-06	1.02E-03	6.04E-06	4.50E-03	1.51E-06	1.12E-03	-	-	-
						PM10	2.59E-06	1.93E-03	6.48E-07	4.83E-04	2.86E-06	2.13E-03	7.14E-07	5.32E-04	7.50E-06	1.53E-05	5.32E-04
						PM2.5	3.93E-07	2.92E-04	9.81E-08	7.31E-05	4.33E-07	3.22E-04	1.08E-07	8.05E-05	1.14E-06	2.32E-06	-
B170	Melting Furnace Diverted Melt	Melting Furnace Portable Crusher & Storage - Drop to Pit Waste (170) (from portable crusher)		3-sided	50%	PM	1.79E-03	0.08	8.95E-04	0.04	1.97E-03	0.09	9.87E-04	0.04	-	-	-
						PM10	8.47E-04	0.04	4.23E-04	0.02	9.33E-04	0.04	4.67E-04	0.02	4.90E-03	6.04E-04	0.02
						PM2.5	1.28E-04	5.77E-03	6.41E-05	2.88E-03	1.41E-04	6.36E-03	7.07E-05	3.18E-03	7.42E-04	9.15E-05	-

Notes:
FEL = Front End Loader
ton = short tons
tonne = metric tons
1. Loading rate for material storage operations is based on the maximum quantity delivered per day or per year.
2. Assumed a control efficiency of 50% due to offloading locations having 3-sided concrete enclosures and 75% efficiency for 4-sided enclosures (hopper) or 3-sided enclosures with roof. Per Application Instructions and Forms for General Permit G40-C by West Virginia Department of Environmental Protection, Telescopic Chutes have a control efficiency of 75% and Full Enclosures have an 80% control efficiency.
3. Large rocks are delivered to the pit waste area by FEL (before crushing), therefore the emissions from this drop are negligible due to size.
4. Modeled emission rates in gray are not modeled individually, but are added as a total source emission rate.
5. For Q/d screening tool, the annual steady-state-equivalent emission rate (Q) was determined based on maximum daily emissions. For example QPM10 (tpy) = PM10 (ton/day) * 365 (day/yr).

Sample Calculations:
Uncontrolled Emissions (ton/day; ton/year) = E (lb/ton) * Loading Rate (ton/day; ton/year) / 2000 (lb/ton)
Controlled Emissions = Uncontrolled Emissions (ton/day; ton/year) * (1 - Control Efficiency (%))
Uncontrolled/Controlled Emissions (tonne/day; tonne/year) = Uncontrolled/Controlled Emissions (ton/day; ton/year) * 0.9071847 tonne/ton
Modeled 24-hr Emission Rate (g/s) = Daily Emissions (ton/day) / 24 (hr/day) [for 24-hr model averaging period] * 2,000 (lb/ton) * 453.59 (g/lb) / 3,600 (sec/hr)
Modeled Annual Emission Rate (g/s) = Annual Emissions (ton/yr) / 8,760 (hr/yr) [for annual model averaging period] * 2,000 (lb/ton) * 453.59 (g/lb) / 3,600 (sec/hr)

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Ranson, West Virginia
Material Handling Fugitives

Updated/added to reflect post-construction updates

2 Crusher Fugitive Emissions

Source ID	Source Description	Pollutant	Emission Factor[2] (lb/ton)	METRIC Processing Rate (tonne/hr)	METRIC Processing Rate (tonne/yr)	US Processing Rate (ton/hr)	US Processing Rate (ton/yr)	Hours of Operation (hrs/day)	Hours of Operation (hrs/yr)	METRIC Hourly (kg/hr)	METRIC Annual (tonne/yr)	US Hourly (lb/hr)	US Annual (ton/yr)	Modeled Emission Rate[3] 24-hr (g/s)	Modeled Emission Rate[3] Annual (g/s)	Class I AQRV Analysis (Q/d)[4] ton/yr
B170	Melting Furnace Diverted Melt Portable Crusher	**PM**	0.0054	136.1	73,467	150.0	81,000	12	540	0.37	0.20	0.81	0.22	--	-	-
		PM_{10}	0.0024							0.16	0.09	0.36	0.10	2.27E-02	2.80E-03	1.58
		$PM_{2.5}$[1]	0.0008							0.05	0.03	0.12	0.03	7.56E-03	9.32E-04	-

Notes:
1. PM2.5 is 15% of PM per AP-42 Appendix B, Table B.2.2 for material handling and processing of aggregate and unprocessed ore.
2. Emission factor for crushing of melting furnace diverted melt assumed to be similar to crushing of stones in AP-42 Table 11.19.2-2. Uncontrolled PM emission factor of 0.0054 lb/ton and Uncontrolled PM10 emission factor of 0.0024 lb/ton for tertiary crushing were conservatively used due to lack of emission factors for primary or secondary crushing.
3. Modeled emission rates in gray are not modeled individually, but are added as a total source emission rate.

4. For Q/d screening tool, the annual steady-state-equivalent emission rate (Q) was determined. For example QPM10 (tpy) = PM10 @ 540 hr/yr (tpy) * [8,760 (hr/yr) / 540 (hr/yr)]. Maximum annual steady-state emissions conservatively assume operation for 24 hours/day, even though this application proposes maximum 24-hour emissions based on 12 hr/day.

Sample Calculations:
Hourly Emissions (lb/hr) = Emission Factor (lb/ton) * Processing Rate (ton/hr)
Annual Emissions (ton/yr) = Hourly Emissions (lb/hr) * Hours of Operation (hrs/yr) / 2000 (lb/ton)
Hourly Emissions (kg/hr) = Hourly Emissions (lb/hr) * 0.4535924 kg/lb
Annual Emissions (tonne/yr) = Annual Emissions (ton/yr) * 0.9071847 tonne/ton
Modeled 24-hr Emission Rate (g/s) = Daily Emissions (lb/hr) * 12 (hr/day) / 24 (hr/day) [for 24-hr model averaging period] * 453.59 (g/lb) / 3,600 (sec/hr)
Modeled Annual Emission Rate (g/s) = Annual Emissions (ton/yr) / 8,760 (hr/yr) [for annual model averaging period] * 2,000 (lb/ton) * 453.59 (g/lb) / 3,600 (sec/hr)

3 Wind Erosion Emission from Outdoor Stockpiles

p[2]	**number of days per year with precipitation >0.01 inch**	148
f[3]	**percentage of time that the unobstructed wind speed exceeds 12 mph at the mean pile height**	9.06

Stockpile Description	S- Silt content[1] %
Raw Material Stockpile	12.7
Pit Waste (B170)	12.7

Pollutant	Emission Factor[4] Raw Material Stockpile lb/day/acre	Emission Factor[4] Pit Waste (170) Stockpile lb/day/acre
PM	8.03	8.03
PM10	3.77	3.77
PM2.5[5]	0.60	0.60

Notes:
1. Silt content chosen as worst case among various materials in stockpile.
2. Number of days per year with precipitation greater than 0.01 inch based on Table B - Precipitation Zones in West Virginia in Application Instructions and Forms for General Permit G40-C by West Virginia Department of Environmental Protection.
3. Percentage of time that the unobstructed wind speed exceeds 12 mph at the mean pile height based on AP 42 Ch. 13.2.5.2 Equation (1) and MRBIAD Aermap processed data 2012-2016.
4. Outdoor stockpile emission factor equation per WVDAQ G40-B (Nonmetallic Mineral Processing) Calculation Workbook: Stockpiles.
5. PM2.5 particle size multiplier of 0.075 per AP-42 Section 13.2.5-2 for Industrial Wind Erosion.

Sample Calculations:
E (lb PM /day/acre) = 1.7*[s/1.5]*[(365-p)/235]*[f/15]
E (lb PM10/day/acre) = (0.47)*1.7*[s/1.5]*[(365-p)/235]*[f/15]
E (lb PM2.5/day/acre) = (0.075)*1.7*[s/1.5]*[(365-p)/235]*[f/15], where
s=silt content of material,
p=number of days with >0.01 inch of precipitation per year,
f=percentage of time that the unobstructed wind speed exceeds 12 mph at mean pile height

Stockpile Description	Stockpile Base Area[2] Max sq. m	Stockpile Base Area[2] acre	Enclosure Description	Control Efficiency[1] (%)	Pollutant	METRIC UNCONTROLLED Emissions (kg/hr)	METRIC UNCONTROLLED Emissions (tonne/year)	METRIC CONTROLLED Emissions (kg/hr)	METRIC CONTROLLED Emissions (tonne/year)	US UNCONTROLLED Emissions (lb/hr)	US UNCONTROLLED Emissions (ton/year)	US CONTROLLED Emissions (lb/hr)	US CONTROLLED Emissions (ton/year)	Modeled Emission Rate[3,4] 24-hr, Annual (g/s)
Raw Material Stockpile (RMS)	500	0.12	3-sided	50%	**PM**	0.02	0.16	0.01	0.08	0.04	0.18	0.02	0.09	-
					PM10	0.01	0.08	4.40E-03	0.04	0.02	0.09	0.01	0.04	1.22E-03
					PM2.5	1.41E-03	0.01	7.03E-04	0.01	3.10E-03	0.01	1.55E-03	0.01	1.95E-04
Melting Furnace Portable Crusher & Storage - Pit Waste (B170) Stockpile	1800	0.44	3-sided	50%	**PM**	0.07	0.59	0.03	0.30	0.15	0.65	0.07	0.33	-
					PM10	0.03	0.28	0.02	0.14	0.07	0.31	0.03	0.15	4.40E-03
					PM2.5	0.01	0.04	2.53E-03	0.02	0.01	0.05	0.01	0.02	7.03E-04
Raw Material Reject Stockpile (IMF14)	10	0.002	3-sided	50%	**PM**	3.75E-04	3.28E-03	1.87E-04	1.64E-03	8.26E-04	3.62E-03	4.13E-04	1.81E-03	-
					PM10	1.76E-04	1.54E-03	8.81E-05	7.72E-04	3.88E-04	1.70E-03	1.94E-04	8.51E-04	2.45E-05
					PM2.5	2.81E-05	2.46E-04	1.41E-05	1.23E-04	6.20E-05	2.71E-04	3.10E-05	1.36E-04	3.90E-06

Notes:
1. Assumed a control efficiency of 50% due to offloading locations having 3-sided concrete enclosures.
2. One half of the pit waste stockpile area occupied by large rocks, therefore wind erosion emissions are negligible due to size.
3. For wind erosion calculation methods, maximum g/s emissions do not vary based on model averaging period (i.e., a source permitted to operate at maximum capacity 24 hr/day, 365 day/year).
4. Modeled emission rates in gray are not modeled individually, but are added as a total source emission rate.

Sample Calculations:
Uncontrolled Hourly Emissions (lb/hr) = E (lb/day/acre) * day/24 hr * Base area of pile (acres)
Uncontrolled Annual Emissions (ton/year) = E (lb/day/acre) * 365 days/yr * ton/2000 lb * Base area of pile (acres)
Controlled Emissions = Uncontrolled Emissions (ton/day; ton/year) * (1 - Control Efficiency (%))
Uncontrolled/Controlled Hourly Emissions (lb/hour) = Uncontrolled/Controlled Emissions (lb/hr) * 0.4535924 kg/lb
Uncontrolled/Controlled Annual Emissions (ton/year) = Uncontrolled/Controlled Emissions (ton/yr) * 0.9071847 tonne/ton
Modeled Emission Rate (g/s) [for all Averaging Periods] = Hourly Emissions (lb/hr) * 453.59 (g/lb) / 3,600 (sec/hr)

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Ranson, West Virginia
Material Handling Fugitives

Updated/added to reflect post-construction updates

4 Material Handling

Source ID	Source Description	Number of Sources	Loading Rate[1]	Enclosure Description	Control Efficiency[4] (%)	Pollutant	Uncontrolled Emission Factor[5] (lb/ton)	METRIC UNCONTROLLED Emissions (tonne/day)	METRIC UNCONTROLLED Emissions (tonne/year)	METRIC CONTROLLED Emissions (tonne/day)	METRIC CONTROLLED Emissions (tonne/year)	US UNCONTROLLED Emissions (ton/day)	US UNCONTROLLED Emissions (ton/year)	US CONTROLLED Emissions (ton/day)	US CONTROLLED Emissions (ton/year)	Modeled Emission Rate[3] 24-hr (g/s)	Modeled Emission Rate[3] Annual (g/s)	Class I AQRV Analysis (Q/d) ton/yr
IMF17	19 Conveyor Transfer Points (B220)	19	Claimed Confidential	Full Enclosure	80%	PM	3.00E-03	1.45E-02	5.31E+00	2.91E-03	1.06E+00	1.60E-02	5.85E+00	3.20E-03	1.17E+00	-	-	-
						PM10	1.10E-03	5.33E-03	1.95E+00	1.07E-03	3.89E-01	5.87E-03	2.14E+00	1.17E-03	4.29E-01	1.23E-02	1.23E-02	0.43
						PM2.5	1.10E-03	5.33E-03	1.95E+00	1.07E-03	3.89E-01	5.87E-03	2.14E+00	1.17E-03	4.29E-01	1.23E-02	1.23E-02	-
	Transfer Point - Magnet Separator to Iron Container (B220)	1		Telescopic Chute & Full Enclosure	95%	PM	3.00E-03	7.65E-04	2.79E-01	3.82E-05	1.40E-02	8.43E-04	3.08E-01	4.22E-05	1.54E-02	-	-	-
						PM10	1.10E-03	2.80E-04	1.02E-01	1.40E-05	5.12E-03	3.09E-04	1.13E-01	1.55E-05	5.64E-03	1.62E-04	1.62E-04	0.01
						PM2.5	1.10E-03	2.80E-04	1.02E-01	1.40E-05	5.12E-03	3.09E-04	1.13E-01	1.55E-05	5.64E-03	1.62E-04	1.62E-04	-
	2 Transfer Points - Feeder (B220)	2		Full Enclosure	80%	PM	3.00E-03	1.53E-03	5.58E-01	3.06E-04	1.12E-01	1.69E-03	6.16E-01	3.37E-04	1.23E-01	-	-	-
						PM10	1.10E-03	5.61E-04	2.05E-01	1.12E-04	4.10E-02	6.18E-04	2.26E-01	1.24E-04	4.51E-02	1.30E-03	1.30E-03	0.05
						PM2.5	1.10E-03	5.61E-04	2.05E-01	1.12E-04	4.10E-02	6.18E-04	2.26E-01	1.24E-04	4.51E-02	1.30E-03	1.30E-03	-
	Transfer Point - Mixing Plant to Bin (B220)	1		Full Enclosure	80%	PM	3.00E-03	7.65E-04	2.79E-01	1.53E-04	5.58E-02	8.43E-04	3.08E-01	1.69E-04	6.16E-02	-	-	-
						PM10	1.10E-03	2.80E-04	1.02E-01	5.61E-05	2.05E-02	3.09E-04	1.13E-01	6.18E-05	2.26E-02	6.49E-04	6.49E-04	0.02
						PM2.5	1.10E-03	2.80E-04	1.02E-01	5.61E-05	2.05E-02	3.09E-04	1.13E-01	6.18E-05	2.26E-02	6.49E-04	6.49E-04	-
	Transfer Point - Seive Separator to Bin (B220)	1		Telescopic Chute & Full Enclosure	95%	PM	3.00E-03	7.65E-04	2.79E-01	3.82E-05	1.40E-02	8.43E-04	3.08E-01	4.22E-05	1.54E-02	-	-	-
						PM10	1.10E-03	2.80E-04	1.02E-01	1.40E-05	5.12E-03	3.09E-04	1.13E-01	1.55E-05	5.64E-03	1.62E-04	1.62E-04	0.01
						PM2.5	1.10E-03	2.80E-04	1.02E-01	1.40E-05	5.12E-03	3.09E-04	1.13E-01	1.55E-05	5.64E-03	1.62E-04	1.62E-04	-
IMF17 Fugitives[6]	B220 Material Handling Fugitives	24	-	-	-	PM	-	1.84E-02	6.70E+00	3.44E-03	1.26E+00	2.02E-02	7.39E+00	3.79E-03	1.39E+00	-	-	-
						PM10		6.73E-03	2.46E+00	1.26E-03	4.61E-01	7.42E-03	2.71E+00	1.39E-03	5.08E-01	1.46E-02	1.46E-02	5.08E-01
						PM2.5		6.73E-03	2.46E+00	1.26E-03	4.61E-01	7.42E-03	2.71E+00	1.39E-03	5.08E-01	1.46E-02	1.46E-02	-
IMF12	Conveyor Transfer Point (B215)	1	Claimed Confidential	Full Enclosure	80%	PM	3.00E-03	7.65E-04	2.79E-01	1.53E-04	5.58E-02	8.43E-04	3.08E-01	1.69E-04	6.16E-02	-	-	-
						PM10	1.10E-03	2.80E-04	1.02E-01	5.61E-05	2.05E-02	3.09E-04	1.13E-01	6.18E-05	2.26E-02	6.49E-04	6.49E-04	0.02
						PM2.5	1.10E-03	2.80E-04	1.02E-01	5.61E-05	2.05E-02	3.09E-04	1.13E-01	6.18E-05	2.26E-02	6.49E-04	6.49E-04	-
IMF16	Conveyor Transfer Point (B300)	1	Claimed Confidential	Full Enclosure	80%	PM	3.00E-03	7.65E-04	2.79E-01	1.53E-04	5.58E-02	8.43E-04	3.08E-01	1.69E-04	6.16E-02	-	-	-
						PM10	1.10E-03	2.80E-04	1.02E-01	5.61E-05	2.05E-02	3.09E-04	1.13E-01	6.18E-05	2.26E-02	6.49E-04	6.49E-04	0.02
						PM2.5	1.10E-03	2.80E-04	1.02E-01	5.61E-05	2.05E-02	3.09E-04	1.13E-01	6.18E-05	2.26E-02	6.49E-04	6.49E-04	-
IMF15	Transfer Point - Magnet Separator to Iron Container (Outside B220)	1	Claimed Confidential	4-sided rubber drop guards	75%	PM	3.00E-03	7.65E-04	2.79E-01	3.82E-05	6.98E-02	8.43E-04	3.08E-01	2.11E-04	7.69E-02	-	-	-
						PM10	1.10E-03	2.80E-04	1.02E-01	7.01E-05	2.56E-02	3.09E-04	1.13E-01	7.73E-05	2.82E-02	8.12E-04	8.12E-04	0.03
						PM2.5	1.10E-03	2.80E-04	1.02E-01	7.01E-05	2.56E-02	3.09E-04	1.13E-01	7.73E-05	2.82E-02	8.12E-04	8.12E-04	-
Total IMF15	Outside B220 Transfer Points	1	-	-	-	PM	-	7.65E-04	2.79E-01	1.91E-04	6.98E-02	8.43E-04	3.08E-01	2.11E-04	7.69E-02	-	-	-
						PM10		2.80E-04	1.02E-01	7.01E-05	2.56E-02	3.09E-04	1.13E-01	7.73E-05	2.82E-02	8.12E-04	8.12E-04	2.82E-02
						PM2.5		2.80E-04	1.02E-01	7.01E-05	2.56E-02	3.09E-04	1.13E-01	7.73E-05	2.82E-02	8.12E-04	8.12E-04	-

1. Loading rates for material transfers are based on the maximum daily or annual input to B215 Raw Material Loading Hopper.
2. Per Application Instructions and Forms for General Permit G40-C by West Virginia Department of Environmental Protection, Telescopic Chutes have a 75% control efficiency. Full Enclosures have an 80% control efficiency for dump bin unloading, crushing and screening, transfer and conveying, and loading material onto piles.
3. Modeled emission rates in gray are not modeled individually, but are added as a total source emission rate.
4. For Q/d screening tool, the annual steady-state-equivalent emission rate (Q) was determined based on maximum daily emissions. For example QPM10 (tpy) = PM10 (ton/day) * 365 (day/yr).
5. Transfer Point emission factors were taken from AP-42 Section 11.19.2. The Tertiary Crushing Source was assumed for both Mixing and Crushing. The Conveyor Transfer Point (uncontrolled) emission factor was assumed for all transfer points. No emission factor data is available for $PM_{2.5}$, so $PM_{2.5}$ is assumed equal to PM_{10}.
6. IMF17 consists of the B220 Material Handling Fugitives shown on this table, as well as the two Conveyor Transition Points with Fabric Filters (B220 No. 1) and (B220 No. 2) and the Mixer and Crusher with Fabric Filters shown on the Material Handling Vents summary

Sample Calculations:
Uncontrolled Emissions (ton/day; ton/year) = E (lb/ton) * Loading Rate (ton/day; ton/year) / 2000 (lb/ton)
Controlled Emissions = Uncontrolled Emissions (ton/day; ton/year) * (1 - Control Efficiency (%))
Uncontrolled/Controlled Emissions (tonne/day; tonne/year) = Uncontrolled/Controlled Emissions (ton/day; ton/year) * 0.9071847 tonne/ton
Modeled 24-hr Emission Rate (g/s) = Daily Emissions (ton/day) / 24 (hr/day) [for 24-hr model averaging period] * 2,000 (lb/ton) * 453.59 (g/lb) / 3,600 (sec/hr)
Modeled Annual Emission Rate (g/s) = Annual Emissions (ton/yr) / 8,760 (hr/yr) [for annual model averaging period] * 2,000 (lb/ton) * 453.59 (g/lb) / 3,600 (sec/hr)

Total Fugitive Emissions Summary

Source ID	Source Description	PM CONTROLLED Total Annual Emissions (short tons/yr)	PM CONTROLLED Total Annual Emissions (tonne/year)	PM_{10} CONTROLLED Total Annual Emissions (short tons/yr)	PM_{10} CONTROLLED Total Annual Emissions (tonne/year)	PM_{10} Modeled Emission Rate (24-hr g/s)	PM_{10} Modeled Emission Rate (Annual g/s)	$PM_{2.5}$ CONTROLLED Total Annual Emissions (short tons/yr)	$PM_{2.5}$ CONTROLLED Total Annual Emissions (tonne/year)	$PM_{2.5}$ Modeled Emission Rate (24-hr g/s)	$PM_{2.5}$ Modeled Emission Rate (Annual g/s)	PM10 Class I AQRV Analysis (Q/d)[4] ton/yr
B210/211	Raw Material Storage - Delivery to 210 [from offsite (by truck) or from stockpile (by FEL)]	0.28	0.26	0.13	0.12	4.88E-03	3.83E-03	0.02	0.02	7.38E-04	5.79E-04	0.17
B170	Melting Furnace Portable Crusher & Storage -Melting Furnace Slag Portable Crusher + Drop to Pit Waste (170) (from portable crusher) + Wind Erosion from Pit Waste (170) Stockpile	0.59	0.53	0.27	0.25	0.03	7.80E-03	0.06	0.05	9.00E-03	1.73E-03	1.75
B211	Raw Material Stockpile - Delivery to Stockpile [from offsite (by truck)] + Wind Erosion from Raw Material Stockpile	0.20	0.18	0.14	0.09	3.29E-03	2.75E-03	1.48E-02	1.35E-02	5.09E-04	4.27E-04	0.11
B215	Raw Material Loading Hopper	0.06	0.05	0.03	0.02	7.65E-04	7.65E-04	4.03E-03	1.46E-02	1.16E-04	1.16E-04	2.66E-02
RM_REJ	Raw Material Reject Collection Drop	1.12E-03	1.02E-03	5.32E-04	4.83E-04	7.50E-06	1.53E-05	8.05E-05	7.31E-05	1.14E-06	2.32E-06	5.32E-04
IMF17	B220 Material Handling Fugitives	1.39E+00	1.26E+00	5.08E-01	4.61E-01	1.46E-02	1.46E-02	5.08E-01	4.61E-01	1.46E-02	1.46E-02	5.08E-01
IMF12	Conveyor Transfer Point (B215)	6.16E-02	5.58E-02	2.26E-02	2.05E-02	6.49E-04	6.49E-04	2.26E-02	2.05E-02	6.49E-04	6.49E-04	2.26E-02
IMF16	Conveyor Transfer Point (B300)	6.16E-02	5.58E-02	2.26E-02	2.05E-02	6.49E-04	6.49E-04	2.26E-02	2.05E-02	6.49E-04	6.49E-04	2.26E-02
IMF15	Outside B220 Transfer Points	7.69E-02	6.98E-02	2.82E-02	2.56E-02	8.12E-04	8.12E-04	2.82E-02	2.56E-02	8.12E-04	8.12E-04	2.82E-02
IMF14	Raw Material Reject Stockpile	1.81E-03	1.64E-03	8.51E-04	7.72E-04	2.45E-05	2.45E-05	1.36E-04	1.23E-04	3.90E-06	3.90E-06	8.51E-04

Roxul USA Inc. dba ROCKWOOL
Ranson, West Virginia
Material Handling Vents

Updated/added to reflect post-construction updates

				METRIC		US					METRIC		US			
				PM, PM_{10}							$PM_{2.5}$[1]					
Source ID	Source Description[2]	Fan Flow Rate		Exhaust Concentration		Hourly Emissions	Annual Emissions	Hourly Emissions	Annual Emissions	Modeled Emission Rate[3] 24-hr, Annual	Exhaust Concentration		Hourly Emissions	Annual Emissions	Hourly Emissions	Annual Emissions	Modeled Emission Rate[3] 24-hr, Annual
		(Nm3/h)	(scfm)	(mg/Nm3)	(gr/scf)	(kg/hr)	(tonne/yr)	(lb/hr)	(ton/yr)	(g/s)	(mg/Nm3)	(gr/scf)	(kg/hr)	(tonne/yr)	(lb/hr)	(ton/yr)	(g/s)
IMF21	Charging Building Vacuum Cleaning Filter	500	316	5	0.002	2.50E-03	0.02	5.51E-03	0.02	6.94E-04	2.5	0.001	1.25E-03	0.01	2.76E-03	0.01	3.47E-04
IMF08	Sorbent Silo	1,200	758	5	0.002	6.00E-03	0.05	0.01	0.06	1.67E-03	2.5	0.001	3.00E-03	0.03	6.61E-03	0.03	8.33E-04
IMF07	Filter Fines Day Silo	1,250	790	5	0.002	6.25E-03	0.05	0.01	0.06	1.74E-03	2.5	0.001	3.13E-03	0.03	6.89E-03	0.03	8.68E-04
	Total Indoor with Settling Factor (80%)[4]	-	-	-	-	1.25E-03	0.01	2.76E-03	0.01	3.47E-04	-	-	6.25E-04	0.01	1.38E-03	0.01	1.74E-04
IMF09	Spent Sorbent Silo	1,200	758	5	0.002	6.00E-03	0.05	0.01	0.06	1.67E-03	2.5	0.001	3.00E-03	0.03	6.61E-03	0.03	8.33E-04
IMF10	Filter Fines Receiving Silo	1,200	758	5	0.002	6.00E-03	0.05	0.01	0.06	1.67E-03	2.5	0.001	3.00E-03	0.03	6.61E-03	0.03	8.33E-04
IMF11	Conveyor Transition Point (B215 to B220)	1,800	1,137	5	0.002	0.01	0.08	0.02	0.09	2.50E-03	2.5	0.001	4.50E-03	0.04	9.92E-03	0.04	1.25E-03
	Total Indoor with Settling Factor (80%)[4]	-	-	-	-	1.80E-03	0.02	3.97E-03	0.02	5.00E-04	-	-	9.00E-04	0.01	1.98E-03	0.01	2.50E-04
B220 Conveyor Transition Points, Mixer, and Crusher with Fabric Filters[5]	Conveyor Transition Point (B220 No. 1)	1,800	1,137	5	0.002	0.01	0.08	0.02	0.09	2.50E-03	2.5	0.001	4.50E-03	0.04	0.01	0.04	1.25E-03
	Conveyor Transition Point (B220 No. 2)	1,800	1,137	5	0.002	0.01	0.08	0.02	0.09	2.50E-03	2.5	0.001	4.50E-03	0.04	0.01	0.04	1.25E-03
	Mixer	3,500	2,211	5	0.002	0.02	0.15	0.04	0.17	4.86E-03	2.5	0.001	8.75E-03	0.08	0.02	0.08	2.43E-03
	Crusher	3,500	2,211	5	0.002	0.02	0.15	0.04	0.17	4.86E-03	2.5	0.001	8.75E-03	0.08	0.02	0.08	2.43E-03
	Total Indoor with Settling Factor (80%)[4]	-	-	-	-	1.06E-02	0.09	0.02	0.10	2.94E-03	-	-	5.30E-03	0.05	1.17E-02	0.05	1.47E-03
	Total Conveyor Transition Point (B220 No. 1)	-	-	-	-	1.80E-03	0.02	3.97E-03	0.02	5.00E-04	-	-	9.00E-04	0.01	1.98E-03	0.01	2.50E-04
	Total Conveyor Transition Point (B220 No. 2)	-	-	-	-	1.80E-03	0.02	3.97E-03	0.02	5.00E-04	-	-	9.00E-04	0.01	1.98E-03	0.01	2.50E-04
	Total Mixer	-	-	-	-	3.50E-03	0.03	7.72E-03	0.03	9.72E-04	-	-	1.75E-03	0.02	3.86E-03	0.02	4.86E-04
	Total Crusher	-	-	-	-	3.50E-03	0.03	7.72E-03	0.03	9.72E-04	-	-	1.75E-03	0.02	3.86E-03	0.02	4.86E-04
CM10	Recycle Building Vent 1	30,000	18,950	10	0.004	0.30	2.63	0.66	2.90	8.33E-02	5	0.002	0.15	1.31	0.33	1.45	4.17E-02
CM11	Recycle Building Vent 2	30,000	18,950	10	0.004	0.30	2.63	0.66	2.90	8.33E-02	5	0.002	0.15	1.31	0.33	1.45	4.17E-02
CM08	Recycle Building Vent 3	2,500	1,579	10	0.004	0.03	0.22	0.06	0.24	6.94E-03	5	0.002	0.01	0.11	0.03	0.12	3.47E-03
CM09	Recycle Building Vent 4	2,500	1,579	10	0.004	0.03	0.22	0.06	0.24	6.94E-03	5	0.002	0.01	0.11	0.03	0.12	3.47E-03

Notes:
ton = short tons
tonne = metric tons
1. PM2.5 is conservatively assumed to be 50% of PM for material handling.
2. Material handling vents are equipped with fabric filters or bin vent filters.
3. Maximum g/s emissions do not vary based on model averaging period (i.e., a source permitted to operate at maximum capacity 24 hr/day, 365 day/year).
4. Per Application Instructions and Forms for General Permit G40-C by West Virginia Department of Environmental Protection, Full Enclosures have an 80% control efficiency for dump bin unloading, crushing and screening, transfer and conveying, and loading material onto piles.
5. Conveyor Transition Points (B220 No. 1) and (B220 No. 2) are accounted for with IMF17, as well as the Mixer and Crusher.

Sample Calculations

Hourly Emissions (kg/hr) = Fan Flow Rate (Nm3/hr) * Exhaust Concentration (mg/Nm3) * 1,000,000 (mg/kg)□
Annual Emissions (tonne/yr) = Hourly Emissions (kg/hr) * 8,760 (hr/yr) / 1,000 (kg/tonne)□
(lb/hr) = Fan Flow
Annual Emissions (ton/yr) = Hourly Emissions (lb/hr) * 8,760 (hr/yr) / 2,000 (lb/ton)□
Modeled Emission Rate (g/s) [for all Averaging Periods] = Hourly Emissions (lb/hr) * 453.59 (g/lb) / 3,600 (sec/hr)□

Roxul USA Inc. dba ROCKWOOL
Ranson, West Virginia
Source ID: Natural Gas Boilers (CM03, CM04)

Updated/added to reflect post-construction updates

Operating Parameters, PER BOILER

Maximum Heat Input	1,462	kw
Capacity	4.99	MMBtu/hr
Operating Hours	8,760	hr/yr
Fuel Type	Natural Gas	
Fuel HHV	1,026	MMbtu/MMscf

Maximum Potential Emissions[1,2]

EMISSIONS SHOWN FOR AN INDIVIDUAL EMISSION POINT (PER BOILER)

Pollutant	Emission Factor		US		METRIC		Modeled Emission Rate[4]	
			Hourly Emissions Per Source	Annual Emissions Per Source	Hourly Emissions Per Source	Annual Emissions Per Source		
	(lb/MMscf)	(lb/MMbtu)	(lb/hr)	(ton/yr)	(kg/hr)	(tonne/yr)	(g/s)	Averaging Period
NO_x	36.21	0.0353	0.18	0.77	0.08	0.70	2.22E-02	1-hr, Annual
SO_2	0.6	0.0006	2.92E-03	0.01	1.32E-03	0.01	3.68E-04	1-hr, 3-hr, 24-hr, Annual
$PM/PM_{10F}/PM_{2.5F}$	1.9	0.0019	0.01	0.04	4.19E-03	0.04	-	-
$PM_{10T}/PM_{2.5T}$	7.6	0.0074	0.04	0.16	0.02	0.15	4.66E-03	24-hr, Annual
Condensable PM	5.7	0.0056	0.03	0.12	0.01	0.11	-	-
CO	84	0.0819	0.41	1.79	0.19	1.62	5.15E-02	1-hr, 8-hr
VOC	5.5	0.0054	0.03	0.12	0.01	0.11	-	-
Lead	0.0005	4.87E-07	2.43E-06	1.07E-05	1.10E-06	9.66E-06	-	-
Hexane	1.8	0.0018	0.01	0.04	0.00	0.03	-	-
Total HAPs	1.89	0.0018	0.01	0.04	4.17E-03	0.04	-	-
CO_2	-	116.98	583.72	2556.68	264.77	2,319.38	-	-
CH_4	-	2.20E-03	0.01	0.05	4.99E-03	0.04	-	-
N_2O	-	2.20E-04	1.10E-03	4.82E-03	4.99E-04	4.37E-03	-	-
CO_2e^3	-	-	584.32	2,559.32	265.04	2,321.77	-	-

Notes:
ton = short tons
tonne = metric tons
1. Natural Gas emission factor source AP-42 Table 1.4-1, 1.4-2, 1.4-3, and 1.4-4 for SO_2, PM_{10T}, $PM_{2.5T}$, CO, VOC, Lead, Hexane, Total HAPs, Chromium. GHG emission factors per 40 CFR Part 98, Table C-1 and C-2. GWPs per 40 CFR 98, Table A-1. NO_X emission factor based on 30 ppmvd @ 3% O2 per manufacturer specification.

2. PM_{10T} and $PM_{2.5T}$ emission factors include filterable and condensable particulate matter.
3. CO_2 Equivalent (CO_2e) lb/hr, ton/yr = CO_2 + [GWP_{CH4} * CH_4)] + [GWP_{N2O} * N_2O].
4. Maximum g/s emissions do not vary based on model averaging period (i.e., a source permitted to operate at maximum capacity 24 hr/day, 365 day/yea

Sample Calculations:
Hourly Emissions (lb/hr) = Emission Factor (lb/MMBtu) * Maximum Heat Input Capacity (MMBtu/hr)
Annual Emissions (ton/yr) = Hourly Emissions (lb/hr) * 8,760 (hr/yr) / 2,000 (lb/ton)
Hourly Emissions (kg/hr) = Hourly Emissions (lb/hr) * 0.4535924 kg/lb
Annual Emissions (tonne/yr) = Hourly Emissions (kg/hr) * 8,760 (hr/yr) / 1,000 (kg/tonne)
Modeled Emission Rate (g/s) [for all Averaging Periods] = Hourly Emissions (lb/hr) * 453.59 (g/lb) / 3,600 (sec/hr)

Roxul USA Inc. dba ROCKWOOL
Ranson, West Virginia
Source ID: Emergency Fire Pump Engine (EFP1)

Updated/added to reflect post-construction updates

Operating Parameters, per fire pump engine

Fuel type	Diesel		0.0015% Sulfur
Maximum Firing Rate	316	hp	
	236	kw	
	2.21	MMBtu/hr	
Operating hours	500	hr/yr	

Maximum Potential Emissions

Pollutant	Emission Factor			US		METRIC		Modeled Emission Rate[5]		Class I AQRV Analysis (Q/d)[6]
				Hourly Emissions	Annual Emissions	Hourly Emissions	Annual Emissions			
	g/kw-hr	lb/hp-hr	Source	(lb/hr)	(ton/yr)	(kg/hr)	(tonne/yr)	(g/s)	Averaging Period	ton/yr
Filterable PM/PM_{10}/$PM_{2.5}$[1]	0.11	1.81E-04	Manufacturer Rating Data	0.06	0.01	0.03	0.01	-	-	-
PM_{10T}	-	2.35E-04	Filterable + Condensable	0.07	0.02	0.03	0.02	5.34E-04 1.95E-04	Annual 24-hr	0.33
$PM_{2.5T}$	-	2.35E-04	Filterable + Condensable	0.07	0.02	0.03	0.02	5.34E-04 1.95E-04	Annual 24-hr	-
Condensable PM[2]	-	5.39E-05	AP-42, Tbl. 3.4-2	0.02	4.26E-03	7.73E-03	3.87E-03	-	-	-
NO_x[4]	3.43	5.639E-03	Manufacturer Rating Data	1.78	0.45	0.81	0.40	1.28E-02 intermittent excluded	Annual 1-hr	7.81
CO	0.8	1.315E-03	Manufacturer Rating Data	0.42	0.10	0.19	0.09	2.62E-02	1-hr, 8-hr	-
SO_2	-	1.09E-05	Mass Balance	3.44E-03	8.61E-04	1.56E-03	7.81E-04	7.23E-05 intermittent excluded	3-hr, 24-hr, Annual 1-hr	0.02
Combustion VOC[7]	0.11	1.808E-04	Manufacturer Rating Data	0.06	0.01	0.03	0.01	-	-	-
Total HAPs[2]	-	2.71E-05	AP-42, ($3.87x10^{-3}$ lb/MMBtu)	8.58E-03	2.14E-03	3.89E-03	1.95E-03	-	-	-
CO_2	-	1.14	40 CFR 98, Tbl C-1 (73.96 kg/MMBtu)	360.75	90.19	163.64	81.82	-	-	-
CH_4	-	4.63E-05	40 CFR 98, Tbl C-2 (3.0x10-3 kg/MMBtu)	1.46E-02	3.66E-03	6.64E-03	3.32E-03	-	-	-
N_2O	-	9.25E-06	40 CFR 98, Tbl C-2 (6.0x10-4 kg/MMBtu)	2.93E-03	7.32E-04	1.33E-03	6.64E-04	-	-	-
CO_2e[3]	-	-	-	361.99	90.50	164.20	82.10	-	-	-

Notes:
ton = short tons
tonne = metric tons
1. Conservatively assuming PM= PM_{10}, $PM_{2.5.}$
2. Per AP-42, used average brake specific fuel consumption of 7,000 Btu/hp-hr to convert lb/MMBtu emission factors to lb/hp-hr.
3. CO_2 Equivalent (CO_2e) lb/hr, ton/yr = CO_2 + [GWP_{CH4} * CH_4)] + [GWP_{N2O} * N_2O]. GWPs per 40 CFR 98, Table A-1 [CO_2 = 1, CH_4 = 25, N_2O = 298].
4. Conservatively assumed all NSPS NOx + NMHC limit emitted as NO_X.
5. The Emergency Fire Pump will assume 100 hours of operation per year for testing and readiness purposes. As an intermittent source it would not be included in the 1-hr NO_x and SO_2 analyses as recommended by EPA (EPA Memorandum March 16, 2011). For the 1-hr and 8-hr CO, 24-hr PM_{10}/$PM_{2.5}$, and 3-hr and 24-hr SO_2 analyses, the Emergency Fire Pump will be modeled assuming emission rates conservatively based on an operation schedule of 1/2 hour per day. Modeled emissions for the 24-hr and annual SO_2 standard were conservatively set equal to the modeled 3-hr SO_2 emissions. Modeled emissions for the 8-hr CO standard were conservatively set equal to the modeled 1-hr CO emissions.

annual steady state emissions conservatively assume 24 hr/day operation, although maximum 24-hour emissions are anticipated to include a half hour of operation for testing (in an emergency, EFP1 may operate for longer, but other sources at facility would likley not be operating).
7. Conservatively assumed total hydrocarbons=TOC=VOC

Sample Calculations:
Hourly Emissions (lb/hr) = Emission Factor (lb/hp-hr) * Maximum Firing Rate (hp)
Annual Emissions (ton/yr) = Hourly Emissions (lb/hr) * 500 (hr/yr) / 2,000 (lb/ton)
Hourly Emissions (kg/hr) = Hourly Emissions (lb/hr) * 0.4535924 kg/lb
Annual Emissions (tonne/year) = Annual Emissions (ton/year) * 0.9071847 tonne/ton
SO_2 3-hr, 24-hr, Annual Emission Rate (g/s) = Hourly Emissions (lb/hr) / 2 [per 0.5 hr/day assumption] / 3-hr model averaging period * 453.59 (g/lb) / 3,600 (sec/hr)
CO Modeled 1-hr, 8-hr Emission Rate (g/s) = Hourly Emissions (lb/hr) / 2 [per 0.5 hr/day assumption] * 453.59 (g/lb) / 3,600 (sec/hr)
PM_{10}/$PM_{2.5}$ Modeled 24-hr Emission Rate (g/s) = Daily Emissions (lb/hr) / 2 [per 0.5 hr/day assumption] / 24-hr model averaging period * 2,000 (lb/ton) * 453.59 (g/lb) / 3,600 (sec/hr)
PM_{10}/$PM_{2.5}$/NO_x Modeled Annual Emission Rate (g/s) = Annual Emissions (ton/yr) [based on 500 hr/yr] / 8,760 (hr/yr) * 2,000 (lb/ton) * 453.59 (g/lb) / 3,600 (sec/hr)

Roxul USA Inc. dba ROCKWOOL
Ranson, West Virginia
Source ID: Facility-wide Fugitive Emissions from Paved Haul Roads

Emission Estimate For Paved Haulroads[1]

k =	PM particle size multiplier ((lb/VMT))	0.011
k_{10} =	PM10 particle size multiplier ((lb/VMT))	0.0022
$k_{2.5}$=	PM2.5 particle size multiplier ((lb/VMT))	0.00054
$sL_{finishedprod}$[2] =	Finished product road surface silt loading, (g/m^2)	0.2
sL_{rawmat}[3] =	Raw materials road surface silt loading, (g/m^2)	8.2
W[6] =	Mean Vehicle Weight (tons)	see table
P[4] =	Number of days per year with precipitation >0.01 inch	148
N =	Number of days in averaging period	365
CE[5]	Control Efficiency, %	75%
-	Maximum Weeks of Operation per year:	52
-	Hours of Operation per year:	8,760

Notes:
1. Paved haulroads emission factor equation per AP-42 Ch. 13.2.1.3 Equation 2, January 2011).
2. Finished product road surface silt loading based on AP-42 Table 13.2.1-2 Ubiquitous Silt Loading Default Values with Hot Spot Contributions from Anti-Skid Abrasives, ADT Category 500-5,000.
3. Raw materials road surface silt loading based on AP-42 Table 13.2.1-3 Typical Silt Content and Loading Values for Paved Roads at Industrial Facilities, Quarry Industry.
4. Number of days per year with precipitation greater than 0.01 inch based on Table B - Precipitation Zones in West Virginia in Application Instructions and Forms for General Permit G40-C by West Virginia Department of Environmental Protection.
5. Control Efficiency conservatively estimated due to paved road sweeping.
6. Mean vehicle weight is an average of the empty vehicle weight and loaded vehicle weight.

Sample Calculations:
E (lb/vehicle mile traveled (VMT)) = [k * (sL)^0.91 * (W)^1.02] * (1 - (P/4*N)

US Units

Item No.	Description	Empty Vehicle Weight	Load Carried Weight[2]	Loaded Vehicle Weight[3]	W, Mean Vehicle Weight	Miles per Trip	Maximum Trips Per Day, Per Year[2]	PM				PM-10						PM-2.5						PM10
								Uncontrolled Emission Factor	Uncontrolled Emissions		Controlled Emissions		Uncontrolled Emission Factor	Uncontrolled Emissions		Controlled Emissions		Total Modeled Emission Rate[1]		Uncontrolled Emission Factor	Uncontrolled Emissions		Controlled Emissions		Total Modeled Emission Rate[1]	Class I AQRV Analysis (Q/d)
		(tons)	(tons)	(tons)	(tons)			(lb/VMT)	(ton/day)	(ton/year)	(ton/day)	(ton/year)	(lb/VMT)	(ton/day)	(ton/year)	(ton/day)	(ton/year)	24-hr (g/s)	Annual (g/s)	(lb/VMT)	(ton/day)	(ton/year)	(ton/day)	(ton/year)	24-hr (g/s)	Annual (g/s)	ton/yr
1	Truck - Oil	Claimed Confidential	Claimed Confidential	Claimed Confidential	Claimed Confidential	0.46	Claimed Confidential	Claimed Confidential	3.54E-04	0.02	8.85E-05	4.60E-03	Claimed Confidential	7.08E-05	3.68E-03	1.77E-05	9.20E-04	1.86E-04	2.65E-05	Claimed Confidential	1.74E-05	9.03E-04	4.34E-06	2.26E-04	4.56E-05	6.50E-06	0.01
2	Truck - Oxygen					0.46			7.29E-04	0.21	1.82E-04	0.05		1.46E-04	0.04	3.65E-05	0.01	3.83E-04	3.00E-04		3.58E-05	0.01	8.95E-06	2.56E-03	9.40E-05	7.36E-05	0.01
3	Truck - Raw Material (Stone) to 210					0.46			0.01	2.74	2.91E-03	0.68		2.32E-03	0.55	5.81E-04	0.14	6.10E-03	3.94E-03		5.71E-04	0.13	1.43E-04	0.03	1.50E-03	9.67E-04	0.21
4	Truck - DeSOx and Binder					0.46			8.36E-04	0.24	2.09E-04	0.06		1.67E-04	0.05	4.18E-05	0.01	4.39E-04	3.44E-04		4.11E-05	0.01	1.03E-05	2.94E-03	1.08E-04	8.45E-05	0.02
5	Truck - Waste					0.46			3.22E-04	0.09	8.04E-05	0.02		6.43E-05	0.02	1.61E-05	4.60E-03	1.69E-04	1.32E-04		1.58E-05	4.52E-03	3.95E-06	1.13E-03	4.15E-05	3.25E-05	0.01
6	Truck - Pallet and Foil					0.76			1.05E-04	0.03	2.63E-05	0.01		2.10E-05	0.01	5.26E-06	1.50E-03	5.52E-05	4.33E-05		5.17E-06	1.48E-03	1.29E-06	3.69E-04	1.36E-05	1.06E-05	1.92E-03
7	Truck - Finished Goods					0.76			8.85E-04	0.25	2.21E-04	0.06		1.77E-04	0.05	4.43E-05	0.01	4.65E-04	3.64E-04		4.34E-05	0.01	1.09E-05	3.11E-03	1.14E-04	8.94E-05	0.02
8[4]	FEL - Diverted Melt from Bldg 300 to Pit Waste (170)					0.27			0.01	2.10	2.87E-03	0.52		2.30E-03	0.42	5.74E-04	0.10	6.03E-03	3.01E-03		5.64E-04	0.10	1.41E-04	0.03	1.48E-03	7.40E-04	0.21
9[4]	FEL - Crushed Melt from 170 to 210					0.1			4.25E-03	0.78	1.06E-03	0.19		8.50E-04	0.16	2.13E-04	0.04	2.23E-03	1.12E-03		2.09E-04	0.04	5.22E-05	0.01	5.48E-04	2.74E-04	0.08
10[4]	FEL - Raw Material from 210 to Feed Hopper					0.06			3.23E-03	1.18	8.08E-04	0.29		6.46E-04	0.24	1.62E-04	0.06	1.70E-03	1.70E-03		1.59E-04	0.06	3.97E-05	0.01	4.16E-04	4.16E-04	0.06
11[4]	FEL - Raw Material from Stockpile to 210					0.16			0.01	3.15	2.91E-03	0.79		2.33E-03	0.63	5.83E-04	0.16	0.01	4.52E-03		5.72E-04	0.15	1.43E-04	0.04	1.50E-03	1.11E-03	0.21
12	Truck - Raw Material from Stockpile to 210 (add'l miles over Item 3)					0.27			0.01	0.26	1.81E-03	0.07		1.45E-03	0.05	3.62E-04	0.01	3.80E-03	3.77E-04		3.56E-04	0.01	8.89E-05	3.22E-03	9.33E-04	9.26E-05	0.13
							TOTAL Raw Material (Item 1-5, 8-12)		**0.05**	**10.75**	**0.01**	**2.69**		**0.01**	**2.15**	**0.003**	**0.54**	**0.03**	**0.02**		**0.003**	**0.53**	**6.35E-04**	**0.13**	**6.67E-03**	**3.80E-03**	**0.94**
							TOTAL Finished Products (Items 6-7)		**9.90E-04**	**0.28**	**2.48E-04**	**0.07**		**1.98E-04**	**0.06**	**4.95E-05**	**0.01**	**5.20E-04**	**4.07E-04**		**4.86E-05**	**0.01**	**1.22E-05**	**3.48E-03**	**1.28E-04**	**1.00E-04**	**0.02**

Source	Pollutant	No. of Modeled Segments	PER SEGMENT Modeled Emission Rates[1]	
			24-hr (g/s)	Annual (g/s)
Raw Material Paved Haul Roads	PM-10	31	8.76E-04	4.99E-04
	PM-2.5		2.15E-04	1.22E-04
Finished Products Paved Haul Roads	PM-10	35	1.49E-05	1.16E-05
	PM-2.5		3.65E-06	2.86E-06

Metric Units

Item No.	Description	Empty Vehicle Weight	Load Carried Weight	Loaded Vehicle Weight	W, Mean Vehicle Weight	km per Trip	Maximum Trips Per Day, Per Year	PM				PM-10						PM-2.5					
								Uncontrolled Emission Factor	Uncontrolled Emissions		Controlled Emissions		Uncontrolled Emission Factor	Uncontrolled Emissions		Controlled Emissions		Total Modeled Emission Rate		Uncontrolled Emission Factor	Uncontrolled Emissions		Controlled Emissions		Total Modeled Emission Rate
		(tonnes)	(tonnes)	(tonnes)	(tonnes)			(kg/VMT)	(tonne/day)	(tonne/year)	(tonne/day)	(tonne/year)	(kg/VMT)	(tonne/day)	(tonne/year)	(tonne/day)	(tonne/year)	24-hr (g/s)	Annual (g/s)	(kg/VMT)	(tonne/day)	(tonne/year)	(tonne/day)	(tonne/year)	24-hr (g/s)	Annual (g/s)
1	Truck - Oil	Claimed Confidential	Claimed Confidential	Claimed Confidential	Claimed Confidential	0.74	Claimed Confidential	Claimed Confidential	3.21E-04	0.02	8.03E-05	4.17E-03	Claimed Confidential	6.42E-05	3.34E-03	1.61E-05	8.35E-04			Claimed Confidential	1.58E-05	8.20E-04	3.94E-06	2.05E-04		
2	Truck - Oxygen					0.74			6.61E-04	0.19	1.65E-04	0.05		1.32E-04	0.04	3.31E-05	0.01				3.25E-05	0.01	8.12E-06	2.32E-03		
3	Truck - Raw Material (Stone) to 210 or Stockpile					0.74			1.05E-02	2.48	2.64E-03	0.62		2.11E-03	0.50	5.27E-04	0.12				5.18E-04	0.12	1.29E-04	0.03		
4	Truck - DeSOx and Binder					0.74			7.59E-04	0.22	1.90E-04	0.05		1.52E-04	0.04	3.79E-05	0.01				3.73E-05	0.01	9.31E-06	2.66E-03		
5	Truck - Waste					0.74			2.92E-04	0.08	7.30E-05	0.02		5.84E-05	0.02	1.46E-05	4.17E-03				1.43E-05	4.10E-03	3.58E-06	1.02E-03		
6	Truck - Pallet and Foil					1.22			9.55E-05	0.03	2.39E-05	0.01		1.91E-05	0.01	4.77E-06	1.37E-03				4.69E-06	1.34E-03	1.17E-06	3.35E-04		
7	Truck - Finished Goods					1.22			8.03E-04	0.23	2.01E-04	0.06		1.61E-04	0.05	4.01E-05	0.01				3.94E-05	0.01	9.85E-06	2.82E-03		
8	FEL - Diverted Melt from Bldg 300 to Pit Waste (170)					0.43			1.04E-02	1.90	2.60E-03	0.48		2.08E-03	0.38	5.21E-04	0.10				5.11E-04	0.09	1.28E-04	0.02		
9	FEL - Crushed Melt from 170 to 210					0.16			3.86E-03	0.70	9.64E-04	0.18		7.72E-04	0.14	1.93E-04	0.04				1.89E-04	0.03	4.73E-05	0.01		
10	FEL - Raw Material from 210 to Feed Hopper					0.10			2.93E-03	1.07	7.33E-04	0.27		5.86E-04	0.21	1.47E-04	0.05				1.44E-04	0.05	3.60E-05	0.01		
11	FEL - Raw Material from Stockpile to 210					0.26			0.01	2.85	2.64E-03	0.71		2.12E-03	0.57	5.29E-04	0.14				5.19E-04	0.14	1.30E-04	3.50E-02		
12	Truck - Raw Material from Stockpile to 210 (add'l miles over Item 3)					0.43			6.57E-03	0.24	1.64E-03	0.06		1.31E-03	0.05	3.29E-04	0.01				3.23E-04	0.01	8.06E-05	2.92E-03		
							TOTAL Raw Material (Item 1-5, 8-12)		**0.05**	**9.76**	**0.01**	**2.44**		**9.39E-03**	**1.95**	**0.002**	**0.49**				**0.002**	**0.48**	**5.76E-04**	**0.12**		
							TOTAL Finished Products (Items 6-7)		**8.98E-04**	**0.26**	**2.25E-04**	**0.06**		**1.80E-04**	**0.05**	**4.49E-05**	**0.01**				**4.41E-05**	**0.01**	**1.10E-05**	**3.15E-03**		

Notes:
ton = short tons
tonne = metric tons
FEL = front end loader
1. Modeled emission rates in gray are not modeled as a total, but divided out among the number of segments modeled.
2. Maximum Trips per Day, Maximum Trips per Year, and Load Carried Weight by truck are based on data from a similar Roxul facility.
3. Loaded vehicle weight is a sum of empty vehicle weight and load carried weight, unless the sum is greater than 40 tons, which is the maximum loaded vehicle weight per the Department of Transportation (23 CFR 658.17).
4. FEL empty vehicle weight based on operating weight of a Cat 930K Wheel Loader Standard Lift. FEL load carried weight based on Cat 930K Wheel Loader General Purpose bucket capacity, throughput from a similar Roxul facility, and the approximate weight of basalt rock per cubic yard by Pacific Mountain Masonry.
5. For Q/d screening tool, the annual steady-state-equivalent emission rate (Q) was determined based on maximum daily emissions. For example QPM10 (tpy) = PM10 (ton/day) * 365 (day/yr).
Sample Calculations:
Uncontrolled Daily Emissions (ton/day) = E (lb/VMT) * Miles per trip * Max trips per day / 2000 (lb/ton)
Uncontrolled Yearly Emissions (ton/year) = E (lb/VMT) * Miles per trip * Max trips per year / 2000 (lb/ton)
Controlled Daily/Yearly Emissions (ton/day, ton/year) = Uncontrolled Daily/Yearly Emissions (ton/day, ton/year) * (1 - Control Efficiency (%))
Uncontrolled/Controlled Daily/Yearly Emissions (ton/day, ton/year) = Uncontrolled/Controlled Daily/Yearly Emissions (ton/day, ton/year) * 0.9071847 tonne/ton
Modeled 24-hr Emission Rate (g/s) = Daily Emissions (ton/day) / 24 (hr/day) [for 24-hr model averaging period] * 2,000 (lb/ton) * 453.59 (g/lb) / 3,600 (sec/hr)
Modeled Annual Emission Rate (g/s) = Annual Emissions (ton/yr) / 8,760 (hr/yr) [for annual model averaging period] * 2,000 (lb/ton) * 453.59 (g/lb) / 3,600 (sec/hr)

Roxul USA Inc. dba ROCKWOOL
Ranson, West Virginia
Source ID: Facility-wide Storage Tanks

Updated/added to reflect post-construction updates

														US						METRIC					
														VOC Emissions			Speciated HAP Emissions			VOC Emissions			Speciated HAP Emissions		
Rockwool Source ID[6]	Description	Material Stored	Tank Orientation	Capacity	Height	Diameter	Throughput	Fill Method	Roof Type	Temp. Controlled?	Storage Temperature		Pressurized?	Breathing Loss[2]	Working Loss	Total Loss[3]	Total Formaldehyde	Total Methanol	Total Phenol	Breathing Loss[2]	Working Loss	Total Loss[3]	Total Formaldehyde	Total Methanol	Total Phenol
				(gal)	(ft)	(ft)	(gal/yr)				deg C	deg F	(Y, N)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(tonne/yr)	(tonne/yr)	(tonne/yr)	(tonne/yr)	(tonne/yr)	(tonne/yr)
TK-DF	One (1) Diesel Fuel Horizontal Storage Tank (4.7 m3, 1,242 gal)	Diesel Fuel	Horizontal	1,242	16.4	4.4	52,834	Splash Pump	Flat	No	Ambient	Ambient	No	1.18E-04	4.33E-04	5.51E-04	-	-	-	1.07E-04	3.93E-04	5.00E-04	-	-	-
TK-TO1	One (1) Thermal Oil Horizontal Expansion Tank (0.8 m3, 212 gal)	Thermal Oil	Horizontal	212	6.5	3.0	180	Splash Pump	Flat	Yes	300	572[1]	No	-	1.93E-03	1.93E-03	-	-	-	-	1.75E-03	1.75E-03	-	-	-
TK-TO2	One (1) Thermal Oil Horizontal Drain Tank (0.6 m3, 159 gal)	Thermal Oil	Horizontal	159	6.5	3.0	180	Splash Pump	Flat	Yes	300	572[1]	No	-	1.93E-03	1.93E-03	-	-	-	-	1.75E-03	1.75E-03	-	-	-
TK-TO3	One (1) Thermal Oil Horizontal Tank (20 m3, 5,283 gal)	Thermal Oil	Horizontal	5,283	21.0	6.6	698	Splash Pump	Flat	Yes	200	392	No	-	2.18E-03	2.18E-03	-	-	-	-	1.98E-03	1.98E-03	-	-	-
TK-TO4	One (1) Thermal Oil Horizontal Expansion Tank (7.3 m3, 1,928 gal)	Thermal Oil	Horizontal	1,928	13.0	5.2	698	Splash Pump	Flat	Yes	200	392	No	-	2.18E-03	2.18E-03	-	-	-	-	1.98E-03	1.98E-03	-	-	-
TK-RS1	No. 1 of Six (6) Resin Vertical Storage Tanks (ea. 50 m3, 13,209 gal)	Resin	Vertical	13,209	21.0	13.8	317,007	Splash Air Off or Pump	Cone	Yes	20	68	No	-	0.02	0.02	0.02	1.54E-04	-	-	0.02	0.02	0.02	1.39E-04	-
TK-RS2	No. 2 of Six (6) Resin Vertical Storage Tanks (ea. 50 m3, 13,209 gal)	Resin	Vertical	13,209	21.0	13.8	317,007	Splash Air Off or Pump	Cone	Yes	20	68	No	-	0.02	0.02	0.02	1.54E-04	-	-	0.02	0.02	0.02	1.39E-04	-
TK-RS3	No. 3 of Six (6) Resin Vertical Storage Tanks (ea. 50 m3, 13,209 gal)	Resin	Vertical	13,209	21.0	13.8	317,007	Splash Air Off or Pump	Cone	Yes	20	68	No	-	0.02	0.02	0.02	1.54E-04	-	-	0.02	0.02	0.02	1.39E-04	-
TK-RS4	No. 4 of Six (6) Resin Vertical Storage Tanks (ea. 50 m3, 13,209 gal)	Resin	Vertical	13,209	21.0	13.8	317,007	Splash Air Off or Pump	Cone	Yes	20	68	No	-	0.02	0.02	0.02	1.54E-04	-	-	0.02	0.02	0.02	1.39E-04	-
TK-RS5	No. 5 of Six (6) Resin Vertical Storage Tanks (ea. 50 m3, 13,209 gal)	Resin	Vertical	13,209	21.0	13.8	317,007	Splash Air Off or Pump	Cone	Yes	20	68	No	-	0.02	0.02	0.02	1.54E-04	-	-	0.02	0.02	0.02	1.39E-04	-
TK-RS6	No. 6 of Six (6) Resin Vertical Storage Tanks (ea. 50 m3, 13,209 gal)	Resin	Vertical	13,209	21.0	13.8	317,007	Splash Air Off or Pump	Cone	Yes	20	68	No	-	0.02	0.02	0.02	1.54E-04	-	-	0.02	0.02	0.02	1.39E-04	-
TK-CA	One (1) Coupling Agent Vertical Storage Tank (1.5 m3, 396 gal)	Coupling Agent Solution	Vertical	396	6.0	3.6	4,227	Splash Pump	Cone	No	Ambient	Ambient	No	2.03E-05	2.29E-05	4.31E-05	-	-	-	1.84E-05	2.07E-05	3.91E-05	-	-	-
TK-AD	One (1) Additive Vertical Storage Tank (1.5 m3, 396 gal)	Binder Additive	Vertical	396	6.0	3.6	17,171	Splash Pump	Cone	No	Ambient	Ambient	No	2.03E-06	7.97E-05	8.17E-05	-	-	-	1.84E-06	7.23E-05	7.41E-05	-	-	-
TK-ADB1	One (1) Vertical Additive Buffer Tank (1.5 m3, 396 gal)	Binder Solution	Vertical	396	6.0	3.6	65,000	Splash Pump	Cone	No	Ambient	Ambient	No	2.03E-05	1.23E-04	1.43E-04	0.00	0.00E+00	-	1.84E-05	0.00	0.00	0.00	0.00E+00	-
TK-ADB2	One (1) Vertical Additive Buffer Tank (0.5 m3, 132 gal)	Binder Solution	Vertical	132	4.0	2.6	21,667	Splash Pump	Cone	No	Ambient	Ambient	No	7.05E-06	0.00	0.00	0.00	0.00E+00	-	6.40E-06	0.00	0.00	0.00	0.00E+00	-
TK-GLY	One (1) Vertical Glycol Storage Tank (1.5 m3, 396 gal)	Glycol	Vertical	396	6.0	3.6	4,752	Splash Pump	Flat	No	Ambient	Ambient	No	2.90E-06	0.00	0.00	0.00	0.00E+00	-	0.00E+00	0.00	0.00	0.00	0.00E+00	-
TK-BS1	No. 1 of Three (3) Binder Storage Containers (ea. 1 m3, 264 gal)	Fleece Coating	Vertical	264	7.8	3.6	130,325	Splash Pump	Flat	No	Ambient	Ambient	No	3.72E-05	2.50E-04	2.87E-04	2.84E-04	2.45E-06	-	3.38E-05	2.26E-04	2.60E-04	2.58E-04	2.22E-06	-
TK-BS2	No. 2 of Three (3) Binder Storage Containers (ea. 1 m3, 264 gal)	Fleece Coating	Vertical	264	7.8	3.6	130,325	Splash Pump	Flat	No	Ambient	Ambient	No	3.72E-05	2.50E-04	2.87E-04	2.84E-04	2.45E-06	-	3.38E-05	2.26E-04	2.60E-04	2.58E-04	2.22E-06	-
TK-BS3	No. 3 of Three (3) Binder Storage Containers (ea. 1 m3, 264 gal)	Fleece Coating	Vertical	264	7.8	3.6	130,325	Splash Pump	Flat	No	Ambient	Ambient	No	3.72E-05	2.50E-04	2.87E-04	2.84E-04	2.45E-06	-	3.38E-05	2.26E-04	2.60E-04	2.58E-04	2.22E-06	-
TK-DOD	One (1) De-dust Oil Vertical Day Tank (1 m3, 264 gal).	De-dust Oil	Vertical	264	5.0	3.0	52,834	Splash Pump	Cone	No	Ambient	Ambient	No	1.79E-05	1.61E-04	1.79E-04	-	-	-	1.62E-05	1.46E-04	1.62E-04	-	-	-
TK-PD	One (1) Paint Dilution Storage Tank (3 m3, 793 gal)	Diluted Water-based Paint	Vertical	793	8.6	4.0	266,471	Splash Pump	Flat	No	Ambient	Ambient	No	-	-	0.03	-	-	-	-	-	0.03	-	-	-
TK-PDD	One (1) Paint Dilution Day Tank (1.5 m3, 397 gal)	Diluted Water-based Paint	Vertical	397	5.0	4.2	266,471	Splash Pump	Flat	No	Ambient	Ambient	No	-	-	0.03	-	-	-	-	-	0.03	-	-	-
																0.19	**0.11**	**9.30E-04**	**--**			**0.18**	**0.10**	**0.00**	**--**

Note:

1. Temperature representative of max system operating temperature; these tanks operate at ambient temperature (i.e., max system operating temperature represents worst case emissions).
2. There are no breathing losses for temperature controlled tanks.
3. Formaldehyde, Methanol, and Phenol emissions are included in Total VOC emissions.
4. The following storage containers are either filled with container contents prior to delivery to the site and maintained closed or do not have quantifiable emissions. The number of containers is approximate.
   Ten (10) Coupling Agent Storage Containers (ea. 1 m3, 264 gal)
   Fifty (50) Coupling Agent Storage Drums (ea. 0.2 m3, 53 gal)
   Thirty (30) De-dust Oil Storage Containers (ea. 1 m3, 264 gal)
   Forty (40) Silicone Oil/Resin Storage Containers (ea. 1 m3, 264 gal)
   Rockfon Paint Storage Totes (No. varies)
   Rockfon Paint Waste Storage Totes (No. varies)
   Thermal Oil Storage Containers (No. varies)
   Product Marking Ink Containers, Number Varies (ea. 0.02 m3, 5 gal)
   Product Marking Ink Cleaner Containers, Number Varies (ea. 1 L, 0.26 gal)
5. Emissions from TK-PD and TK-PDD are estimated using AP42 Section 6.4.1 and utilizes a 1 percent estimation of VOC losses.
6. The calculations for all souces in this table, except for TK-PD and TK-PDD, have been updated to current AP-42 methodology using Emission Master. Tank dimensions and capacities for TK-TO3 and TK-TO4 have been updated to reflect construction.

Attachment O

Roxul USA Inc. dba ROCKWOOL
Ranson, West Virginia
BACT Summary, Proposed Compliance Demonstration, & Federal State/ Regulatory Limits

Unit Process	Source ID	Source Description	Pollutant	US		METRIC		Proposed BACT Control Type	Proposed Compliance Demonstration	Federal/State Regulatory Emission Standard		
				Proposed BACT Emission Limit		Proposed BACT Emission Limit						
				Limit	UOM	Limit	UOM			Standard	Limit	UOM
Minwool Line												
Material Handling Fugitives	B211	Raw Material Stockpile	PM/PM10/ PM2.5 (filterable)	--	--	--	--	Partial Enclosures & Good Housekeeping Practices	Recordkeeping	--	--	--
	IMF14	Raw Material Reject Stockpile						3-Sided Enclosure	Initial and 1/5 yr VE	NSPS OOO	7%	opacity
	RM_REJ	Raw Material Reject Collection Drop						4-Sided Drop Guard	Initial and 1/5 yr VE	NSPS OOO	7%	opacity
	IMF07	One (1) Storage Silo (Filter Fines Day)	PM/PM_{10} (filterable)	2.76E-03	lb/hr	1.25E-03	kg/hr	Bin Vent Filter Enclosed Indoors	Initial and 1/5 yr VE	NSPS OOO	7%	opacity
			$PM_{2.5}$ (filterable)	1.38E-03		6.25E-04						
	IMF11	Conveyor Transition Point (B215 to B220)	PM/PM_{10} (filterable)	3.97E-03	lb/hr	1.80E-03	kg/hr	Fabric Filter Enclosed Indoors	Initial and 1/5 yr VE	NSPS OOO	7%	opacity
			$PM_{2.5}$ (filterable)	1.98E-03		9.00E-04						
	IMF17	B220 Material Handling	PM (filterable)	3.75E-01	lb/hr	1.70E-01	kg/hr	Enclosed Indoors	Initial and 1/5 yr VE	NSPS OOO	7%	opacity
			PM10 (filterable)	1.46E-01		6.64E-02						
			$PM_{2.5}$ (filterable)	1.42E-01		6.46E-02						
	IMF12	Conveyor Transfer Point (B215)	PM (filterable)	1.41E-02	lb/hr	6.37E-03	kg/hr	Enclosed Indoors	Initial and 1/5 yr VE	NSPS OOO	7%	opacity
			PM10 (filterable)	5.15E-03		2.34E-03						
			$PM_{2.5}$ (filterable)	5.15E-03		2.34E-03						
	IMF16	Conveyor Transfer Point (B300)	PM (filterable)	1.41E-02	lb/hr	6.37E-03	kg/hr	Enclosed Indoors	Initial and 1/5 yr VE	NSPS OOO	7%	opacity
			PM10 (filterable)	5.15E-03		2.34E-03						
			$PM_{2.5}$ (filterable)	5.15E-03		2.34E-03						
	IMF15	Outside B220 Transfer Points	PM (filterable)	1.76E-02	lb/hr	7.97E-03	kg/hr	4-Sided Rubber Drop Guards	Initial and 1/5 yr VE	NSPS OOO	7%	opacity
			PM10 (filterable)	6.44E-03		2.92E-03						
			$PM_{2.5}$ (filterable)	6.44E-03		2.92E-03						

Attachment P

AIR QUALITY PERMIT NOTICE
Notice of Application

Notice is given that Roxul USA, Inc, (dba ROCKWOOL) has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a Modification Permit for a mineral wool manufacturing facility located at 665 Northport Avenue, in Ranson, Jefferson County, West Virginia. The latitude and longitude coordinates are: 39.37747, -77.87844.

The applicant estimates the decreased potential to discharge the following Regulated Air Pollutants will be:

Carbon Monoxide (CO): 2.43 ton per year decrease
Nitrogen Oxides (NO_x): 1.78 ton per year decrease
Particulate Matter (PM): 6.89 ton per year decrease
Particulate Matter 10 (PM_{10}): 4.20 ton per year decrease
Particulate Matter 2.5 ($PM_{2.5}$): 5.69 ton per year decrease
Volatile Organic Compounds (VOCs): 4.69 ton per year decrease
Greenhouse Gases (as CO2 equivalents): 1,627.34 ton per year decrease
Hazardous Air Pollutants (HAPs): 1.61 ton per year decrease
Sulfur Dioxide (SO_2): No change

Startup of operation under the modification permit will commence upon permit issuance. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice. Written comments will also be received via email at DEPAirQualityPermitting@WV.gov.

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 41281, during normal business hours.
Dated this the 5th day of October, 2022.

By: Roxul USA, Inc (dba ROCKWOOL)
Mark Graves
Director of Operations
665 Northport Avenue
Ranson, WV 25430

Attachment Q

October 3, 2022

Director
West Virginia Division of Air Quality
601- 57th Street
Charleston, West Virginia 25304-2943

Company Name:	Roxul USA, Inc.	**Authorized Representative:**	Mark Graves
Company Address:	665 Northport Ave Ranson, WV 25430	**Title:**	Director of Operations

Person/Title Submitting Confidential Information:	Stacey Phillips Environmental Manager	**Confidential Information Name:**	Stacey Phillips
		Information Title:	Environmental Manager
		Address:	665 Northport Ave Ranson, WV 25430
		WV Designee Phone:	681-247-0824
		State of WV Fax:	

Document Name: **ROCKWOOL R14 Permit Application**

Reason for Submittal: **R14 Application containing Confidential Business Information**

Dear Director:

The attached document contains confidential information concerning the Roxul USA Inc. dba ROCKWOOL Ranson, West Virginia manufacturing facility, the disclosure of which would likely cause substantial harm to ROCKWOOL's competitive business position. The following lists the pages containing confidential information and a summary explanation and justification as to why disclosure would likely cause substantial harm to ROCKWOOLs competitive business position.

In accordance with 45 CSR 31-1 et.seq., the confidential pages are included in the confidential document on colored paper, dated, and marked with the words "Claimed Confidential". Redacted copies of pages with confidential information are included within the Redacted documents.

☒	**Detailed Equipment Sizing** – The disclosure of detailed equipment sizing information would allow competitors an ability to discern critical trade secrets related to the manufacture of mineral wool insulation without conducting industry-specific research, thus providing them an undue economic advantage.	Pages:	126, 127, 129, 133
☒	**Process Parameters** - The disclosure of information claimed confidential related to process parameters would give competitors key insight into trade secrets related to the manufacture of mineral wool insulation.	Pages:	126, 127, 129, 133

The above-noted sections of the referenced document, especially when considered in total and in context, are claimed confidential by ROCKWOOL and should not be disclosed to the public. The claim of confidentiality is based on the criteria found in 45 CSR 31 Section 4.1.

ROCKWOOL claims business confidentiality protection for the identified parts of this permit application noted above mainly because the information, if released, would allow reasonably competent engineers to determine the manner in which ROCKWOOL produces the products of its processes. The raw materials and equipment are available to current and potential competitors; therefore, disclosure of this information would allow these competitors to produce this product without either paying for the technology or conducting the research and development necessary to obtain the technology themselves. This would allow competitors an undue economic advantage since they could potentially produce the product at a lower cost. Some of the information is claimed confidential because if released could provide an unfair advantage to competitors allowing them to prepare marketing strategies based on information not available to companies in the market.

Confidentiality is requested permanently until such time a responsible representative of ROCKWOOL declassifies the confidential information. ROCKWOOL continues to claim business confidentiality protection for this information. The claim has not expired by its term, or been waived or withdrawn. No statute specifically requires the disclosure of this information.

ROCKWOOL has taken, and continues to take, all reasonable measures to protect the confidentiality of this information through such measures as vendor licensee nondisclosure agreements, limited distribution lists, shredding of documents marked confidential prior to disposal, and appropriately marking confidential and redacting copies. This information is not reasonable obtainable without ROCKWOOL's consent. Within the company, ROCKWOOL has distributed this information on a need-to-know basis only. In addition, ROCKWOOL expects its employees to prevent inadvertent dissemination of information. Special provisions for shredding business confidential documents have been made to allow for recycling. There are no plans to relax strict maintenance of business confidentiality for this technology.

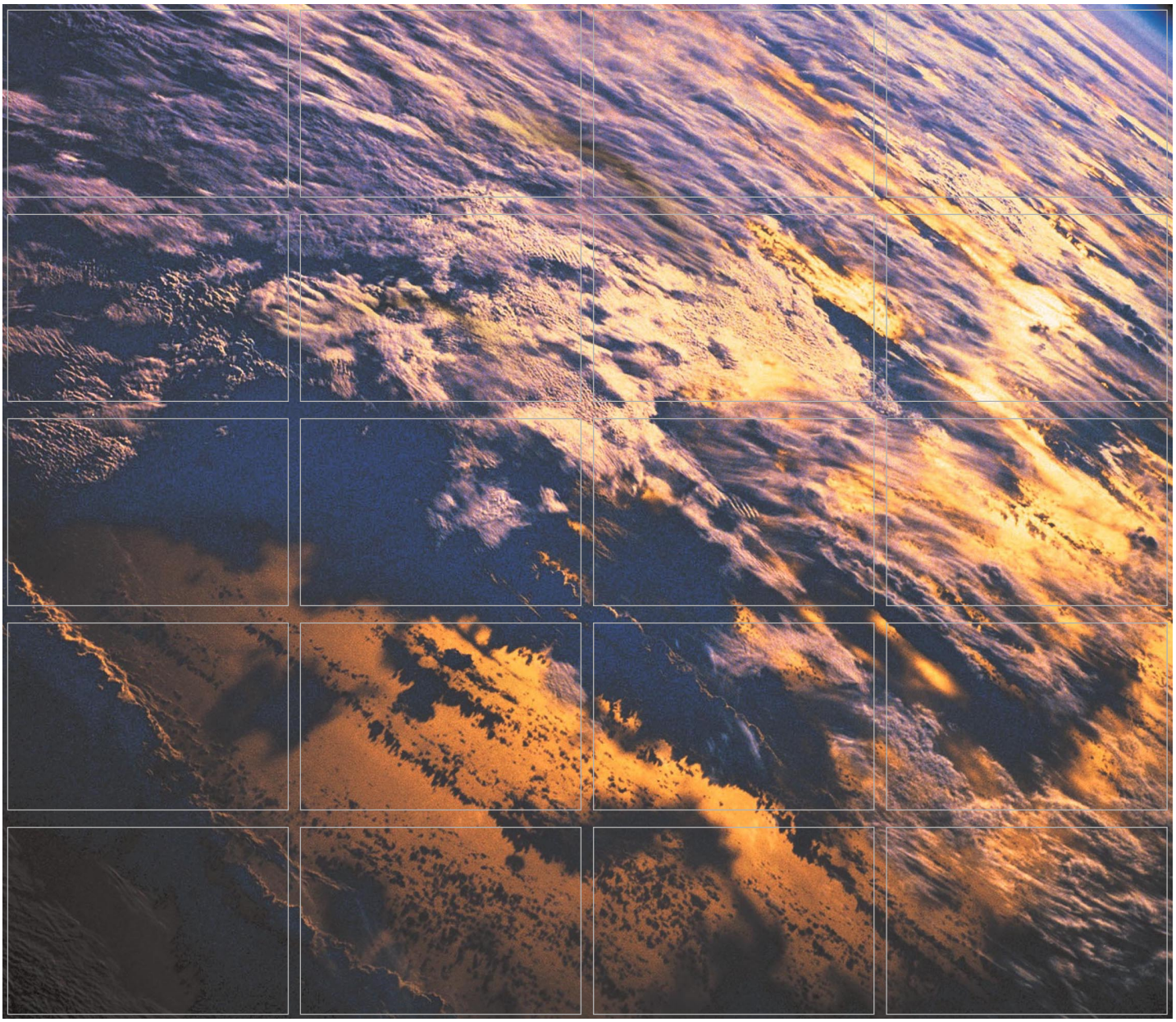
Information revealing the technology in the referenced document is not reasonably obtainable by persons other than the ROCKWOOL employees and/or vendors who need to know and personnel in the West Virginia Division of Air Quality.

ROCKWOOL requests that the West Virginia Division of Air quality notify the company with regard to any third-party request for disclosure of its confidential information prior to any release of such information, so as to enable ROCKWOL to have the opportunity to object to such release and/or defend its claim of confidentiality.

Sincerely,

Mark Graves
Director of Operations

Appendix B - Air Modeling Analysis



ROCKWOOL USA, Inc.

Prevention of Significant Deterioration
Application - Appendix C
Air Quality Assessment

Jefferson County, West Virginia

October 2022

Environmental Resources Management
www.erm.com

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1.0 INTRODUCTION

ROCKWOOL USA Inc. (ROCKWOOL) submits this air quality modeling analysis as directed by the West Virginia Department of Environmental Protection's Division of Air Quality (WVDAQ) pursuant to its authority under 45 CSR 13, Section 7. Air quality modeling was done prior to issuance of R14-0037, issued to ROCKWOOL's Ranson, West Virginia facility on April 30, 2018. ROCKWOOL has requested a modification of that permit to reflect modifications at the site, and WVDAQ has requested an update of the earlier modeling to reflect the effect on air quality of the equipment removals, additions, or changes in location that are more fully described in the permit modification application, Permit Application R14-0037A. The assumptions, information and data relied upon for the previous modeling remained unchanged except as noted in this supplemental report. This supplemental air quality modeling was required for the sole purpose of confirming that the changes for which modification is being sought by ROCKWOOL will not interfere with attainment of National Ambient Air Quality Standards, or cause or contribute to violation of an air quality increment.

1.1 PROJECT OVERVIEW

ROCKWOOL operates a mineral wool insulation manufacturing facility (Project). The Project consists of a 460,000-square-foot manufacturing facility on an estimated 130 acres site in the city of Ranson in Jefferson County, West Virginia. The plant produces mineral wool insulation for building insulation, customized solutions for industrial applications, acoustic ceilings and other applications.

1.2 OVERVIEW OF MODELING ANALYSIS METHODOLOGY

Table 1-1 provides a summary of the attainment status of Jefferson County, WV with respect to the National Ambient Air Quality Standards (NAAQS). The attainment status determines which regulatory programs new major sources or modifications to existing sources must address in the process of obtaining an air quality construction permit.

Table 1-1 Attainment Status of Jefferson County, West Virginia

Pollutant	Attainment Status
SO_2 (annual)	Attainment
SO_2 (1-hr)	Attainment
CO	Attainment
Pb	Attainment
O_3 (1-hr)	Attainment
PM_{10}	Attainment
NO_2 (annual)	Attainment
NO_2 (1-hr)	Attainment
O_3 (8-hr)	Attainment
$PM_{2.5}$ (annual)	Attainment
$PM_{2.5}$ (24-hr)	Attainment

- Data obtained from EPA *Green Book* https://www3.epa.gov/airquality/greenbook/anayo_wv.html

NNSR does not apply, because Jefferson County, WV is in attainment for all regulated pollutants. There is no PSD Applicability for the permit updates contained within R14-0037A. The modeling analysis included in this report is provided as requested by WVDAQ under the authority of WV CSR 13 Section 7.

For the pollutants subject to review, dispersion modeling was performed to assess the ambient air impacts resulting from the emissions of these pollutants due to the Project, with the exception of VOC, which is a precursor to ozone formation and is not modeled. In addition, there are no NAAQS or PSD increments for PM, CO_2e (or greenhouse gases, GHGs), or sulfuric acid mist; therefore, PSD applicants are not required to model or conduct ambient monitoring for these pollutants.

The modeling analysis addresses compliance with the NAAQS and PSD Increments, as applicable, and conforms to Appendix W of 40 CFR Part 51 (Guideline on Air Quality Models). The key elements of the modeling analysis include:

- Use of the latest version of the regulatory dispersion model and supporting programs: AERMOD (version 22112), AERMET (version 22112), AERMINUTE (version 15272), AERMAP (version 18081), AERSURFACE (version 20060), and BPIPRM (version 04274);
- Use of input meteorological data from EMV Regional Airport, Shepherd Field (KMRB, WBAN: 13734), located approximately 10 kilometers (km) to the west of the Project;
- Use of upper air data from Dulles Airport, MD (WBAN: 93734);
- Application of the latest version of AERSURFACE as recommended in the EPA AERMOD Implementation Guidance (EPA 2022);

- Utilize the surface friction velocity adjustment (ADJ_U*) option in AERMET;
- Develop a comprehensive receptor grid designed to identify maximum modeled concentrations;
- Utilize the Ambient Ratio Method 2 (ARM2) option in AERMOD to characterize NO_2 from modeled concentrations of NO_X;
- In accordance with PSD requirements, determine whether emissions from the Project that are subject to PSD will have an effect on growth, soils, vegetation, and visibility in the vicinity of the Project;
- Compare maximum predicted impacts to relevant Significant Impact Levels (SILs) and Significant Monitoring Concentrations (SMCs) to determine if additional modeling or monitoring could be required;
- Demonstrate that allowable emissions from the facility would not cause or contribute to air pollution in violation of any National Ambient Air Quality Standard (NAAQS) or PSD increment.

2.0 PROJECT EMISSIONS AND SOURCE CHARACTERIZATION

2.1 PROJECT DESCRIPTION

The ROCKWOOL facility is located in Jefferson County, WV. The general location of the facility is provided on the regional map shown in Figure 1-1. A plot plan of the facility is presented in Figure 1-2.

Figure 1-1 ROCKWOOL, Jefferson County, WV – Regional Map

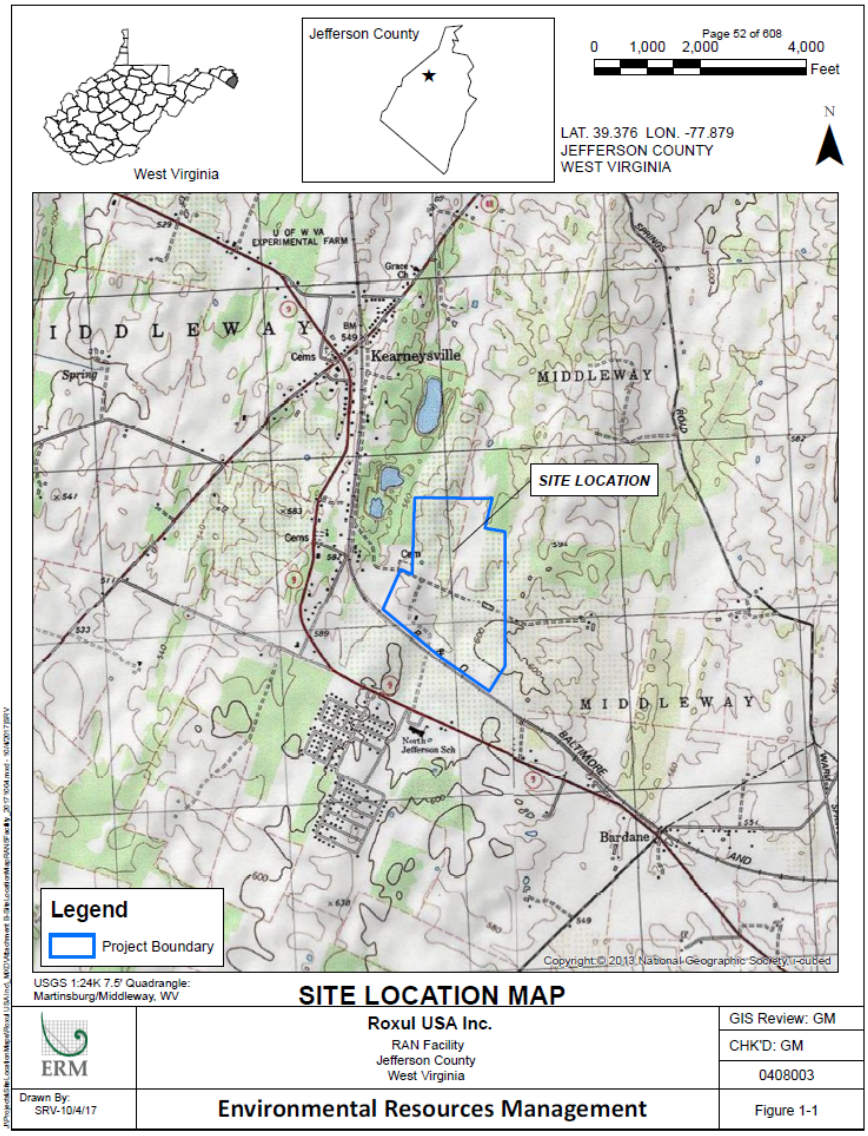
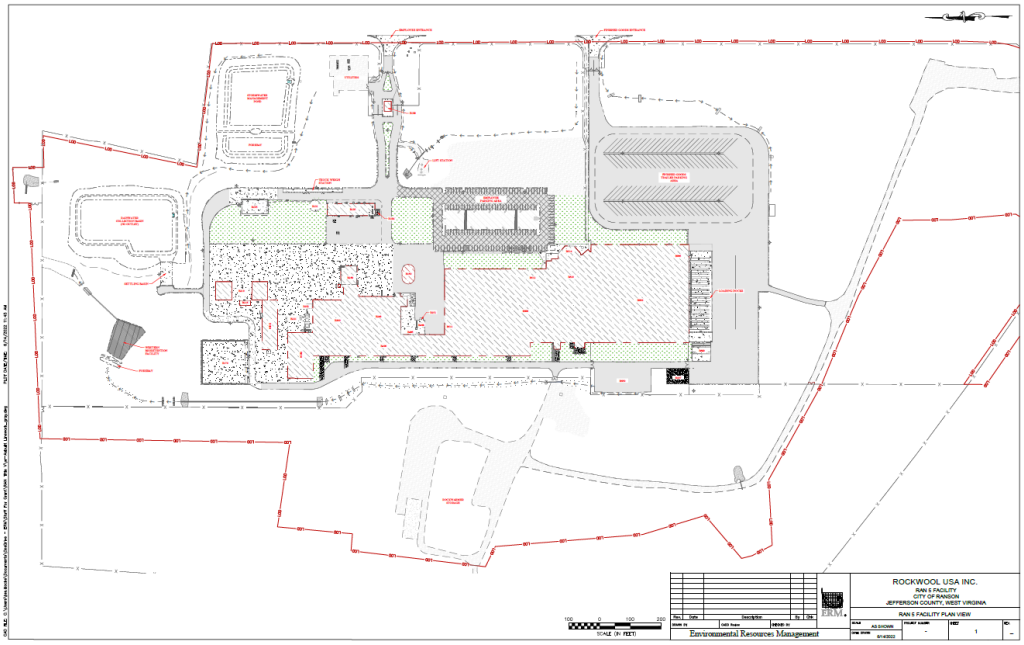


Figure 1-2 Facility Layout



2.2 *PROJECT SOURCES*

A detailed list of emission rates and source parameters is provided in Attachment 1. The emission calculations are included as Attachment N in Permit Application R14-0037A. An overview of the emission sources associated with the Project are as follows:

- Mineral Wool Line (including Recycle Plant), and
- Rockfon Line

Other facility wide operations include:

- Oxygen production,
- Natural gas heating,
- Emergency fire pump engine,
- Paved haul roads, and
- Storage tanks.

Mineral wool production technology uses processes which can be described with a linear relationship between the amount of processed material and the

mass of generated pollutants. This linear mass-based relationship can be expressed with proportionality between operational loads and pollutant emission rates, i.e., higher loads generate higher emission rates. For the exhaust (emission point) from the furnace some pollutants are related to a constant air flow and as such independent of load. ROCKWOOL conservatively assumes in the emission calculations that the facility would operate on 100% load at all times.

The second aspect of the variable load conditions is related to the provisions for dispersion of the emitted gases. The flow rate of gases passing through the furnace is governed by fans with specific air flow requirements due to the nature of production. In order to achieve the required product characteristics, constant airflow and temperature are needed. Therefore, during the steady-state operations, stack exhaust flow rates and temperature are maintained approximately constant. Therefore, ROCKWOOL has not modeled varying load conditions since maximum emissions occur at maximum load conditions and stack parameters are maintained at consistent levels.

Transient operations, such as startup and shutdown, related to scheduled maintenance occur once a week. Furthermore, when transient operations do occur, the emission profile of pollutants is only significantly impacted for a short period of time. Given that these events are infrequent in nature, ROCKWOOL has not separately modeled transient operations.

ROCKWOOL's handling of load conditions and transient operations is consistent and has not been updated from previously approved analysis.

2.3 BUILDING WAKE EFFECTS

The EPA's Building Profile Input Program (BPIP), Version 04274 was used to calculate downwash effects for the modeled emission sources. Building, structure, and tank configurations and locations relative to the modeled sources were obtained from engineering drawings of the planned facility and input into BPIP. Construction of facility stacks did not exceed the greater of the GEP formula height calculated by BPIP or 65 m (213 feet).

3.0 MODELING METHODOLOGY

3.1 MODEL SELECTION AND APPLICATION

The latest version of EPA's AERMOD model (version 22112) was used for predicting ambient impacts for each modeled pollutant. The use of the latest version of AERMOD is an update from previously approved analysis and, therefore, Section 3.1 of this report has been updated. An overview of the

various air quality modeling analyses that utilize AERMOD are described in the following sections.

3.1.1 Project Only Modeling Analysis

This section summarizes the model inputs and procedures that were used to conduct the Project-only air quality impact analysis for the Project. Specifically, the following analyses are addressed in this section:

- Refined single-source modeling to compare maximum predicted impacts to EPA SILs; and
- Comparison of refined single-source impacts to EPA SMCs to determine if a preconstruction monitoring waiver request is justified.

As discussed in Section 3.1.3, for those pollutant impacts that are demonstrated to be less than applicable SILs, no further analysis is required because these pollutants impacts are presumed to not cause or contribute significantly to any modeled violations of a NAAQS or PSD Increment. Where impacts exceed SILs, additional refined modeling was required to demonstrate that the cumulative impact of the Project and other potentially interacting sources plus background did not cause or contribute to any violation of any NAAQS and PSD Increment.

Section 3.1.3 addresses the cumulative (multi-source) impact analysis procedures used to demonstrate that the combined impacts of pollutants from Project and nearby sources did not cause or contribute to air pollution in violation of any NAAQS or PSD Increment. The Class I Area impact analysis procedure is addressed in Section 3.11 and the other air quality analyses (visibility impairment, soils and vegetation impacts, and associated growth analysis) are summarized in Section 3.7.3.

3.1.2 Significant Impact Analysis

3.1.2.1 Justification of the Use of Significant Impact Levels (SILs)

The EPA has historically cautioned states that the use of a SIL may not be appropriate when a substantial portion of any NAAQS or PSD Increment is known to be consumed. Therefore, justification of the use of SILs is recommended in support of the PSD review record. For this modeling analysis, cumulative impact modeling involving nearby sources was required and it was necessary to demonstrate that the Project did not contribute significantly to any modeled violations of NAAQS. To provide justification with respect to the use of SILs in the NAAQS analysis, the differences between the NAAQS and background concentrations determined to be representative of the Project impact area (see Section 3.5) for applicable pollutants and averaging periods were compared to the applicable SIL values. The comparison summarized in

Table 3-1 shows that the differences in this case between the NAAQS and background concentrations are much higher than the corresponding SILs. Therefore, these differences are sufficient for WVDAQ to conclude that a modeled impact less than the SIL for each of the applicable pollutants did not cause or contribute to a violation of the NAAQS.

Table 3-1 Comparison of NAAQS, Representative Background Concentrations, and SILs ($\mu g/m^3$)

Pollutant	Averaging Period	NAAQS	Representative Background/Design Concentration	Difference Between NAAQS and Design Concentration	SIL
PM_{10}	24-Hour	150	25	125	5
$PM_{2.5}$	24-Hour	35	11.7	23.3	1.2
	Annual	12	5.3	6.7	0.2
NO_2	1-Hour	188	42.6	145.4	7.5
	Annual	100	8.09	91.9	1
SO_2	1-Hour	196	7.9	188.1	7.8
	3-Hour	1,300	16.8	1,283.2	25

3.1.2.2 Significant Impact Analysis Modeling Procedures

The significance analysis, updated as a part of this report, involved refined modeling to determine maximum ambient impacts from the Project in comparison to pollutant-specific SILs. The results of the significance analysis determined the need for further modeling including nearby sources to evaluate compliance with NAAQS and PSD Increments. All Project sources listed in Section 2.2 were evaluated for inclusion in the refined modeling.

The Emergency Fire Pump assumes 100 hour of operation per year for testing and readiness purposes. As an intermittent source it is not included in the 1-hour NO_2 and SO_2 analyses as recommended by EPA (EPA Memorandum March 16, 2011).

For the 24-hr $PM_{10}/PM_{2.5}$ analyses, the Emergency Fire Pump was modeled assuming emission rates conservatively based on an operational schedule of 1/2 hour per day.

The results of the refined modeling of Project sources are compared to the SILs in order to conservatively estimate the significant impact area for each pollutant and averaging period. It should be noted that highest first-highest (H1H) model design concentrations for all short term averages were compared to the applicable SILs. Additionally, it should be noted that for 1-hr NO_2, 24-hr $PM_{2.5}$, and annual $PM_{2.5}$ pollutant and averaging period combinations, the relevant model design value is the H1H value averaged over five (5) years per

receptor. The applicable Class II Area SILs used for this analysis are summarized in Table 3-1 and Table 3-2 in Sections 3.1.2.1 and 3.2, respectively.

3.1.3 Cumulative Modeling Analysis

For those pollutant impacts due to Project sources alone that are demonstrated to be less than applicable SILs, no further analysis is required and the Project impacts are presumed not to cause or contribute significantly to violation of the NAAQS or PSD Increments. Where the Project's impacts are determined to exceed SILs, additional refined modeling is required to demonstrate that the cumulative impact of the Project and nearby sources will not cause or contribute to air pollution in violation of any NAAQS and PSD Increment, shown in Table 3-2 of Section 3.2. The Cumulative Modeling Analysis has been updated as a part of this analysis.

The cumulative modeling was performed for all receptors where the Project had a significant impact, as determined by the significance modeling analysis. The cumulative analyses includes background concentrations of pollutants as discussed in Section 3.5 and contributions from nearby off-site sources as discussed in Section 3.10.

In accordance with EPA guidance[1], the significant contribution analysis examines every exceedance of the NAAQS to assess if the contribution from the Project is significant. If necessary the MAXDCONT processing available in AERMOD can be used to assess the ranked distribution of 1-hr NO_2 and 24-hr $PM_{2.5}$ modeled concentration to determine the Project's contribution to modeled NAAQS exceedances.

3.2 AMBIENT AIR QUALITY STANDARDS

Table 3-2 presents a summary of the air quality standards that were addressed for NO_2, SO_2, PM_{10}, and $PM_{2.5}$. The modeling analysis has been updated to demonstrate compliance is met with the updates contained within the application for permit modification. If Project impacts are shown to be less than the SILs and SMCs, then no further analysis was required. If the SILs are exceeded, additional analyses were necessary, including the development of a background source inventory and background monitored concentrations. It should be noted that the 1-hr SIL for NO_2 is an interim SIL based on EPA guidance, and has been adopted by WVDEP based on WVDEP's concurrence with EPA that modeled concentrations less than the 1-hr SIL for NO_2 represent a de-minimis level of concentration and would not be expected to contribute to

[1] EPA Memorandum, dated March 1, 2011, from Tyler Fox, "Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard."

violations of the 1-hr NO_2 NAAQS.

Table 3-2 Ambient Air Quality Standards

Pollutant	Averaging Period	NAAQS [a] ($\mu g/m^3$)	Class II Increment Standards ($\mu g/m^3$)	Class II SIL ($\mu g/m^3$)	SMC ($\mu g/m^3$)
SO_2	1- Hour	196 [b,q]	-	7.8 [c,n]	-
	3-Hour	1,300 [d,e]	512 [d]	25 [g]	-
	24-Hour	365 [d,h]	91 [d]	5 [g]	13
	Annual	80 [u,h]	20 [u]	1 [g,u]	-
PM_{10}	24-Hour	150 [i,s]	30 [d]	5 [g]	10
	Annual	50 [j,r]	17 [u]	1 [g,u]	-
$PM_{2.5}$	24-Hour	35 [k,f]	9[d]	1.2 [f]	t
	Annual	12 [j,o]/15[e, j]	4[u]	0.2 [v]	-
NO_2	1-Hour	188 [l,p]	-	7.5 [c,n]	-
	Annual	100 [u]	25 [u]	1 [g,u]	14
Pb	Rolling 3-Month	0.15 [m]	-	-	-
Ozone	8-hour	70 ppb	-	1 ppb[v]	<100 tons per year (tons/yr) VOC

a) Primary standard unless otherwise noted.
b) The 3-year average of the 99th-percentile of the annual distribution of daily maximum 1-hour concentrations must not exceed standard.
c) EPA Interim SIL adopted by WVDEP on December 1, 2010.
d) One exceedance allowed per year.
e) Secondary standard.
f) For the $PM_{2.5}$ 24-hour SIL analysis, modeled concentration is the highest of the 5-year averages of the maximum modeled 24-hour average $PM_{2.5}$ concentrations predicted each year at each receptor, based on 5 years of National Weather Service (NWS) data. Use of the SIL is subject to evaluation depending on the approach taken to address $PM_{2.5}$ secondary impacts. For the $PM_{2.5}$ 24-hr NAAQS analysis, the modeled concentration is the 98th percentile of the 5-year averages of the maximum modeled 24-hour average $PM_{2.5}$ concentrations (EPA memorandum, dated March 20, 2014, from S. Page, "Guidance for $PM_{2.5}$ Permit Modeling").
g) For determining compliance with the SIL, no exceedances allowed.
h) The 24-hour and annual SO_2 NAAQS were revoked, but are in effect until the SO_2 1-hour designations are finalized. However, the increment standards and related SILs remain in effect.
i) Expected number of days per calendar year, on average, with arithmetic time-averaged concentration above standard is equal to or less than one. For modeling analyses, compliance is evaluated by comparing the high, 6th-high modeled concentration over five years (plus an appropriate background concentration) to the NAAQS.
j) Based on 3-year average of the annual mean concentrations.
k) The 3-year average of the 98th percentile of 24-hour concentrations must not exceed standard. The NAAQS was revised effective December 18, 2006.
l) The 3-year average of the 98th-percentile of the annual distribution of daily maximum 1-hour concentrations must not exceed standard.
m) Rolling 3-month average, no exceedances allowed.

n) Highest of the 5-year averages of the maximum modeled 1-hour NO_2 and 1-hour SO_2 concentrations at each receptor, based on 5 years of meteorological data, must not exceed the 1-hr NO_2 and SO_2 SIL, respectively, in order to demonstrate insignificant impacts. (EPA memorandum, dated March 1, 2011, from T. Fox, "Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO2 National Ambient Air Quality Standard" and memorandum dated June 29, 2010, from S. Page, "Guidance Concerning the Implementation of the 1-hour NO_2 NAAQS for the Prevention of Significant Deterioration Program" and WVDEP memorandum, dated December 1, 2010, from Andrew Fleck, "Interim 1-Hour Significant Impact Levels for Nitrogen Dioxide and Sulfur Dioxide").

o) The highest average of the modeled annual averages across 5 years of NWS meteorological data is compared to the $PM_{2.5}$ annual average SIL and AAQS. Use of the SIL is subject to evaluation depending on the approach taken to address $PM_{2.5}$ secondary impacts. (EPA memorandum, dated March 20, 2014, from S. Page, "Guidance for $PM_{2.5}$ Permit Modeling").

p) For NO_2 1-hour NAAQS analysis, modeled concentration is the 98th percentile (H8H) of the annual distribution of daily maximum 1-hour concentrations averaged across 5 years of NWS data (EPA memorandum, dated June 28, 2010, from T. Fox, "Applicability of Appendix W Modeling Guidance for the 1-hour NO2 National Ambient Air Quality Standard").

q) For SO_2 1-hour NAAQS analysis, modeled concentration is the 99th percentile of the annual distribution of daily maximum 1-hour concentrations averaged across 5 years of NWS data (EPA memorandum dated August 23, 2010, from S. Page, "Guidance Concerning the Implementation of the 1-hour SO_2 NAAQS for the Prevention of Significant Deterioration Program").

r) AAQS REVOKED.

s) For PM_{10} 24-hour average NAAQS analysis, modeled concentration is the highest 6th highest concentration over 5 years of NWS data.

t) On January 22, 2013, the U.S. Court of Appeals for the District of Columbia Circuit vacated the parts of two PSD rules establishing a $PM_{2.5}$ SMC, finding that the EPA was precluded from using the $PM_{2.5}$ SMCs to exempt permit applicants from the statutory requirement to compile preconstruction monitoring data.

u) No exceedances are allowed for annual averages to determine compliance with the NAAQS and to determine whether impacts are significant compared to the SIL.

v) On August 1, 2016 USEPA published draft guidance on SILs for $PM_{2.5}$ and ozone. USEPA proposed no change to the 24-hr $PM_{2.5}$ SIL of 1.2 $\mu g/m^3$; however, an annual $PM_{2.5}$ SIL of 0.2 $\mu g/m^3$ is recommended in this draft guidance. An 8-hour ozone SIL of 1 ppb was also proposed.

3.3 $PM_{2.5}$ CONSIDERATIONS

In January 2013, the SMCs for $PM_{2.5}$ were vacated by the DC Circuit Court. The SMCs are concentrations that are used to determine if a project subject to PSD regulations needs to compile preconstruction ambient monitoring to determine if existing air quality conditions are representative of the project site. Preconstruction monitoring is typically required when a project's modeled impacts exceed the SMCs and the existing air quality monitoring network in the region is inadequate to characterize existing air quality. No updates to $PM_{2.5}$ considerations have been made and remains consistent with what was previously approved in R14-0037.

3.3.1 Representative Background Concentrations of $PM_{2.5}$

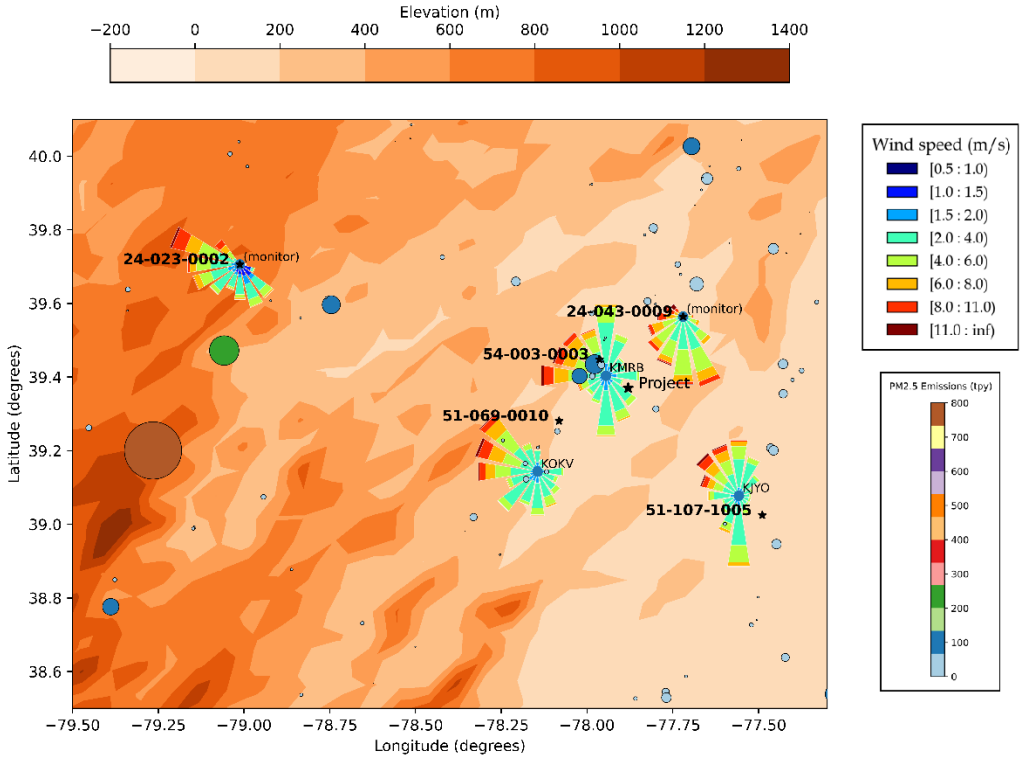
There are total of five $PM_{2.5}$ ambient air monitoring stations in the greater vicinity of the project site. The monitors are of different types, serving specific regional screening, and are spread over the states of WV, MD, and VA. The monitors' distance to the Project site, measurement scale, sampling rate, and data coverage are listed in Table 3-3. No updates to $PM_{2.5}$ background monitor selection has been made and remains consistent with what was previously approved in R14-0037.

Table 3-3 List of $PM_{2.5}$ Ambient Monitor Station in the Vicinity of the Project Site

$PM_{2.5}$ Monitor Location	$PM_{2.5}$ Monitor ID	Distance to Project (km)	Measurement Scale	Sampling Rate	Data Coverage 2019-21	Design Conc. ($\mu g/m^3$) 24hr, Annual
Martinsburg, Berkeley Co., WV	54-003-0003	11	Urban (4-50km)	24-hour, every 3rd day	349 obs., 96%	22.7, 8.3
Piney Run, Garrett Co., MD	24-023-0002	105	Regional Scale (50 - 100s km)	1-hour, every day	1058 obs., 97%	11.7, 5.3
Hagerstown, Washington Co., MD	24-043-0009	25	Urban (4-50km)	1-hour, every day	1057 obs., 96%	20.7, 7.2
Ashburn, Loudoun Co. VA	51-107-1005	51	Neighborhood (400m – 4km)	24-hour, every 3rd days	347 obs., 95%	18.3, 6.9
Rte 669, Frederick Co. VA	51-069-0010	21	Neighborhood (400m – 4km)	24-hour, every 3rd days	358 obs., 98%	19.0, 7.2

In addition proximity to large industrial sources, prevailing winds were taken in consideration. The locations of the industrial facilities throughout the region were obtained from the National Emission Inventory (NEI) 2017. Wind roses were constructed with local monitor observations, when available (Piney Run and Hagerstown, MD) or observations from the nearest NWS station were used. Martinsburg airport was considered representative of the Berkeley Co. monitor location; Leesburg Municipal (JYO) airport represents the winds at Loudoun Co. monitor; and the winds captured at Winchester Regional (OKV) airport are considered representative for the Frederick Co. monitor. The Berkeley Co, Garret Co, Hagerstown Frederick Co monitors are located in the foot hills of the Allegheny Plateau and west of the Blue Ridge Mountains; the Loudoun Co monitor is located just east of the Blue Ridge mountains. The wind roses summarize the wind conditions at the representative locations for the period of interest – 2019-2021. Monitor and weather station locations together with the regional $PM_{2.5}$ sources are presented in Figure 2-1 over terrain elevation background.

Figure 2-1 ***Location of $PM_{2.5}$ Ambient Monitor Stations in Relation to Project and NEI 2017 Industrial Sources***



The Garret County, MD monitor is a regional transport monitor collecting hourly samples every day. It is located approximately 105 km west-northwest of the Project in rural setting similar to the project site. The 3-year data capture rate was estimated as 97% for the 2019-2021 period. There are no large sources in the immediate vicinity of the monitor and the prevailing northwesterly winds indicate that the monitor is likely influenced by larger scale transport events, and therefore suitable for representation of background $PM_{2.5}$ levels.

Frederick Co., VA monitor is a neighborhood scale monitor located 21 km southwest of the Project site. In addition of the monitor being representative of local scale events, it is also placed approximately 3 km northeast of limestone processing facility, and provided the local wind patterns is very likely highly influenced by these operations. Therefore the observations at this monitor are not considered as a representative background for the Project site.

Loudoun Co., VA monitor is a neighborhood scale monitor located 51 km southeast of the Project site and placed in a suburban setting. The monitor is representative of local scale events, and therefore the observations at this monitor are not considered as a representative background for the Project site.

Hagerstown, MD monitor is an urban scale monitor located 25 km northeast of the Project site in an industrial area, less than 1 kilometer south of a scrap metal processing facility. Provided the local wind patterns it is very likely that the monitor is highly influenced by these operations. In addition, when evaluating the Hagerstown, MD monitor it should be noted that an urban scale monitor is operated in Berkeley Co., WV and is closer to the Project site. Therefore the observations at this monitor are not considered as a representative background for the Project site.

Berkeley Co., WV monitor is located approximately 11 km northwest of the Project. This is an urban scale monitor and is situated in a more urban environment compared to the site. The data capture rate is once every 3 days. Additionally the monitor is located 1.5 km north of a cement plant with extensive quarrying operations. It is likely that the monitor is highly influenced by this source. Moreover the industrial sites in the vicinity of the monitor were included explicitly in the NAAQS and increment modeling.

The initial review of the five available monitors indicates that the preferred sites for this project are the Berkeley Co. and the Garret Co. monitors. Further detailed evaluation of the land-use characteristics of these locations and comparison to the Project site are used to support the final monitor selection.

The land-use characteristics of the project site were compared to the same for the two monitors. For this purpose, AERSURFACE was used to extract the land features included within an area of 1-km radius. The domain size was selected to simulate the modeling requirement for surface roughness, a characteristic that AERMOD is found very sensitive. Further calculations show that the correlation between the land characteristics of the Project and the two monitor domains is as follows:

- Project to Garrett Co. monitor (GRT) correlation = 41%
- Project to Berkeley Co. monitor (BRK) correlation = 4%

Figure 2-2 shows the comparison between the land-use features of the Project and two monitor sites based on the 2016 National Land Cover Data archive, provided by the USGS.

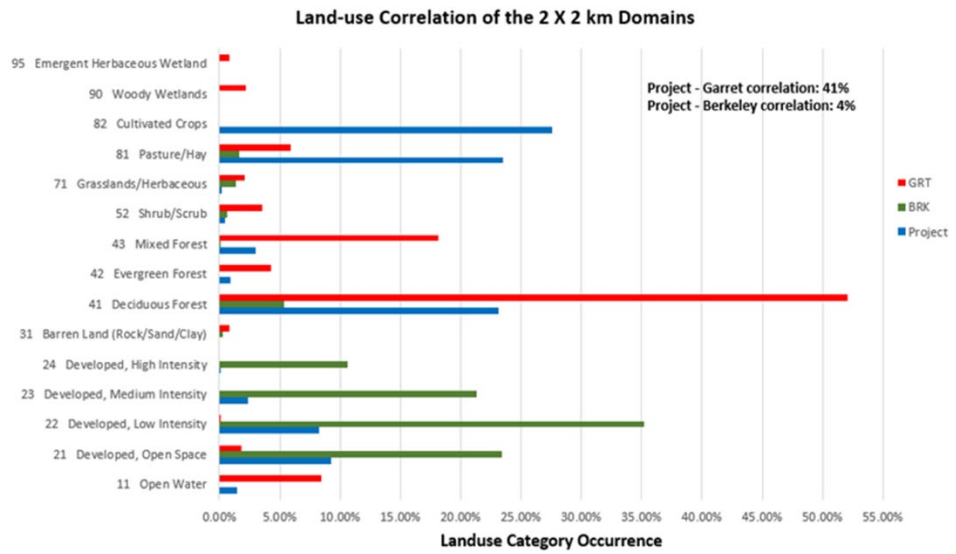


Figure 2-2 ***Comparison of Land-use Features Between the Martinsburg (BRK) and Garrett Co, (GRT) Monitors and Project based on 2016 land use data.***

Based on the above arguments, ROCKWOOL has used the Garrett County monitor as representative of the regional concentrations in the $PM_{2.5}$ NAAQS analysis. The cumulative modeling explicitly includes the regional sources in the vicinity of the Project, therefore the use of the Garrett County monitor observations was considered a realistic representation of the regional background values without introducing double counting of $PM_{2.5}$ concentrations.

3.4 OZONE ANALYSIS AND SECONDARY FORMATION OF $PM_{2.5}$

In December 2016, EPA released a guidance memorandum (EPA 2016a) for review and comment that described how Modeled Emission Rates of Precursors (MERPs) could be calculated as part of a Tier I ozone and secondary $PM_{2.5}$ formation analysis to assess a project's emissions of precursor pollutants as they would relate to the ozone and $PM_{2.5}$ "critical air quality thresholds". ROCKWOOL has utilized the MERPs guidance to assess the Project's impacts on ozone secondary $PM_{2.5}$ formation as described in the paragraphs below. This analysis has been updated to reflect data revisions submitted in the application for modification.

3.4.1 Calculation of MERPs for Ozone

As specified in Table 1-2, the potential emissions of NO_X from the proposed project are 237.18 tpy and the potential emissions of VOC are 469.72 tons per year. The MERPs guidance provides modeling results representing the maximum downwind ozone concentrations due NO_X and VOC emissions of

hypothetical sources. EPA conducted photochemical modeling of hypothetical sources using emission rates of 500 tpy, 1,000 tpy, and 3,000 tpy of both NO_X and VOC for various locations throughout the US. Figure A-1 of the MERPs guidance presents the locations of the sources modeled in the Eastern US. The EPA Source 8 was located in Southern Pennsylvania, in Adams County and was found to be located approximately 75 km northeast of the project. Due to the close regional proximity of EPA Source 8, ROCKWOOL asserts that this source is most suitable to develop the appropriate MERP levels with which to assess the Project's emissions of precursors against the appropriate "critical air quality threshold". For the purpose of this analysis, the critical air quality threshold for ozone was considered to be equivalent to the proposed ozone SIL of 1 ppb.

It should be noted that most current monitor design values shown in Table 3-4 for the region are all below the ozone NAAQS of 70 ppb.

Table 3-4 Monitor Values at the Berkeley, WV

Monitor ID	County, State	Observed 2019 8hr Design Value (ppb)	Observed 2020 8hr Design Value (ppb)	Observed 2021 8hr Design Value (ppb)
540030003	Berkeley, WV	58.0	57.0	57.0

Also, for the purpose of this analysis, ROCKWOOL has considered MERP values derived from the model results for EPA Source 8 based on the 500 tpy cases for both NO_X and VOC, as these are the closest approximations of the project emission rates. Table 3-5 presents modeled ozone concentrations from Table A-1 of the MERPs guidance for the 500 tpy case for Source 8.

Table 3-5a EPA Hypothetical Source Ozone Modeling Results – Source 8 (Pennsylvania)

Precursor	Emissions (tpy)	Stack Height	Maximum Modeled Ozone Concentration (ppb)
NO_X	500	Low (10 m)	1.67
NO_X	500	High (90 m)	1.66
VOC	500	Low (10 m)	0.16
VOC	500	High (90 m)	0.16

The results of EPA's hypothetical source modeling presented in Table 3-5a can be used to derive appropriate MERP values for NO_X and VOC. The MERPs guidance specifies the following equation to derive a MERP:

MERP = Critical Air Quality Threshold * (Modeled emission rate from hypothetical source/ Modeled air quality impact from hypothetical source)

As stated previously, ROCKWOOL used the proposed ozone SIL of 1 ppb to represent the critical air quality threshold. The SIL represents a de-minimis impact level, that is, if the maximum concentration of ozone due to a single source is less than the SIL, then it can be concluded that the source has an insignificant contribution to ozone formation. If the high stack height case for both NO_X and VOC is chosen along with the ozone SIL, the resulting MERPs values are the following:

NOX MERP = 1ppb * 500 tpy / 1.66 ppb = 302 tpy
VOC MERP = 1ppb * 500 tpy / 0.16 ppb = 3205 tpy

Note that the high stack case is chosen since the stacks with the highest emissions of NOx and SO2 are tall stacks with heights near 65 meters. The potential emissions of NO_X (237.18 tpy) and VOC (469.72 tpy) are below the MERP values calculated above. However, since the emissions of these ozone precursors each exceed the individually applicable PSD SERs, the MERPs guidance suggests that the total emission rate of precursors should be cumulatively evaluated with respect to the MERP levels. The following equation shows the Project's cumulative MERP consumption. A cumulative MERP consumption of less than 100% indicates that a project would not cause ozone concentrations exceeding the ozone SIL.

(Project NOx emissions (237.18 tpy)/NOX MERP (302 tpy) +
(Project VOC emissions (469.72 tpy)/VOC MERP (3205 tpy)) = 93%

The calculated cumulative consumption of the MERPs is 93%. ROCKWOOL concludes that this analysis utilizing recent EPA guidance demonstrates that the proposed project will result in insignificant ozone impacts.

3.4.2 Secondary $PM_{2.5}$ and EPA MERPs Guidance

In addition to the photochemical ozone modeling for various hypothetical sources across the US contained in the MERPs guidance, EPA has also provided photochemical modeling for $PM_{2.5}$ for the same hypothetical sources due to emissions of $PM_{2.5}$ precursor pollutants NO_X and SO_2. The use of MERPs for NO_X and SO_2 to determine whether a project would have significant $PM_{2.5}$ impacts (i.e., exceed the applicable SILs) is complicated by the fact that a project's total impact on $PM_{2.5}$ air quality includes contributions from both precursor emissions and direct emissions of $PM_{2.5}$ from project sources. Section 4 of this report presents model results that indicate that the $PM_{2.5}$ SILs are exceeded due to directly emitted $PM_{2.5}$ alone. Therefore, calculation of MERPs would not be needed since the Project already has significant $PM_{2.5}$ impacts. However, the photochemical model results for hypothetical sources in the MERPs guidance can still serve as a resource to assess the potential contribution of secondary $PM_{2.5}$ to the total modeled concentrations due to the

Project. The approach described in the following paragraphs represents a Tier 1 secondary $PM_{2.5}$ assessment, as described in Section 5.4.2(b) in the revised Guideline on Air Quality Models (EPA 2017).

Tables A-2 and A-3 of the MERPs guidance contain model results for $PM_{2.5}$ 24-hr and annual averaging periods for the various hypothetical sources modeled by EPA across the US. Similar to the modeling conducted for ozone, EPA conducted photochemical modeling of hypothetical sources using emissions of 500 tpy, 1,000 tpy, and 3,000 tpy of both NO_X and SO_2.

In order to characterize expected maximum modeled impacts of $PM_{2.5}$ from the proposed project, ROCKWOOL used the model results for EPA Source 8 located in Southern Pennsylvania, Adams County. Table 3-5b shows the EPA hypothetical source PM2.5 modeling results.

Table 3-5b EPA Hypothetical Source PM2.5 Modeling Results – Source 8 (Pennsylvania)

Precursor	Averaging Period	Emissions (tpy)	MERPS (tpy)	Stack Height	Maximum Modeled $PM_{2.5}$ Concentration ($\mu g/m^3$)
NO_X	24 hour	500	5977	Low (10 m)	1.00E-01
NO_X	Annual	500	10142	Low (10 m)	9.86E-03
SO2	24 hour	500	1643	Low (10 m)	0.37
SO2	Annual	500	10885	Low (10 m)	9.19E-03
NO_X	24 hour	500	13992	High (90 m)	4.29E-02
NO_X	Annual	500	34469	High (90 m)	2.90E-03
SO2	24 hour	500	5845	High (90 m)	1.03E-01
SO2	Annual	500	32884	High (90 m)	3.04E-03

The model results for the hypothetical stack is obtained from the USEPA "MERPS View Qlik" internet application. Table 3-5b presents modeled secondary PM2.5 concentrations from the MERPs View Qlik for the 500 tpy NOx and SO2 cases, for both the 10-m and 90-m stack height cases. Also shown here are the resulting MERPS emissions values.

The secondary 24-hour average PM2.5 concentration is computed based on 500 TPY emissions and a SIL of 1.2 ug/m3. The actual PM2.5 emissions represent 12.94 percent of the PM2.5 SIL:

(Project NOx emissions (237.18 tpy)/NO_X MERP (13,992 tpy) +
(Project SO_2 emissions (147.45 tpy)/SO_2 MERP (5,845 tpy)) = 4.22 %

The total Secondary 24-hour PM2.5 concentration is 0.0506 μg/m³

(Project NOx emissions (237.18 tpy)/NO_X MERP (34,469 tpy) +
(Project SO_2 emissions (147.45 tpy)/SO_2 MERP (32,884 tpy)) =1.14 %

Total Secondary $PM_{2.5}$ (Annual) = 0.0023 μg/m³

The secondary $PM_{2.5}$ concentrations determined above, based on a relationship between $PM_{2.5}$ concentrations and precursor emissions that were derived from maximum $PM_{2.5}$ modeled concentrations from EPA hypothetical source photochemical modeling in the same region as the proposed project, are added to direct $PM_{2.5}$ modeled concentrations to determine the total project air quality impact on $PM_{2.5}$. For this analysis the secondary PM2.5 for the 90 meter stack are used since most of the precursor emissions are from the taller stacks.

3.5 BACKGROUND POLLUTANT CONCENTRATIONS

As discussed in Section 3.1.3, representative background pollutant concentrations must be utilized if a cumulative air quality modeling analysis is necessary for NO_2, $PM_{2.5}$, PM_{10}, or SO_2. The following discussion presents the most current monitor design values for nearby monitors that ROCKWOOL has identified that are representative of Jefferson County. No updates to background have been made and remains consistent with what was previously approved in R14-0037.

3.5.1 Representative Background Concentrations of NO_2

Table 3-6 presents the most recent NO_2 monitor design values for the regional transport monitor in Loudon County, Virginia (EPA ID 51-153-0009). This is the closest NO_2 monitor to the proposed Project with a valid 2019-2021 monitor design value. This monitor is located 56 km to the southeast of the project site. The NO_2 data coverage of 97.0% was found sufficient for modeling purposes. The monitor is placed in rural setting similar to the project site.

Table 3-6 Annual and 1-hr NO_2 Monitor Design Values

POLLUTANT	MONITOR LOCATION	MONITOR ID	Distance to Project (km)	AVERAGING PERIOD	DESIGN CONCENTRATION (µg/m3)
NO_2	Loudon Co., VA	51-153-0009	56	1-Hour	42.6
				Annual	8.09

To characterize 1-hr background NO_2 values, ROCKWOOL utilized EPA guidance (EPA 2011) and calculated the design value based on the most recent three years of data. The NAAQS analysis was performed in two stages. In the first stage a conservative approach was applied by adding a single design value to all model predicted concentrations. If needed, a refined approach would be applied by calculating variable background values. Specifically, the most recent 3-year average of the 98th percentile monitor values by season and hour-of-day are to be calculated for the refined approach. EPA guidance suggests that the season and hour-of-day combination be based on the 3rd highest values to represent the 98th percentile.

3.5.2 Representative Background Concentrations of $PM_{2.5}$

As discussed in Section 3.3, the $PM_{2.5}$ ambient data was collected at the Garrett County, MD monitoring station. ROCKWOOL used this data to characterize background $PM_{2.5}$ for use in any necessary cumulative $PM_{2.5}$ analysis. Table 3-7 presents the current annual and 24-hr monitor design values.

Table 3-7 $PM_{2.5}$ Monitor Design Values

POLLUTANT	MONITOR LOCATION	MONITOR ID	Distance to Project (km)	AVERAGING PERIOD	DESIGN CONCENTRATION (µg/m3)
$PM_{2.5}$	Piney Run Garrett Co., MD	24-023-0002	105	24-Hour	11.7
				Annual	5.3

To characterize 24-hr background $PM_{2.5}$ values, ROCKWOOL utilized EPA guidance (EPA 2014) and calculated the design value based on the most recent three years of data 2019-2021.

3.5.3 Representative Background Concentrations of PM_{10}

The closest PM_{10} monitor to the Project is located in Winchester City, VA, 33 km to the southwest. Based on proximity, ROCKWOOL used Winchester City monitor observations in the PM_{10} NAAQS analysis for this application. The maximum second highest monitor design value over the most recent three years of available data was used to characterize background PM_{10} in the cumulative NAAQS analysis, if needed. Note that this PM_{10} monitor was not in service in 2021, so 2018 is used as a surrogate for 2021. For PM_{10} the most recent 3-years in 2018-2020. Table 3-8 summarizes the most recent design value from the Winchester City, VA PM_{10} monitor.

Table 3-8 PM_{10} Monitor Design Values

POLLUTANT	MONITOR LOCATION	MONITOR ID	Distance to Project (km)	AVERAGING PERIOD	DESIGN CONCENTRATION (µg/m3)
PM_{10}	Winchester City, VA	51-840-0002	33	24-Hour	25

3.5.4 Representative Background Concentrations of SO_2

Table 3-9 presents the most recent SO_2 monitor design values for the regional transport monitor in Garrett County, MD (EPA ID 24-023-0002). This is the most representative SO_2 monitor with a valid monitor design value based on 2019-2021 data. The Garrett County monitor is located 105 km west-northwest of the Project site. The overall SO_2 data coverage of 90.9% was found sufficient for modeling purposes. The monitor is placed in rural setting similar to the Project site.

Table 3-9 SO_2 Monitor Design Values

POLLUTANT	MONITOR LOCATION	MONITOR ID	Distance to Project (km)	AVERAGING PERIOD	DESIGN CONCENTRATION (µg/m³)
SO_2	Garrett Co., MD	24-023-0002	105	1-Hour	7.9
				3-Hour	16.8

To characterize 1-hr background SO_2 values, ROCKWOOL utilized EPA guidance (EPA 2011) and calculated the design value based on the most recent three years of data.

3.6 NO_X TO NO_2 CONVERSION

For the NO_2 modeling analyses, ROCKWOOL used the Ambient Ratio Method (ARM2) option in AERMOD to account for the formation of NO_2 from the emissions of NO_X from the Project sources. ROCKWOOL utilized ARM2 with the national default range of NO_2 to NO_X ratios (50% to 90%). When ARM2 is used, AERMOD assigns the appropriate ratio for each hour and receptor based on the total modeled concentration of NO_X. This analysis has been updated to consider the impacts of updates made in the application for permit modification.

3.7 GEOGRAPHIC SETTING

3.7.1 Land Use Characteristics

The facility is located in the city of Ranson, Jefferson County, WV. AERMOD was used in the default (rural) mode. ROCKWOOL has analyzed the land use classifications within an area defined by a 3 km radius from the approximate center of the site, and has determined that the land use within this area is 3.46% urban classification. This determination was made by analyzing the USGS NLCD 2016 data updated in 2021 via Multi-Resolution Land Characteristics Consortium (MRLC), where urban classifications were assumed to be category 22 (high intensity residential) and category 23 (commercial /industrial/transportation). This clearly shows that the ROCKWOOL site can be classified as rural.

3.7.2 Terrain

The facility is situated in elevated terrain at approximately 177 m. The latest version of EPA's AERMAP program (version 18081) was used to determine the ground elevation and hill scale for each modeled receptor, based on data obtained from the USGS National Elevation Database (NED). The NED data was obtained at a horizontal resolution of 1/3 arc-second (10-m) for use in this analysis.

3.7.3 Effects on Growth, Soils, Vegetation, and Visibility

PSD requirements include an evaluation of the effects of growth due to a project, and an evaluation of the effects of project emissions on soils, vegetation, and visibility. Evaluation of potential impacts on vegetation and soils were performed by comparison of maximum modeled impacts from the Project to Air Quality Related Value (AQRV) screening concentrations provided in the EPA document "A Screening Procedure for the Impacts of Air

Pollution Sources on Plants, Soils, and Animals"[2] and to NAAQS secondary standards. The screening levels represent the minimum concentrations in either plant tissue or soils at which adverse growth effects or tissue injury was reported in the literature. The NAAQS secondary standards were set to protect public welfare, including protection against damage to crops and vegetation. Therefore, comparing the modeled emissions to the AQRVs and the NAAQS secondary standards provides an indication as to whether potential impacts are likely to be significant. Table 3-10 summarizes the applicable AQRVs or NAAQS secondary standards.

Table 3-10 Summary of Applicable AQRVs and Secondary NAAQS

Pollutant	Averaging Period	AQRV Screening Levels ($\mu g/m^3$)	Secondary NAAQS ($\mu g/m^3$)
PM_{10}	24-hour	--	150
	Annual	--	50
$PM_{2.5}$	24-hour	--	35
	Annual	--	15
NO_2	4-hour	3,760	--
	8 hour	3,760	--
	1-month	564	--
	Annual	100	100
SO_2	1-hour	917	--
	3-hour	786	1,300
	24-hour	--	260
	Annual	18	60
Pb	Quarterly	1.5	0.15

"--" = not applicable or not available.

With respect to visibility impacts, ROCKWOOL has consulted with WVDAQ to determine if any areas in the vicinity are considered to be sensitive with respect to potential visibility degradation, and investigate the appropriateness of applying the EPA VISCREEN (Version 1.01, dated 13190) visibility model to sensitive viewsheds within these areas to conservatively assess the proposed Project's impact on visibility impairment. Antietam National Battlefield and Harper's Ferry National Historical Park were both evaluated for visibility impacts in this analysis. VISCREEN was executed following the procedures described in EPA's Workbook for Plume Visual Impact Screening and Analysis for Level-1 and Level-2 visibility assessment.[3]

[2] USEPA, A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals, EPA 450/2-81-078, December 12, 1980.
[3] EPA, Workbook for Plume Visual Impact Screening and Analysis (Revised), EPA-454/R-92-023, 1992.

3.8 RECEPTOR GRIDS

For this modeling analysis, nested Cartesian receptor grids of variable spacing were utilized to resolve the ground concentration patterns. The grid is shown in Figure 3-3. The grids were defined using a common central point at the proposed project as an origin, extended distance from the origin, and receptor spacing. As a result of this approach the following sub-grid are defined:

- at most 50-meter spacing along the fence line;
- 100-meter spacing from origin out 3 km;
- 250-meter spacing from 3 km to 5 km from the facility;
- 500-meter spacing from 5 km to 10 km from the facility;
- 1000-meter spacing from 10 km to 20 km from the facility; and
- 2000-meter spacing from 20 km to 50 km from the facility, as needed.

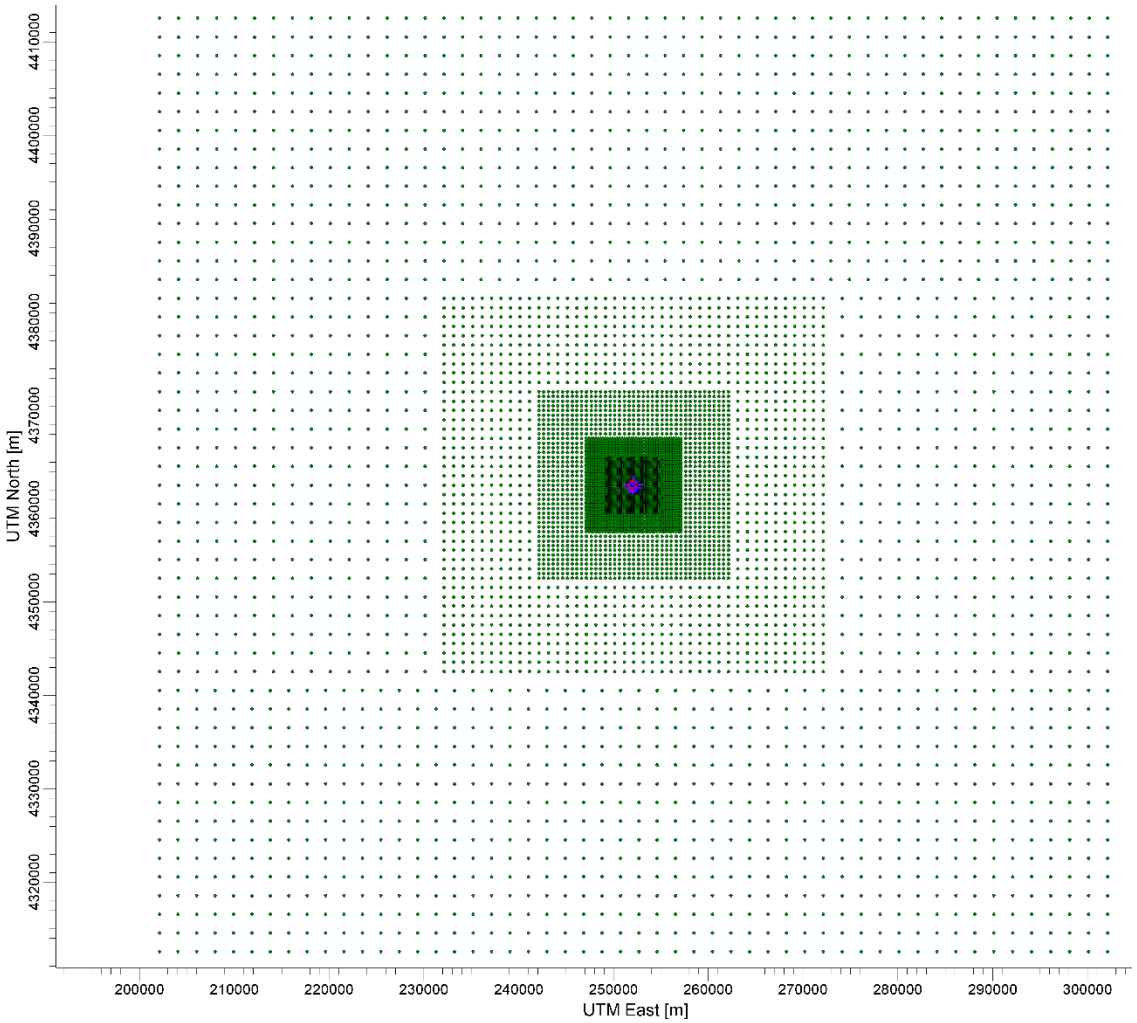
As noted previously, AERMAP was used to define ground elevations and hill scales for each receptor. ROCKWOOL analyzed isopleths of modeled concentrations due to the proposed Project, and determined if the proposed receptor grid adequately accounts for the worst case impacts. The receptor grid extent was adjusted accordingly in a manner to adequately resolve the areas with increasing ground concentration gradients. In case of isolated high impacts from the proposed Project appearing in sections of the coarse receptor grid (500-m spacing and larger), then additional 100-meter spaced sub-grids were used to better resolve the concentration patterns. This was done for the 1-hour NAAQS modeling of NO_2.

The facility fence line was used as the boundary to determine ambient air. No receptors were placed within this fence line boundary. A physical fence controls public access to the facility.

All Cartesian coordinates are in UTM system, zone 18, datum NAD-83.

ROCKWOOL's approach to receptor grids remains consistent with previously approved analysis under R14-0037.

Figure 3-3 AERMOD Primary Receptor Grid



3.9 METEOROLOGICAL DATA FOR AIR QUALITY MODELING

EPA requires site-specific meteorological data to be included in the PSD application modeling. In absence of site-specific data, data from a representative NWS station should be used.

ROCKWOOL utilized meteorological data collected from 2017-2021 at the Eastern WV Regional Airport, Shepherd Field (KMRB) in this modeling analysis. The KMRB Automated Surface Observation System (ASOS) system is located approximately 9.8 km to the west of the Project site. Upper air data from Washington Dulles International Airport (IAD) was used in the analysis. The following steps were taken to prepare and process these data with the latest versions of EPA's processing programs:

- AERMET version 21112 was used to process the surface and upper air meteorological data;
- The ADJ_U* option was used in AERMET;
- One-minute and five-minute ASOS wind data was processed for input into AERMET through the use of the AERMINUTE version 15272 preprocessor;
- AERSURFACE was run with varying options for moisture conditions (average, wet, and dry) at seasonal temporal resolution;
- The National Weather Service monthly precipitation data was used to assign the moisture characteristics for the 5-year period.
- The National Center for Environmental Information (NCEI) Global Summary of the Day (GSOD) and the National Weather Service Snow Data Assimilation (SNODAS) snow depth maps was used to assign the snowfall characteristics for each season of the 5-year modeling period;
- The resulting files were processed into 5 individual calendar years and one 5-year period for model input.

The ADJ_U* option addresses a known bias towards under-prediction of friction velocity under stable, low wind speed conditions, leading to observed model over-prediction for these conditions. ADJ_U* is a regulatory option in the default application of AERMET version 22112 for use in AERMOD.

3.9.2 Summary of AERMET Location Inputs

Integrated Surface Hourly Data (ISHD) format data from KMRB was input in the AERMET "SURFACE" pathway, and FSL format upper air data was input in the AERMET "UPPERAIR" pathway. The following location data was used in AERMET:

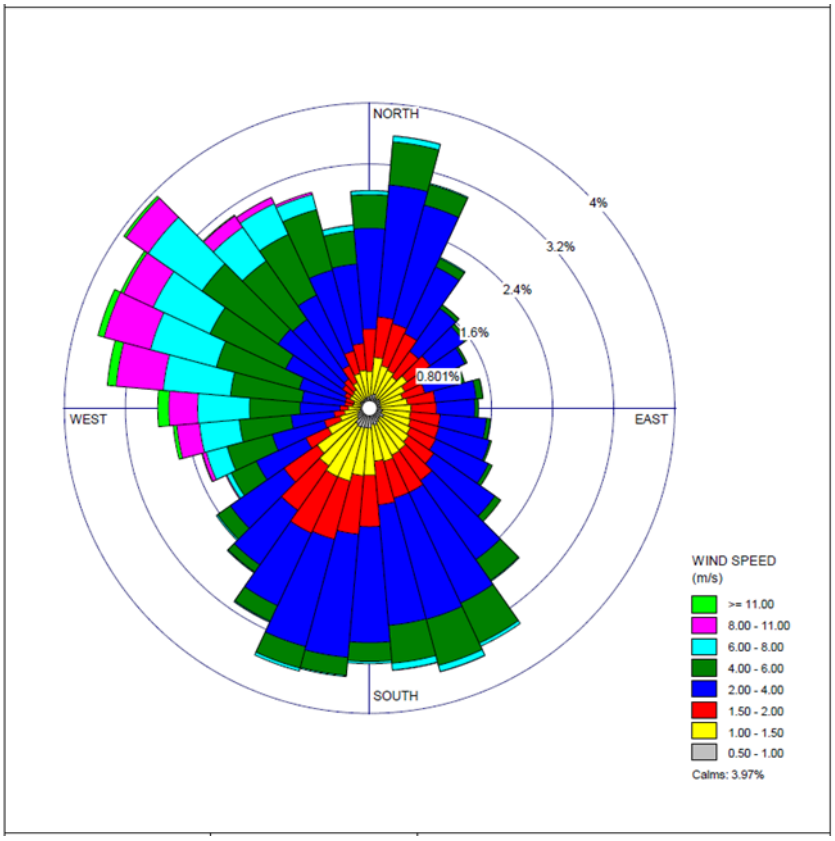
- KMRB ASOS Location: 39.4038N 77.9749W - determined from Google Earth;
- KMRB Elevation: 164.98 m ;
- The wind measurement (Anemometer) height is 7.92 meters (26 feet) per NOAA ASOS station data
- IAD Upper Air Location: 38.98N 77.47W – noted in FSL file header; and
- Hourly AERMET data is processed in time zone 5.

3.9.3 Meteorological Data Representativeness

3.9.3.1 Representativeness of Wind Measurements

A wind rose for KMRB for 2017-2021 is shown in Figure 3-4.

Figure 3-4 KMRB Wind Rose – 2017-2021



The proposed Project site and KMRB are both situated in the gently rolling terrain region of the Potomac Highlands. The Project site is located approximately 10 km east of the meteorological station; both locations have similar terrain elevation: Project – 177 m, KMRB – 165 m. Both sites are situated in a the valley east of the Allegheny Mountain and west of the northern tip of Blue Ridge Mountain; therefore, it is reasonable to assume they are both

exposed to the same regional wind pattern, and would not experience local steering of the wind from the dominant northwesterly and southerly direction. ROCKWOOL asserts that due to the relatively close proximity and similar terrain setting, that the KMRB winds are representative of the proposed Project site.

3.9.3.2 Representativeness of Surface Characteristics

The surface characteristics required by AERMET (surface roughness, Bowen ratio, and albedo) are required to be representative of the meteorological measurement site, as specified in the EPA's AERMOD Implementation Guidance. The AERSURFACE (Version 20060) land-use processor was used for the development of the necessary micrometeorological parameters for use in AERMET. The following is a summary of the settings that were used in AERSURFACE:

- USGS 2016 NLCD input land use data
- USGS 2016 USGS Impervious and Tree Canopy data
- Center Latitude (decimal degrees): 39.404
- Center Longitude (decimal degrees): -77.975
- Datum: NAD83
- Study radius (km) for surface roughness: 1.0
- Airport? Y, Continuous snow cover? N
- Surface moisture? **Variable**, Arid region? N
- Temporal resolution: Seasonal
- Month/Season assignments? Default
- Late autumn after frost and harvest, or winter with no snow: **0**
- Winter with continuous no snow on the ground: **12 1 2**
- Transitional spring (partial green coverage, short annuals): 3 4 5
- Midsummer with lush vegetation: 6 7 8
- Autumn with unharvested cropland: 9 10 11

The variable inputs were based on climatological data compiled by NCDC. Surface moisture was characterized on seasonal basis based on National Weather Service monthly precipitation data at Martinsburg, WV. AERSURFACE was executed with seasonal resolution with 12 wind direction sectors. Note that the NLCD 2016 was updated by USGS in 2021 and obtained from the Multi-Resolution Land Cover Consortium (MRLC). This updated 2016 NLCD is used in this analysis.

Additional details on the moisture and snow cover options that were used are provided in Section 3.9.4.

As noted previously, the KMRB station is located approximately 9.8 km west of the Project site. Bowen ratio and albedo are bulk variables in AERMET, that is,

they are intended to be representative of the greater modeling domain as opposed to being highly site specific. AERSURFACE determines the appropriate value of Bowen ratio and albedo by considering the land-use within a 10 km by 10 km area centered on the meteorological instruments location. Table 3-11 summarizes the average values of surface roughness within 1 km of the KMRB ASOS site and the proposed Project site, as well as the Bowen ratio and albedo for both sites determined by AERSURFACE. AERSURFACE was executed on a seasonal basis for a single 360 wind direction sector for the purposes of this comparison.

Table 3-11 Comparison of Micrometeorological Variables

Season	Albedo		Bowen Ratio		Surface Roughness	
	Project	Airport	Project	Airport	Project	Airport
1	0.18	0.17	0.78	0.85	0.063	0.077
2	0.15	0.15	0.40	0.49	0.091	0.077
3	0.18	0.17	0.47	0.49	0.255	0.231
4	0.18	0.17	0.78	0.85	0.248	0.220

The NLCD 2016 land use data analyzed by AERSURFACE produce very similar average albedo and Bowen ratio values between the proposed Project and the airport site. However, the surface roughness values for the proposed site derived from AERSURFACE are higher than the values derived for KMRB from the NLCD 2016 land use data, for the spring, summer and fall seasons. ROCKWOOL conservatively used the KMRB surface roughness in the modeling.

3.9.3.3 Comparison of Hypothetical Unity AERMOD Concentrations (Airport vs Site Surface Characteristics)

In order to assess how sensitive the AERMOD predicted concentrations are to the surface characteristics that were used to process the meteorological data, AERMET was used to process the meteorological data into two data sets. One relies on surface characteristics based on the meteorological station location at the airport. The second set of meteorological data was produced using AERMET and surface characteristics based on a representative location of the site. AERMOD simulations used a unit emission rate for the WESP stack (HE01) and the melting furnace stack (IMF01). A unit emission rate means an emission rate of 1 g/s.

The results of this analysis are shown in Attachment 5 and indicate no significant change in the predicted concentrations based on either the airport and project site surface characteristics.

3.9.4 AERMET Processing

AERMET (version 22112) was executed using EPA recommended settings to produce the meteorological data needed for AERMOD. The five year period from 2017-2021 was used in this analysis. The AERMET analysis included the use of both the AERMINUTE and AERSURFACE preprocessors. The AERMINUTE (version 15272) meteorological data processor was used to produce wind speed and direction data based on archived 1-minute and 5-minute ASOS data for KMRB, for input into AERMET Stage 2. A 0.5 m/s wind speed threshold was applied to the 1-minute ASOS derived wind speeds in AERMET.

In addition to the surface meteorological data from KMRB, ROCKWOOL utilized upper air data from Washington Dulles International (IAD) airport in this analysis. Upper air data is used in AERMET to determine an initial potential temperature distribution from a morning sounding. AERMET assumes the 12Z sounding is to be nearly equivalent to a morning sounding. The initial potential temperature distribution is used by AERMET to characterize the growth of the daytime convective boundary layer. It is important to use upper air data that is representative of the model application site. IAD is the closest upper air collection station to the proposed project site.

The guidance pertaining to the determination of moisture characteristics suggests that the 30-year rainfall record be examined, and then precipitation of the modeling period be compared to the 30 year statistical norms. A season was considered dry if the precipitation during a year of the modeling period is in the lower 30th percentile of the corresponding climatic norm. Similarly, average moisture is assumed for seasonal precipitation the in the range of 30th to 70th percentile, and wet moisture is assumed for the 70th percentile and greater. For snow cover, the snow observations from NOAA's Global Summary of the Day (GSOD) at Martinsburg, WV was examined. This data did not indicate any persistent snow cover at this site. To assess this in more detail, the National Weather Service Snow Data Assimilation System (SNODAS) snow depth maps were examined and animations of this maps were performed. This data indicates clearly that on a seasonal basis, the snow cover occurred below 50 percent of the time during the winter season during 2017-2021. Thus continuous snow cover was found not to occur. The proposed snow cover and moisture options for the 2017-2010 KMRB meteorological data processing are presented in Table 3-12.

Table 3-12 KMRB Snow Cover and Monthly Surface Moisture Assignments

Modeling Year	WINTER		SPRING	SUMMER	FALL
	Moisture	Continuous Snow on the ground?	Moisture	Moisture	Moisture

2017	Dry	No	Avg	Avg	Dry
2018	Wet	No	Avg	Wet	Wet
2019	Wet	No	Wet	Wet	Dry
2020	Wet	No	Avg	Dry	Dry
2021	Avg	No	Dry	Avg	Avg

3.10 REGIONAL INVENTORY FOR CUMULATIVE MODELING ANALYSES

As discussed in Section 3.1.3, cumulative air quality modeling analyses may be necessary if the Project's modeled impacts exceed the applicable SILs. The cumulative analyses includes representative background concentrations from regional monitors, as well as contributions from other sources in the area, "nearby sources" whose close proximity to the Project site would make their modeled impacts in relation to the modeled impacts from the proposed Project not well characterized by representative background monitor data alone.

Important considerations for identifying nearby sources to include in the cumulative modeling inventory, in a manner that does not make the assessment overly conservative or complicated, are discussed by EPA in Section 8.3 of the Guideline on Air Quality Models (40 CFR Part 51, Appendix W). Specifically, paragraph 8.3.3(b)(iii) of the Guideline provides the following language:

> *The number of nearby sources to be explicitly modeled in the air quality analysis is expected to be few except in unusual situations. In most cases, the few nearby sources will be located within 10 to 20 km from the source(s) under consideration.*

The Guideline also contains the following language to define "nearby sources" in paragraph 8.3.3 (b):

> *Nearby Sources: All sources in the vicinity of the source(s) under consideration for emissions limits that are not adequately represented by ambient monitoring data should be explicitly modeled. Since an ambient monitor is limited to characterizing air quality at a fixed location, sources that cause a significant concentration gradient in the vicinity of the source(s) under consideration for emissions limits are not likely to be adequately characterized by the monitored data due to the high degree of variability of the source's impact.*

The maximum significant impact area (SIA, i.e., the distance defined by furthest receptor from the Project with a modeled concentration due to the Project in excess of an applicable SIL) was within 57 km for the 1-hour average and within 2.5 km for the larger averaging periods. Considering the above referenced language from the Guideline, ROCKWOOL has limited the cumulative inventory for all pollutants and averaging periods that exceed their

respective SIL to major sources within an area of radius 25 km of the proposed Project site.

Separate inventories were developed for NO_X, PM_{10}, $PM_{2.5}$, and SO_2 and were updated from the inventory used as a part of R14-0037 in order to capture facility startups and shutdowns within the region. These inventories are included in Attachment 3. Title V permits and permit applications that are publicly available were the primary basis for the development of modeled emission rates for these inventories. The stack parameters were based on the WVDAQ emission inventory and available permits and permit applications. The MDDEP and VADEQ were contacted and provided emissions inventories.

3.11 CLASS I IMPACTS

The proposed Project is located within 300 km of three (3) federally protected Class I areas. All of these Class I areas are located generally to the east and south of the Project. The Class I areas and approximate distances from the Project site are as follows:

- Otter Creek Wilderness – 153 km, managed by the US Forest Service (USFS),
- Dolly Sods Wilderness – 131 km, managed by USFS, and
- Shenandoah National Park – 60 km, managed by the National Park Service (NPS).

The Federal Land Managers (FLMs) have recommended an emissions over distance screening threshold that can be used to preliminarily assess a project's significance with respect to air quality related values (AQRVs), namely visibility and deposition in Class I areas (NPS 2010). This ratio is represented by total annualized maximum 24-hour emissions of NO_X, SO_2, PM_{10}, and H_2SO_4 in tons/yr divided by distance to a Class I area in km and is referred to as the Q/D ratio. The FLM guidance suggests that projects with a Q/D ratio of less than 10 would not be expected to have significant impacts with respect to AQRVs in Class I areas. ROCKWOOL calculated Q/D ratios for the closest Class I area to be 9.3, which is below the FLM screening level of 10 and therefore no AQRV analysis has been conducted.

ROCKWOOL evaluated the project related increase of NO_2, PM_{10}, $PM_{2.5}$, and SO_2 against the Class I SILs by applying the AERMOD dispersion model at a distance of 50 km from the Project site. This proposed analysis represents the maximum spatial extent (50 km from source to receptor) for regulatory applications of AERMOD. The receptors were placed at 1° intervals on an arc that represents the angular distance of the Class I area at 50 km from the project site. The angular distance was determined based on the receptors used by the NPS to represent each Class I area for refined air quality modeling

analyses[4]. The maximum modeled concentrations at the 50 km receptors are less than the Class I SILs for NO_2, and is therefore assumed that the project also had maximum potential NO_2 impacts that were less than the SILs at the more distant Class I areas.

For pollutants that the AERMOD screening evaluation exceeded Class I SILs, which included PM_{10}, $PM_{2.5}$, and SO_2, ROCKWOOL used a refined analysis with the CALPUFF model to evaluate the project impact within the park proper. As approved in the original protocol submitted November 2017, chemical transformation was used with CALPUFF, namely the MESOPUFF II scheme coupled with the VISTAS meteorological data set provided by EPA.

4.0 MODEL RESULTS PRESENTATION

The following section summarizes the modeling analysis results using the methods discussed in Section 3.

4.1 FACILITY IMPACTS AND DETERMINATION OF SIGNIFICANT IMPACT AREAS

The facility sources were modeled according to the methods discussed in Section 3.1.2.2. Table 4-1 contains a summary of the results comparing the facility impacts to the SIL and presents the calculated SIA. The SIA for each pollutant/averaging period is determined by calculating the maximum distance to which impacts are greater than the SIL. The spatial concentration distributions of all pollutants exceeding their SIL is presented in Attachment 4.

Table 4-1 Summary of Facility Impacts and SIL/SIA Analyses

Pollutant	Averaging Period	Maximum Modeled Concentrations (µg/m³)[1]	PM2.5 Secondary (µg/m³)	Total Concentration (µg/m³)	SIL (µg/m³)	SMC (µg/m3)	SIA (km)
NO_2	1-hour	34.68			7.5	--	56.77
	Annual	1.34			1	14	0.63
PM_{10}	24-hour	24.85			5	10	1.17
	Annual	2.90			1	--	0.61
$PM_{2.5}$ (NAAQS)	24-hour	8.58	0.0506	8.63	1.2	--	17.04
	Annual	1.61	0.0023	1.61	0.2	--	1.97
$PM_{2.5}$ (PSDI)	24-hour	9.65	0.0506	9.71	1.2	--	20.62
	Annual	2.06	0.0023	2.06	0.2	--	2.26
SO_2	1-hour	27.48			7.9	--	46.38

[4] http://www.nature.nps.gov/air/maps/receptors/

Pollutant	Averaging Period	Maximum Modeled Concentrations (µg/m³)[1]	PM2.5 Secondary (µg/m³)	Total Concentration (µg/m³)	SIL (µg/m³)	SMC (µg/m3)	SIA (km)
	3-hour	16.94			25	--	N/A
	24-hour	4.25			5	13	N/A
	Annual	0.49			1	--	N/A

[1]- The 5-year maximum concentrations are reported for: 3-hr, 24-hr, and annual SO_2; annual NO_2; 24-hr and annual PM_{10}; 24-hr and annual PM2.5 for PSD increment. The 5-year average concentrations are reported for: 1-hr SO_2; 1-hr NO_2; 24-hr and annual $PM_{2.5}$ for the NAAQS comparisons. All impacts larger or equal to the SIL were considered significant

The facility had significant impacts for NO_2, PM_{10}, $PM_{2.5}$ and SO_2; thus, further cumulative modeling analyses are required for these pollutants. NO_2 and SO_2 modeled impacts are below the SMC, therefore the project can be exempted from preconstruction monitoring for NO_2 and SO_2 based on these results. ROCKWOOL proposed the use of representative regional background data to satisfy the preconstruction monitoring for PM10, which had modeled impacts above the SMC. Justification of the representativeness of existing regional background data for use in the modeling analysis is provided in Section 3.5.3.

4.2 MULTI-SOURCE AIR QUALITY ANALYSES

Modeling analyses were carried out for the NAAQS standards using five years of meteorological data for NO_2, $PM_{2.5}$, PM_{10} and SO_2 using the methods discussed in Section 3.1.3. Modeling was also performed for NO_2, $PM_{2.5}$, and PM_{10} for PSD class II increment standards using the methods discussed in Section 3.1.3.

4.2.1 Cumulative NAAQS

Table 4-2 summarizes the results of the NAAQS modeling analyses of combined facility-wide ROCKWOOL and nearby off-property sources. The analyses demonstrate compliance with all applicable NAAQS.

Table 4-2 Cumulative Modeling Results summary (NAAQS)

Scenario	Averaging Period	Rank	Modeled Concentration (µg/m³)	Background Concentration (µg/m³)	PM2.5 Secondary	Total Concentration (µg/m³)	NAAQS (µg/m³)	ROCKWOOL Contribution (µg/m³)
NO_2	1-hour	H8H	121.03	42.60		163.63	188	
	Annual	H1H	1.37	8.00		9.37	100	
$PM_{2.5}$	24-hour	H8H	6.02	11.70	0.0506	17.78	35	
	Annual	H1H	1.75	5.30	0.0023	7.06	12	
PM_{10}	24-hour	H6H	21.07	25		46.07	150	
SO2	1-hour	H4H	71.89	7.90		79.79	196	

4.2.2 Cumulative Class II PSD Increment

Table 4-3 summarizes the class II PSD increment modeling analysis results. The results demonstrate that all on-site sources and off-site source with PSD increment consuming emissions have impacts below the class II PSD increment standards.

Table 4-3 PSD Increment Results

Scenario	Averaging Period	Ranks	Modeled Concentrations (µg/m³)	Secondary PM2.5 (µg/m³)	Total Concentrations (µg/m³)	Allowable Increment (µg/m³)	% of Allowable Increment
NO2	Annual	H1H	1.34	NA	1.34	25	5.0%
PM2.5	24-hour	H2H	8.64	0.0506	8.69	9	97.6%
	Annual	H1H	1.84	0.0023	1.85	4	46.0%
PM10	24-hour	H2H	24.12	NA	24.12	30	80.0%
	Annual	H1H	3.93	NA	3.93	17	23.0%

4.3 CLASS I ANALYSES

After screening all applicable pollutants/averaging time impacts at 50 km using AERMOD, a further refined analysis was conducted for $PM_{2.5}$, PM_{10}, and SO_2 using CALPUFF. The results are summarized in Table 4-4. All refined modeled impacts based on the CALPUFF simulations were below the Class I SIL, therefore no further CLASS I evaluations are necessary.

Table 4-4 Class I SIL Analyses

Pollutant	Averaging Period	Aermod Maximum Modeled Concentrations (µg/m³)	CALPUFF Maximum Modeled Concentrations (µg/m³)	Class 1 SIL (µg/m³)
$PM_{2.5}$	24-hr	**0.33**	0.096	0.27
	Annual	0.020	-	0.05
PM_{10}	24-hr	**0.59**	0.094	0.32
	Annual	0.026	-	0.16
NO_2	Annual	0.04	-	0.10
SO_2	3-hr	**3.62**	0.518	1.00
	24-hr	**0.67**	0.108	0.20
	Annual	0.03	-	0.08

4.4 ADDITIONAL IMPACT ANALYSES

4.4.1 1-Hour NAAQS Sensitivity Analyses

An additional modeling analysis was performed as a part of the modification application for the 1-hour NO_2 and SO_2 NAAQS standards as support for the proposed 30-day average emission limits for Melting Furnace source IMF01. To demonstrate that a 30-day average emission limit is protective of the short term NAAQS at this facility, the emission rates from IMF01 were incrementally increased and assessed in cumulative NAAQS modeling.

Operation of IMF01 presents an opportunity to realize greater short-term emission rates due to changes to the melt feed-rate, operational upsets, and other process related variables. Because ROCKWOOL understands that these short-term increases to emission rates can and will occur, they have elected to conduct this sensitivity analysis by modeling various increased emission rates against the 1-hr NO_2 and SO_2 NAAQS standards.

NO_2 modeling was conducted with source IMF01 emissions as calculated (baseline), and scaled up by 25%, 50%, and 75% of the calculated emission rate. SO_2 emissions from source IMF01 were modeled as calculated (baseline) and

with increases of 10%, 20%, and 30%. These rates were selected as a reasonable range based on knowledge of the process operations.

The results of this demonstration are summarized in Table 4-5. Varying the emission rates of source IMF01 did not change the modeled impact reported or the highest contribution from ROCKWOOL sources to an exceedance. Note that for NO_2, the overall highest contribution from the ROCKWOOL sources when the predicted concentration is greater than the NAAQS was 0.1734, 0.2008, and 0.2281 for the 25%, 50%, and 75% IMF01 emissions scaling, respectively. These results support that a 30-day average emission limit on emission source IMF01 would be protective of the 1-hour NAAQS.

Table 4-5 Summary of NAAQS 1-Hour Sensitivity Analyses

Scenario	Averaging Period	Emission Rate Factor	Modeled Concentrations (µg/m³)	Background Concentrations (µg/m³)	Total Concentrations (µg/m³)	NAAQS (µg/m³)	Contribution from ROCKWOOL Sources (µg/m³)
NO_2	1-hour	Baseline	121.03	42.60	163.64	188	
	1-hour	25% Increase	121.03	42.60	163.64	188	
	1-hour	50% Increase	121.03	42.60	163.64	188	
	1-hour	75% Increase	121.03	42.60	163.64	188	
SO2	1-hour	Baseline	71.89	7.90	79.79	196	-
	1-hour	10% Increase	71.90	7.90	79.79	196	-
	1-hour	20% Increase	71.90	7.90	79.80	196	-
	1-hour	30% Increase	71.91	7.90	79.81	196	-

4.4.2 Evaluation of Effects on Growth, Soils, Vegetation

In order to assess the effects of growth, soils, and vegetation; additional simulations were conducted to examine predicted concentrations relative to AQRV screening levels and secondary NAAQS. Table 4-9 summarizes these results. Table 4-6 shows that there are no significant impacts based on comparisons with assigned screening levels and secondary NAAQS. The concentrations in Table 4-9 are based mostly on the cumulative NAAQS concentrations. It is clear from Table 4-9 that predicted concentrations will not reach the screening level concentrations. Therefore, no significant impacts on soils, vegetation, or wildlife are indicated.

Table 4-6 Summary of Applicable AQRVs and AAQS Comparison

Pollutant	Averaging Periods	Screening Levels (ug/m3)	Secondary NAAQS (ug/m3)	Total Predicted Concentrations (µg/m³)	Notes
PM_{10}	24-hour	-	150	46.07	1
$PM_{2.5}$	24-hour	-	35	17.78	2
	Annual	-	15	7.06	3
NO_2	4-hour	3,760	-	17.64	4
	8-hour	3,760	-	15.26	4
	1-month	564	-	10.07	4
	Annual	100	100	1.34	5
SO2	1-hour	917	--	27.26	4
	3-hour	786	1300	79.79	5
	Annual	18	60	0.51	4

[1] Cumulative NAAQS concentration, High-6th-High total concentration
[2] Cumulative NAAQS concentration, High-8th-High total concentration
[3] Cumulative NAAQS concentration, maximum
[4] Maximum concentration (24-hr average used as surrogate for 1-month average)
[5] Cumulative NAAQS concentration, maximum total concentration

4.4.3 CLASS II VISIBILITY ANALYSIS

ROCKWOOL has assessed areas near the proposed project that may be considered sensitive with respect to potential visibility impacts, and applied the USEPA VISCREEN (Version 1.01, dated 13190) visibility model to these areas to conservatively assess the proposed project's potential impact on visibility. Specifically, ROCKWOOL has evaluated the project's impact on plume visibility at the Antietam National Battlefield (Antietam) and Harper's Ferry National Historical Park (Harper's Ferry). ROCKWOOL used the VISCREEN (version 13190) visibility screening model using "Level 1" assumptions followed by "Level 2" assumptions as necessary, following the procedures described in the VISCREEN workbook[5].

Table 4-7 presents a summary of the inputs that were used in the VISCREEN Level 1 and Level 2 analyses. The distances that are shown in Table 4-7 are based on the approximate line from the ROCKWOOL project site to the visitor's center at each area. The closest and furthest point in the area to ROCKWOOL was determined along this line. The locations of ROCKWOOL and the two areas considered in this analysis is presented in Figure 4-1. The visitor's centers at each area are clearly shown in the figure.

[5] "Workbook for Plume Visual Impact Screening and Analysis (Revised)", USEPA, October 1992, EPA-454/R-92-023

Figure 4-1 Location of Nearby Parks and Visitor's Centers

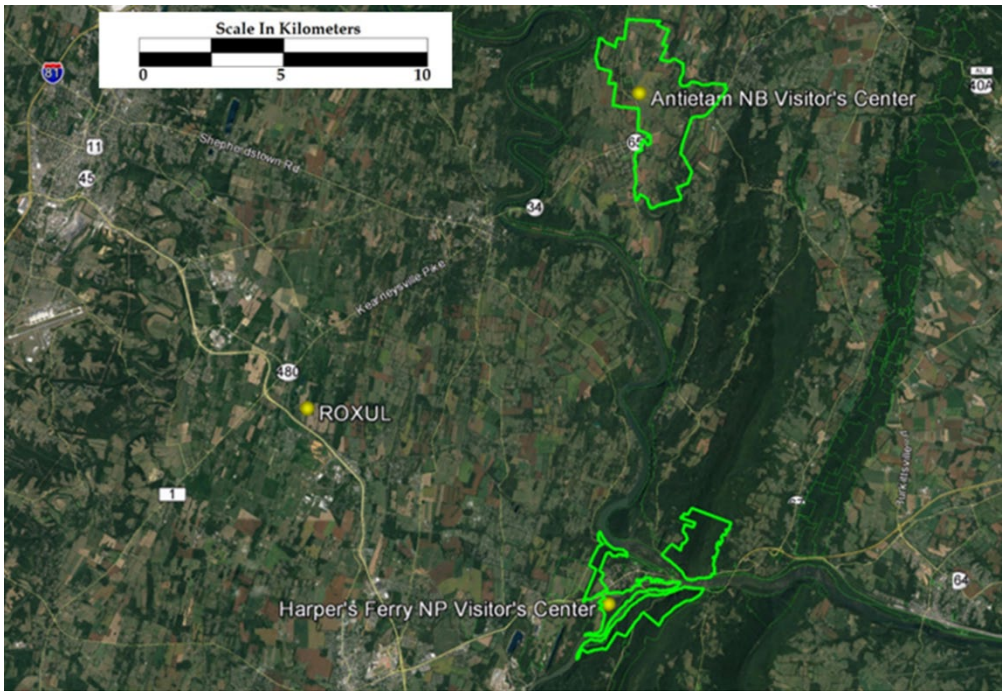


Table 4-8 presents the results of the VISCREEN Level 1 analyses for Antietam. While Antietam shows visibility impacts less than the VISCREEN visibility screening criteria using Level 1 assumptions, the screening criteria are exceeded for Harper's Ferry. Therefore, to evaluate visibility impacts at Harper's Ferry, ROCKWOOL performed a VISCREEN Level 2 assumptions as described below.

VISCREEN LEVEL 2

ROCKWOOL followed the procedures described in the workbook to determine worst-case meteorological conditions for use in the Level 2 analysis. The procedures require that the hourly meteorological data first be sorted by cardinal, intercardinal, and secondary-intercardinal wind directions (16 wind directions), followed by wind speed, and finally Pasquill-Gifford (PG) stability class. This sorting is done for the entire meteorological data period and arranged by time-of-day, using six hour blocks (hours 1-6, 7-12, 13-18, and 19-24). In order to determine PG stability class, meteorological data from Dulles International Airport (IAD) were processed using the PCRAMMET (version 99169) meteorological processor. PCRAMMET is limited in what input data format can be processed. Recent meteorological data in the ISHD format are not able to be processed in PCRAMMET. Therefore, ROCKWOOL relied on the SCRAM formatted surface and mixing height from IAD, available from USEPA. IAD is located approximately 60 km southeast of the ROCKWOOL

project site, and is the closest airport with observational data suitable for use in PCRAMMET.

The years considered for the VISCREEN Level 2 analysis were 1986-1988, and 1990 and 1991, based upon PMCRAMMET data availability. Surface data from 1989 were not available; therefore, a discontinuous five-year period was used. The five years of meteorological data were analyzed to determine the worst-case dispersion condition for VISCREEN Level 2 for wind directions that could transport emissions from the project site to Harper's Ferry (i.e., west-northwest winds). The attached spreadsheet contains the wind speed and stability class joint frequency distribution for the meteorological observations from IAD, as well as the worst-case meteorological conditions for the west-northwest wind direction. The result of the joint frequency distribution analysis for the west-northwest wind direction indicates that a wind speed of 2 m/s and stability class 6 should be used in the Level 2 analysis. It should be noted that this wind speed and stability class combination is indicated for the hours 1-6 and hours 19-24 blocks. These hours are mostly nighttime hours, where public access to the park would be minimal or limited. If only the daytime hours are considered (i.e., hour blocks 7-12 and 13-18), then the wind speed and stability class combination would change to 2 m/s and stability class 4. ROCKWOOL has used the conservative 2 m/s and stability class 6 combination for the VISCREEN Level 2 analysis.

The results of the VISCREEN Level 2 analysis for Harper's Ferry are presented in Table 4-9. The VISCREEN visibility screening criteria are not exceeded for Harper's Ferry using the Level 2 adjustment to wind speed. No other inputs were changed from the Level 1 analysis other than the wind speed.

Table 4-7 - Inputs for VISCREEN Level 1 and Level 2 Analyses

Variable	Input Value		Variable	Input Value	
Particulates	148.99	tons/yr	Background Ozone	0.04	ppm
NO_X (as NO_2)	237.18	tons/yr	Background Visual Range	25	km
Primary NO_2	0	tons/yr	Plume-Source Observer Angle	11.25	degrees
Soot	0	tons/yr	Stability (Level 2 Analysis Only)	6	
Primary SO_4	0	tons/yr	Wind Speed (Level 2 Analysis Only)	2	m/s
Primary Particulate Density	2.5		Source-Observer Distance (Antietam)	14.9	km
Primary Particulate Diameter	6		Minimum Source-Class I Distance (Antietam)	14.9	km
Soot Density	2		Maximum Source-Class I Distance (Antietam)	17.5	km
Soot Diameter	1		Source-Observer Distance (Harper's Ferry)	10.3	km
Sulfate Density	1.5		Minimum Source-Class I Distance (Harper's Ferry)	10.3	km
Sulfate Diameter	4		Maximum Source-Class I Distance (Harper's Ferry)	14.4	km

Table 4-8 VISCREEN Level 1 Results – Antietam National Battlefield

					Delta E		Contrast	
Backgrnd	Theta	Azi	Distance	Alpha	Criteria	Plume	Criteria	Plume
SKY	10	124	17.5	45	2	1.790	0.05	0.014
SKY	140	124	17.5	45	2	0.553	0.05	-0.012
TERRAIN	10	84	14.9	84	2	1.833	0.05	0.020
TERRAIN	140	84	14.9	84	2	0.295	0.05	0.011

Table 4-9 - VISCREEN Level 2 Results – Harper's Ferry National Historical Park

					Delta E		Contrast	
Backgrnd	Theta	Azi	Distance	Alpha	Criteria	Plume	Criteria	Plume
SKY	10	144	14.4	25	2	1.456	0.05	0.011
SKY	140	144	14.4	25	2	0.430	0.05	-0.010
TERRAIN	10	84	10.3	84	2	1.720	0.05	0.016
TERRAIN	140	84	10.3	84	2	0.25	0.05	0.008

5.0 SUMMARY AND CONCLUSIONS

A detailed air quality impact assessment was performed for the ROCKWOOL facility in Jefferson County, West Virginia. This report addresses the ambient air quality impact analysis to support the Rule 13 permit modification for pollutants that have an applicable ambient standard (PSD increment, NAAQS, or SMC).

The ambient air quality impact assessment was based on the AERMOD and dispersion model. The CALPUFF dispersion model was also used to address pollutant impacts at Class I areas. Impact analyses were conducted for NO_x, PM_{10}, $PM_{2.5,}$ and SO_2 with 5 years (2017-2021) of hourly processed data based on surface observations from EMV Regional Airport in West Virginia and upper air observations from Dulles Airport in Maryland. The plant's significant impact areas were derived from the 5-year modeling analysis. The plant had significant impacts for NO_2, PM_{10}, $PM_{2.5}$ and SO_2; thus, comprehensive modeling analyses were performed for these pollutants with other major emission sources to assess compliance with the applicable PSD increments and NAAQS. Dispersion modeling analyses showed compliance with the PSD increments and NAAQS for NO_2, PM_{10}, $PM_{2.5}$ and SO_2. A Class I SIL analysis was performed with AERMOD and the CALPUFF air modeling system that demonstrated insignificant impacts in Class I areas.

The most recent air quality modeling results are consistent with the results from the original modeling, and the original conclusions that there will be no violations of National Ambient Air Quality Standards, and no increment consumption, are confirmed.

6.0 REFERENCES

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Attachment 1
ROCKWOOL Modeled Source Parameters and Emission Rates

Attachment 1 -Modeled Stack Parameters

Ranson, West Virginia

Model ID	Source Description	Source Type	DATUM: NAD83		Base Elevation	Stack Height	Stack Inside Diameter	Exit Velocity	Temperature	Release Height	Initial Horizontal Dimension	Initial Vertical Dimension	Vertical dimension	Length of Side X	Length of Side Y
			UTM-E (m)	UTM-N (m)	(m)	(m)	(m)	(m/s)	(K)	(m)	(m)	(m)	(m)	(m)	(m)
Minwool Line															
B210/211	Raw Material Storage (B210/211)	Volume	252122.71	4362723.91	177.18	-	-	-	-	4.20	4.38	3.91	8.40	17.71	15.736
B215	Raw Material Loading Hopper (B215)	Volume	252111.48	4362726.15	177.18	-	-	-	-	4.78	1.08	1.72	3.69	4.61	3.693
IMF11	Conveyor Transition Point (B215 to B220)	Volume	252111.26	4362720.65	177.18	-	-	-	-	2.19	0.35	2.03	4.37	1.52	
IMF17	B220 Material Handling	Volume	252077.17	4362707.00	177.18	-	-	-	-	1.10	0.24	1.02	2.20	1.03	
IMF12	Conveyor Transfer Point (B215)	Volume	252109.48	4362715.64	177.18	-	-	-	-	2.19	0.35	2.03	4.37	1.52	
IMF16	Conveyor Transfer Point (B300)	Volume	252096.79	4362647.10	177.18	-	-	-	-	15.86	0.35	14.35	30.85	1.52	
IMF15	Outside B220 Transfer Points	Volume	252107.76	4362711.40	177.18	-	-	-	-	1.50	0.70	1.39	3.00	3.00	
RM_REJ	Raw Material Reject Collection Drop	Volume	252064.52	4362700.45	177.18	-	-	-	-	2.12	0.44	0.79	1.70	1.91	
IMF21	Charging Building Vacuum Cleaning Filter	Point	252086.44	4362687.44	177.18	3	0.15	9.00	313						
IMF24	Pre-heat Burner	Point	252110.21	4362631.99	177.18	38	0.35	16.59	523.15						
IMF01	Melting Furnace	Point	252103.66	4362643.76	177.18	65	1.00	21.11	406.15						
IMF07	One (1) Storage Silo (Filter Fines Day)	Point	252103.66	4362643.76	177.18	31	0.31	1.42	333						
IMF10	Filter Fines Recieving Silo	Point	252119.19	4362619.57	177.18	22	0.33	15.59	336						
IMF08	Sorbent Silo	Point	252119.18	4362614.25	177.18	22	0.33	2.79	293						
IMF09	Spent Sorbent Silo	Point	252118.70	4362609.67	177.18	22	0.33	15.59	336						
HE01	WESP	Point	252132.41	4362558.28	177.18	64.82	3.94	15.71	306.9						
DI	Dry Ice Cleaning	Fugitive	-	-	-	-	-	-	-						
CM12	Fleece Application Vent 1	Point	252045.00	4362606.09	-	-	-	-	-						
CM13	Fleece Application Vent 2	Point	252045.00	4362600.62	-	-	-	-	-						
CE01	De-dusting Baghouse	Point	252087.79	4362547.63	177.18	35.4	1.16	21.13	313						
CE02	Vacuum Cleaning Baghouse	Point	252075.42	4362528.33	177.18	30	0.70	16.56	313						
P_MARK	Product Marking	Volume	252057.64	4362505.80	177.18					3.05	2.13	1.42		9.16	
CM10	Recycle Plant Building Vent 1	Point	252105.89	4362588.65	177.18	15.7	0.81	13.64	294						
CM11	Recycle Plant Building Vent 2	Point	252080.44	4362578.91	177.18	19.6	0.81	13.64	294						
CM08	Recycle Plant Building Vent 3	Point	252098.77	4362578.43	177.18	15.7	0.36	7.50	294						
CM09	Recycle Plant Building Vent 4	Point	252104.82	4362596.10	177.18	15.7	0.36	7.50	294						
RMS	Raw Material Outdoor Stockpile	Volume	252128.47	4362691.43	177.18	-	-	-	-	1.22	5.46	1.13	2.44	13.411	32.309
IMF14	Raw Material Reject Stockpile	Volume	252063.17	4362700.23	177.18					2.48	0.83	0.59	1.265	3.5682	3.5682
B170	Melting Furnace Portable Crusher & Storage	Volume	252061.03	4362749.13	177.18	-	-	-	-	2.40	9.87	2.23	4.8	42.441	42.441
Rockfon Line															
RFNE1	IR Zone	Point	252033.19	4362304.15	177.18	13.00	0.32	12.85	328						
RFNE2	Hot Press and Cure	Point	252033.20	4362345.88	177.18	13.00	0.32	12.27	313						
RFNE3	High Oven A	Point	252002.20	4362321.43	177.18	12.00	0.50	15.47	373						
RFNE9	High Oven B	Point	252000.04	4362215.79	177.18	12.00	0.50	15.47	373						
RFNE4	Drying Oven 1	Point	251983.68	4362306.41	177.18	12.00	0.50	11.22	433						
RFNE6	Drying Oven 2 & 3	Point	251982.55	4362282.93	177.18	15.00	0.80	10.52	433						
RFNE5	Spray Paint Cabin	Point	251982.57	4362264.62	177.18	33.00	0.50	16.23	313						
RFNE7	Cooling Zone	Point	251995.40	4362294.50	177.18	14.00	0.80	15.85	313						
RFNE8	De-dusting Baghouse	Point	252056.87	4362271.85	177.18	30.00	1.56	19.64	313						
Other Facility-wide Sources															
CM03	Natural Gas Boiler 1	Point	252107.80	4362629.79	177.18	23.05	0.3048	12.74	384.15						
CM04	Natural Gas Boiler 2	Point	252109.47	4362629.46	177.18	23.05	0.3048	12.74	384.15						
RFN10	RFN Building Heat	Point	252005.78	4362369.97	177.18	15	0.35	15.01	330						
EFP1	Emergency Fire Pump Engine	Point	252195.80	4362629.35	177.18	4.26	0.15	39.31	726						
Rd_RM	Raw Material Paved Haul Roads	Volume	Multiple	Multiple	177.18	-	-	-	-	2.55	7.44	2.37		31.992	
Rd_FP	Finished Product Paved Haul Road	Volume	Multiple	Multiple	177.18	-	-	-	-	2.55	7.44	2.37		31.992	

Attachment 1 -Modeled Emission Rates

Ranson, West Virginia

Model ID	Source Description	NO2		SO2		CO	PM10		PM2.5	
		1-Hour (g/s)	Annual (g/s)	1-Hour (g/s)	3HR-24HR-Annual (g/s)	1-HR-8-HR (g/s)	24-Hour (g/s)	Annual (g/s)	24-Hour (g/s)	Annual (g/s)
Minwool Line										
B210/211	Raw Material Storage (B210/211)						4.88E-03	3.83E-03	7.38E-04	5.79E-04
B215	Raw Material Loading Hopper (B215)						7.65E-04	7.65E-04	1.16E-04	1.16E-04
IMF11	Conveyor Transition Point (B215 to B220)						5.00E-04	5.00E-04	2.50E-04	2.50E-04
IMF17	B220 Material Handling						1.56E-02	1.56E-02	1.51E-02	1.51E-02
IMF12	Conveyor Transfer Point (B215)						6.49E-04	6.49E-04	6.49E-04	6.49E-04
IMF16	Conveyor Transfer Point (B300)						6.49E-04	6.49E-04	6.49E-04	6.49E-04
IMF15	Outside B220 Transfer Points						8.12E-04	8.12E-04	8.12E-04	8.12E-04
RM_REJ	Raw Material Reject Collection Drop						7.50E-06	1.53E-05	1.14E-06	2.32E-06
IMF21	Charging Building Vacuum Cleaning Filter						6.94E-04	6.94E-04	3.47E-04	3.47E-04
IMF24	Pre-heat Burner	4.56E-02	4.56E-02	3.77E-04	3.77E-04	5.28E-02	4.78E-03	4.78E-03	4.78E-03	4.78E-03
IMF01	Melting Furnace	4.71E+00	4.71E+00	4.24E+00	4.24E+00	4.05E-01	1.04E+00	1.04E+00	9.42E-01	9.42E-01
IMF07	One (1) Storage Silo (Filter Fines Day)						3.47E-04	3.47E-04	1.74E-04	1.74E-04
IMF10	Filter Fines Recieving Silo						1.67E-03	1.67E-03	8.33E-04	8.33E-04
IMF08	Sorbent Silo						1.67E-03	1.67E-03	8.33E-04	8.33E-04
IMF09	Spent Sorbent Silo						1.67E-03	1.67E-03	8.33E-04	8.33E-04
HE01	WESP	1.83E+00	1.83E+00	1.58E-03	1.58E-03	1.24E+00	2.63E+00	2.63E+00	2.42E+00	2.42E+00
DI	Dry Ice Cleaning									
CM12	Fleece Application Vent 1									
CM13	Fleece Application Vent 2									
CE01	De-dusting Baghouse						9.72E-02	9.72E-02	9.72E-02	9.72E-02
CE02	Vacuum Cleaning Baghouse						2.78E-02	2.78E-02	2.78E-02	2.78E-02
P_MARK	Product Marking	4.91E-03	4.91E-03	2.95E-05	2.95E-05	4.13E-03	3.73E-04	3.73E-04	3.73E-04	3.73E-04
CM10	Recycle Plant Building Vent 1						8.33E-02	8.33E-02	4.17E-02	4.17E-02
CM11	Recycle Plant Building Vent 2						8.33E-02	8.33E-02	4.17E-02	4.17E-02
CM08	Recycle Plant Building Vent 3						6.94E-03	6.94E-03	3.47E-03	3.47E-03
CM09	Recycle Plant Building Vent 4						6.94E-03	6.94E-03	3.47E-03	3.47E-03
RMS	Raw Material Outdoor Stockpile						3.29E-03	2.75E-03	5.087E-04	4.27E-04
IMF14	Raw Material Reject Stockpile						2.45E-05	2.45E-05	3.90E-06	3.90E-06
B170	Melting Furnace Portable Crusher & Storage						3.20E-02	7.80E-03	9.00E-03	1.73E-03
Rockfon Line										
RFNE1	IR Zone						2.33E-03	2.33E-03	1.75E-03	1.75E-03
RFNE2	Hot Press and Cure						2.33E-03	2.33E-03	1.75E-03	1.75E-03
RFNE3	High Oven A	3.35E-02	3.35E-02	2.01E-04	2.01E-04	2.82E-02	1.47E-02	1.47E-02	1.10E-02	1.10E-02
RFNE9	High Oven B	3.35E-02	3.35E-02	2.01E-04	2.01E-04	2.82E-02	1.47E-02	1.47E-02	1.10E-02	1.10E-02
RFNE4	Drying Oven 1	2.51E-02	2.51E-02	1.51E-04	1.51E-04	2.11E-02	1.03E-02	1.03E-02	7.71E-03	7.71E-03
RFNE6	Drying Oven 2 & 3	5.87E-02	5.87E-02	3.52E-04	3.52E-04	4.93E-02	1.59E-02	1.59E-02	1.19E-02	1.19E-02
RFNE5	Spray Paint Cabin						1.11E-01	1.11E-01	8.33E-02	8.33E-02
RFNE7	Cooling Zone						2.43E-02	2.43E-02	1.82E-02	1.82E-02
RFNE8	De-dusting Baghouse						4.29E-02	4.29E-02	2.14E-02	2.14E-02
Other Facility-wide Sources										
CM03	Natural Gas Boiler 1	2.22E-02	2.22E-02	3.68E-04	3.68E-04	5.15E-02	4.657E-03	4.657E-03	4.66E-03	4.66E-03
CM04	Natural Gas Boiler 2	2.22E-02	2.22E-02	3.68E-04	3.68E-04	5.15E-02	4.657E-03	4.657E-03	4.66E-03	4.66E-03
RFN10	RFN Building Heat	2.28E-02	2.28E-02	3.77E-04	3.77E-04	5.28E-02	4.78E-03	4.78E-03	4.78E-03	4.78E-03
EFP1	Emergency Fire Pump Engine	intermittent excluded	1.28E-02	intermittent excluded	7.23E-05	2.62E-02	1.95E-04	5.34E-04	1.95E-04	5.34E-04
Rd_RM	Raw Material Paved Haul Roads						8.76E-04	4.99E-04	2.15E-04	1.22E-04
Rd_FP	Finished Product Paved Haul Road						1.49E-05	1.16E-05	3.65E-06	2.86E-06

Attachment 2
Q/D Screening Analysis

Roxul USA Inc. dba ROCKWOOL
Ranson, West Virginia
Summary of Q/d Screening Emissions

Updated/added to reflect post-construction updates

Source ID	Source Description	US NOx (ton/yr)	US SO2 (ton/yr)	US PM10 (ton/yr)	US H2SO4 (ton/yr)	Comment
Minwool Line						
B210/211	Raw Material Storage (B210/211)	--	--	0.17	--	Maximum 24-hour emissions in tpy (max ton/day * 365 day/yr
B215	Raw Material Loading Hopper (B215)	--	--	0.03	--	No difference in maximum 24-hour and annual for tpy basis
IMF11	Conveyor Transition Point (B215 to B220)	--	--	0.02	--	No difference in maximum 24-hour and annual for tpy basis
IMF17	B220 Material Handling	--	--	0.61	--	No difference in maximum 24-hour and annual for tpy basis
IMF12	Conveyor Transfer Point (B215)	--	--	0.02	--	No difference in maximum 24-hour and annual for tpy basis
IMF16	Conveyor Transfer Point (B300)	--	--	0.02	--	No difference in maximum 24-hour and annual for tpy basis
IMF15	Outside B220 Transfer Points	--	--	0.03	--	No difference in maximum 24-hour and annual for tpy basis
RM_REJ	Raw Material Reject Collection Drop	--	--	5.32E-04	--	Maximum 24-hour emissions in tpy (max ton/day * 365 day/yr
IMF21	Charging Building Vacuum Cleaning Filter	--	--	2.41E-02	--	No difference in maximum 24-hour and annual for tpy basis
IMF24	Pre-heat Burner	1.58	0.01	0.17	--	No difference in maximum 24-hour and annual for tpy basis
IMF01	Melting Furnace	163.67	147.31	36.01	16.37	No difference in maximum 24-hour and annual for tpy basis
IMF07	One (1) Storage Silo (Filter Fines Day)	--	--	0.01	--	No difference in maximum 24-hour and annual for tpy basis
IMF10	Filter Fines Recieving Silo	--	--	0.06	--	No difference in maximum 24-hour and annual for tpy basis
IMF08	Sorbent Silo	--	--	0.06	--	No difference in maximum 24-hour and annual for tpy basis
IMF09	Spent Sorbent Silo	--	--	0.06	--	No difference in maximum 24-hour and annual for tpy basis
DI	Dry Ice Cleaning	--	--	--	--	-
CM12	Fleece Application Vent 1	--	--	--	--	-
CM13	Fleece Application Vent 2	--	--	--	--	-
HE01	WESP	63.73	0.05	91.35	--	No difference in maximum 24-hour and annual for tpy basis
CE01	De-dusting Baghouse	--	--	3.38	--	No difference in maximum 24-hour and annual for tpy basis
CE02	Vacuum Cleaning Baghouse	--	--	0.97	--	No difference in maximum 24-hour and annual for tpy basis
P_MARK	Product Marking	0.17	1.02E-03	0.01	--	No difference in maximum 24-hour and annual for tpy basis
CM10	Recycle Plant Building Vent 1	--	--	2.90	--	No difference in maximum 24-hour and annual for tpy basis
CM11	Recycle Plant Building Vent 2	--	--	2.90	--	No difference in maximum 24-hour and annual for tpy basis
CM08	Recycle Plant Building Vent 3	--	--	0.24	--	No difference in maximum 24-hour and annual for tpy basis
CM09	Recycle Plant Building Vent 4	--	--	0.24	--	No difference in maximum 24-hour and annual for tpy basis
RMS	Raw Material Outdoor Stockpile	--	--	0.11	--	Maximum 24-hour emissions in tpy (max ton/day * 365 day/yr
IMF14	Raw Material Reject Stockpile	--	--	8.51E-04	--	No difference in maximum 24-hour and annual for tpy basis
B170	Melting Furnace Portable Crusher & Storage	--	--	1.75	--	For Storage, maximum 24-hour emissions in tpy (max ton/day * 365 day/yr); for crusher, maximum annual steady-state [8760 hr/yr / 540 hr/yr] [Note 1]
Rockfon Line						
RFNE1	IR Zone	--	--	0.08	--	No difference in maximum 24-hour and annual for tpy basis
RFNE2	Hot Press and Cure	--	--	0.08	--	No difference in maximum 24-hour and annual for tpy basis
RFNE3	High Oven A	1.17	0.01	0.51	--	No difference in maximum 24-hour and annual for tpy basis
RFNE9	High Oven B	1.17	0.01	0.51	--	No difference in maximum 24-hour and annual for tpy basis
RFNE4	Drying Oven 1	0.87	0.01	0.36	--	No difference in maximum 24-hour and annual for tpy basis
RFNE6	Drying Oven 2 & 3	2.04	0.01	0.55	--	No difference in maximum 24-hour and annual for tpy basis
RFNE5	Spray Paint Cabin	--	--	3.86	--	No difference in maximum 24-hour and annual for tpy basis
RFNE7	Cooling Zone	--	--	0.84	--	No difference in maximum 24-hour and annual for tpy basis
RFNE8	De-dusting Baghouse	--	--	1.49	--	No difference in maximum 24-hour and annual for tpy basis
Other Facility-wide Sources						
CM03	Natural Gas Boiler 1	0.77	0.01	0.16	--	No difference in maximum 24-hour and annual for tpy basis
CM04	Natural Gas Boiler 2	0.77	0.01	0.16	--	No difference in maximum 24-hour and annual for tpy basis
RFN10	RFN Building Heat	0.79	0.01	0.17	--	No difference in maximum 24-hour and annual for tpy basis
EFP1	Emergency Fire Pump Engine	7.81	1.51E-02	0.3253	--	Maximum annual steady-state (8760 hr/yr / 500 hr/yr) [Note 1
Rd_RM	Raw Material Paved Haul Roads	--	--	0.94	--	Maximum 24-hour emissions in tpy (max ton/day * 365 day/yr
Rd_FP	Finished Product Paved Haul Road	--	--	0.02	--	Maximum 24-hour emissions in tpy (max ton/day * 365 day/yr
TKS	Facility Storage Tanks	--	--	--	--	-
	Totals	**244.55**	**147.46**	**151.20**	**16.37**	

	Q	d	Q/d
Total Emissions, Q (tpy)	559.58	60	9.33

Q/d = Total Emissions, Q (tpy) / Distance to Class I Area, d (km)
Total Emissions, Q (short ton/yr or tpy) = NOx (tpy) + SO2 (tpy) + PM10 (tpy) + H2SO4 (tpy)
d = distance in km to Class I area (Shenandoah National Park)

Highlighted rows indicated adjusted annual emissions for Q/d analysis. See individual calculation tab for each source.
1. For B170 Melting Furnace Portable Crusher & Storage, maximum annual steady-state emissions conservatively assume operation for 24 hours/day, even though this application proposes maximum 24-hour emissions based on 12 hr/day. The EFP1 Emergency Fire Pump Engine maximum annual steady state emissions also conservatively assume 24 hr/day operation, although maximum 24-hour emissions are anticipated to include a half hour of operation for testing (in an emergency, EFP1 may operate for longer, but other sources at facility would likley not be operating).

Attachment 3
Off-Property Inventory Review (Inclusion and Exclusions)

Attachment 3

Table A3-1: Background Emissions Inventory

Facility Name	Agency	ID	UTME	UTMN	Distance from Roxul	Emissions				Within SIA+10km Criterion						
										SIA (km)						
						NO_X	SO_2	PM_{10}	$PM_{2.5}$	0.5	56.8	46.4	0.8	1.1	1.9	19.2
			m	m	km	tpy	tpy	tpy	tpy	NO_X		SO_2	PM_{10}		$PM_{2.5}$	
										Annual	1-hr	1-hr	Annual	24-hr	Annual	24-hr
CONTINENTAL BRICK - MARTINSBURG FACILITY	WVDEP	54-003-00002	245400	4368700	9.11	37.31	122.17	125.25	74.402	Include	Include	Include	Include	Include	Include	Include
ARGOS USA LLC	WVDEP	54-003-00006	243700	4369200	10.73	4043.8	3282.948	458.43	315.45	-	Include	Include	Include	Include	Include	Include
Knauf Insulation, LLC - INWOOD, WV	WVDEP	54-003-00012	239700	4365700	12.81	200.26	25.82	208.04	77	-	Include	Include	-	-	-	Include
MAAX U.S. CORP	WVDEP	54-003-00026	246300	4376200	14.84	10.82				-	Include	Include	-	-	-	Include
QUAD/GRAPHICS, INC	WVDEP	54-003-00042	245846	4377400	16.13	74.52	2.26			-	Include	Include	-	-	-	Include
O-N MINERALS (CHEMSTONE) CO - CLEAR BROOK	VDEQ	51-069-00340	233035.8	4349020.7	23.39	340.17	204.37	94.13	55.98	-	Include	Include	-	-	-	Include
LCS Services, Inc. - NORTH MOUNTAIN SANITARY LANDFILL	WVDEP	54-003-00036	243500	4384500	23.59	21.07	83.53	5.26	5.26	-	Include	Include	-	-	-	Include
Loudoun County Solid Waste Management Facility	VDEQ	51-107-00135	275986.2	4324452.1	44.95	3.098	1.166	1.316		-	Include	Include	-	-	-	-
Digital Loudoun Pkwy Center N LLC	VDEQ	51-107-00890	285089	4319931	53.88					-	Include	Include	-	-	-	-
BHE GT&S - Leesburg Compressor Station	VDEQ	51-107-01016	275083	4319985	48.36	122.1				-	Include	Include	-	-	-	-

Attachment 3
Table A3-1: Background NO_2 Sources

Facility Name in Inventory	Stack Name in Inventory	Model ID	UTM E *m*	UTM N *m*	Distance from Roxul Facility *km*	Base Elevation *m*	Stack Height *m*	Temp. *K*	Exit Velocity *m/s*	Stack Diameter *m*	1-hour Emission Rate *g/s*	Annual Emission Rate *g/s*	Increment Consuming?	Notes
CONTINENTAL BRICK - MARTINSBURG FACILITY	1	002_1	245289.1	4368976	9.38	152.760	6.096	444.261	12.410	0.610	0.530451	0.530169	No	Stack param from stack test included in permit and estimations.
CONTINENTAL BRICK - MARTINSBURG FACILITY	2	002_2	245284.7	4368966	9.38	152.760	6.096	444.261	12.410	0.610	0.530451	0.530169	No	Stack param from stack test included in permit and estimations.
CONTINENTAL BRICK - MARTINSBURG FACILITY	3	002_3	245365.4	4369032	9.36	152.760	6.096	422.039	0.001	0.610	0.088199	0.000288	Yes	Stack param from stack test included in permit and estimations.
CONTINENTAL BRICK - MARTINSBURG FACILITY	4	002_4	245429.1	4369023	9.31	152.760	6.096	422.039	0.001	0.610	0.012600	0.012657	Yes	Stack param from stack test included in permit and estimations.
Argos USA - MARTINSBURG	00B	006_00B	243700	4369200	10.73	154.040	4.877	477.594	1.039	0.363	0.041126	Exclude	No	1.66 mmbtu/hr boiler fugitive sources assigned boiler type parameters.
Argos USA - MARTINSBURG	00E	006_00E	243700	4369200	10.73	154.040	1.829	422.039	2.865	0.204	0.000000	Exclude	No	Intermitten Generators excluded from 1 hour. Assigned estimated stack parameters.
Argos USA - MARTINSBURG	00G	006_00G	243700	4369200	10.73	154.040	3.048	293.150	147.218	0.101	0.715668	Exclude	No	From Argos Title V Permit 07-03-2018
Argos USA - MARTINSBURG	1	006_1	243882.3	4369246	10.62	154.040	133.198	358.150	22.921	5.188	219.866302	Exclude	Yes	Parameters From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files,
Argos USA - MARTINSBURG	2	006_2	243672.8	4369384	10.87	154.040	47.244	368.150	18.806	1.753	0.352794	Exclude	Yes	Parameters From Knauf Insulation Inwwod Facility PSD Appliation Air Quality Modeling input files,
Argos USA - MARTINSBURG	3	006_3	243458.5	4369277	10.97	154.040	3.901	293.150	0.001	0.396	0.311215	Exclude	Yes	Horizontal cap assumes no vertical velocity, height from WVDEP emission inventory, other parameters
Argos USA - MARTINSBURG	101	006_101	243700	4369200	10.73	154.040	1.829	293.150	0.001	0.610	0.637549	Exclude	No	Estimated stack paramater off picture of crusher 440hp.
Knauf Insulation, Inc. - INWOOD, WV	EP18	012_EP18	239835.8	4365622	12.66	178.770	3.050	583.150	9.220	0.300	1.065942	Exclude	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling
Knauf Insulation, Inc. - INWOOD, WV	EP24	012_EP24	239703	4365722	12.82	178.770	36.580	449.820	20.070	1.450	0.496432	Exclude	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling
Knauf Insulation, Inc. - INWOOD, WV	HTR	012_HTR	239677.6	4365685	12.83	178.000	2.438	338.706	0.000	0.914	0.211676	Exclude	No	Estimated Stack paramaters
Knauf Insulation, Inc. - INWOOD, WV	EP23	012_EP23	239657.2	4365698	12.86	178.770	60.660	333.150	20.650	2.900	2.696355	Exclude	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling.
Knauf Insulation, Inc. - INWOOD, WV	EP16	012_EP16	239630.6	4365693	12.88	178.770	7.320	845.930	22.020	0.300	1.150361	Exclude	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling.
Knauf Insulation, Inc. - INWOOD, WV	NWGN	012_NWGN	239624.1	4365676	12.88	178.770	4.270	807.760	50.000	0.100	1.552294	Exclude	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling.
Knauf Insulation, Inc. - INWOOD, WV	EP17	012_EP17	239620.9	4365699	12.89	178.770	7.320	739.650	21.560	0.300	1.380937	Exclude	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling.
Knauf Insulation, Inc. - INWOOD, WV	EP14	012_EP14	239600.5	4365787	12.93	178.770	36.580	385.930	21.130	1.320	0.000000	Exclude	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling.
Knauf Insulation, Inc. - INWOOD, WV	EP12	012_EP12	239586.2	4365746	12.94	178.770	18.380	316.480	17.820	0.710	0.017640	Exclude	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling.
Knauf Insulation, Inc. - INWOOD, WV	EP13	012_EP13	239586.6	4365780	12.94	178.770	60.660	344.260	20.860	2.130	2.047466	Exclude	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling.
MAAX U.S. CORP	3	026_3	246300	4376200	14.84	144.570	18.288	324.817	11.643	3.048	0.311215	Exclude	No	Parameters from WVDEP Emission Inventory.
QUAD/GRAPHICS, INC	001	042_001	246734.1	4377252	15.66	148.350	21.336	435.928	0.001	0.914	1.377157	Exclude	Yes	Rain cap has no vertical velocity. Parameters from state inventory. Allowables from permit.
QUAD/GRAPHICS, INC	002	042_002	246751.7	4377237	15.64	148.350	21.336	435.928	0.001	0.914	1.377157	Exclude	Yes	Rain cap has no vertical velocity. Parameters from state inventory. Allowables from permit.
QUAD/GRAPHICS, INC	003	042_003	246742.7	4377231	15.64	148.350	21.336	478.983	0.001	1.036	1.438896	Exclude	Yes	Rain cap has no vertical velocity, parameters from state emissions inventory and PSD inventory.
QUAD/GRAPHICS, INC	004	042_004	246763.5	4377224	15.63	148.350	21.336	449.817	0.001	0.762	1.243599	Exclude	Yes	Rain cap has no vertical velocity, parameters from state emissions inventory and PSD inventory.

Table A3-1: Background NO_2 Sources

Facility Name in Inventory	Stack Name in Inventory	Model ID	UTM E *m*	UTM N *m*	Distance from Roxul Facility *km*	Base Elevation *m*	Stack Height *m*	Temp. *K*	Exit Velocity *m/s*	Stack Diameter *m*	1-hour Emission Rate *g/s*	Annual Emission Rate *g/s*	Increment Consuming?	Notes
QUAD/GRAPHICS, INC	005	042_005	246763.5	4377224	15.63	148.350	21.336	449.817	0.001	0.762	1.243599	Exclude	Yes	Rain cap has no vertical velocity, listed as increment consuming in WV Inventory.
QUAD/GRAPHICS, INC	009	042_009	246737.3	4377218	15.63	148.350	11.582	435.928	0.001	0.914	1.243599	Exclude	No	Rain cap has no vertical velocity. Parameters from state inventory. Allowables from permit.
QUAD/GRAPHICS, INC	CO	042_CO	246576.7	4377330	15.79	148.350	5.182	689.261	10.455	0.789	0.275935	Exclude	No	Parameters from state inventory. Allowables from permit.
QUAD/GRAPHICS, INC	TO	042_TO	246546	4377308	15.78	148.350	5.182	560.928	1.920	0.972	0.921045	Exclude	Yes	Thermal oxidixer emission units combined, allowables from Title V, parameters from state
LCS Services, Inc. - NORTH MOUNTAIN SANITARY LANDFILL	004	036_004	243500	4384500	23.59	235.980	2.438	755.372	0.661	0.152	0.606050	Exclude	Yes	Estimated flare stack parameters, velocity is lowest allowable in permit. Allowable limits from Title V
O-N Minerals (Chemstone) Co - Clear Brook	1	340_1	233709	4349308	22.68	190.500	60.960	393.150	12.538	1.219	4.882418	Exclude	No	Allowable from Title V Application 10-17-2019, Table C.10
O-N Minerals (Chemstone) Co - Clear Brook	2	340_2	233709	4349308	22.68	190.500	60.960	393.150	12.538	1.219	4.882418	Exclude	No	Allowable from Title V Application 10-17-2019, Table C.10
O-N Minerals (Chemstone) Co - Clear Brook	4	340_4	233709	4349308	22.68	190.500	33.528	338.706	14.793	0.579	0.021420	Exclude	No	Allowable from Title V Application 10-17-2019, Table C.10
Loudoun County Solid Waste Management Facility	LCSWMF - LFG Flare	135_LCSWMF - LFG Flare	275986.2	4324452	44.95	121.920	12.192	1005.372	0.152	2.438	0.089119	Exclude	No	Data from 2018 Emission Statement and Response to DEQ inquiry revised application
BHE GT&S - Leesburg Compressor Station	TUR01	016_TUR01	275083	4319985	48.36	430.000	14.478	764.261	54.864	1.067	0.818986	Exclude	No	Data from 71978 - Permit - 20180608_31925832, and 71978 - Annual Update - 20190417_1711066
BHE GT&S - Leesburg Compressor Station	EN01	016_EN01	275083	4319985	48.36	430.000	10.211	699.817	17.983	0.914	1.259979	Exclude	No	Data from 71978 - Permit - 20180608_31925832, and 71978 - Annual Update - 20190417_1711066
BHE GT&S - Leesburg Compressor Station	EN02	016_EN02	275083	4319985	48.36	430.000	10.211	699.817	17.983	0.914	1.259979	Exclude	No	Data from 71978 - Permit - 20180608_31925832, and 71978 - Annual Update - 20190417_1711066
BHE GT&S - Leesburg Compressor Station	AUX01	016_AUX01	275083	4319985	48.36	430.000	9.754	449.817	3.353	0.396	0.302395	Exclude	No	Data from 71978 - Permit - 20180608_31925832, and 71978 - Annual Update - 20190417_1711066
BHE GT&S - Leesburg Compressor Station	B01	016_B01	275083	4319985	48.36	430.000	9.754	449.817	3.353	0.396	0.062999	Exclude	No	Data from 71978 - Permit - 20180608_31925832, and 71978 - Annual Update - 20190417_1711066
Digital Loudoun Pkwy Center N LLC	A110-B	890_A110-B	285089	4319931	53.88	282.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	A110-D	890_A110-D	285089	4319931	53.88	282.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	A110-R	890_A110-R	285089	4319931	53.88	282.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	A120-B	890_A120-B	285089	4319931	53.88	282.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	A120-D	890_A120-D	285089	4319931	53.88	282.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	A120-R	890_A120-R	285089	4319931	53.88	282.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	A130-B	890_A130-B	285089	4319931	53.88	282.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	A130/140-R	890_A130/140-R	285089	4319931	53.88	282.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	A140-B	890_A140-B	285089	4319931	53.88	282.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	A150-B	890_A150-B	285089	4319931	53.88	282.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	A150-D	890_A150-D	285089	4319931	53.88	282.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	A150-R	890_A150-R	285089	4319931	53.88	282.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	A Base EG (A-PBB)	890_A Base EG (A-PBB)	285089	4319931	53.88	282.000	2.682	767.594	20.544	0.253	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414

Table A3-1: Background NO_2 Sources

Facility Name in Inventory	Stack Name in Inventory	Model ID	UTM E *m*	UTM N *m*	Distance from Roxul Facility *km*	Base Elevation *m*	Stack Height *m*	Temp. *K*	Exit Velocity *m/s*	Stack Diameter *m*	1-hour Emission Rate *g/s*	Annual Emission Rate *g/s*	Increment Consuming?	Notes
Digital Loudoun Pkwy Center N LLC	B110-B	890_B110-B	285089	4319931	53.88	276.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	B110-D	890_B110-D	285089	4319931	53.88	276.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	B110-R	890_B110-R	285089	4319931	53.88	276.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	B120-B	890_B120-B	285089	4319931	53.88	276.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	B120-D	890_B120-D	285089	4319931	53.88	276.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	B120-R	890_B120-R	285089	4319931	53.88	276.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	B130-B	890_B130-B	285089	4319931	53.88	276.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	B130-D	890_B130-D	285089	4319931	53.88	276.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	B130-R	890_B130-R	285089	4319931	53.88	276.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	B140-B	890_B140-B	285089	4319931	53.88	276.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	B140-D	890_B140-D	285089	4319931	53.88	276.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	B140-R	890_B140-R	285089	4319931	53.88	276.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	B Base EG (B-PBB)	890_B Base EG (B-PBB)	285089	4319931	53.88	276.000	2.682	755.372	34.046	0.253	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	D110-B	890_D110-B	285089	4319931	53.88	274.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	D110-R	890_D110-R	285089	4319931	53.88	274.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	D120-B	890_D120-B	285089	4319931	53.88	274.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	D120-D	890_D120-D	285089	4319931	53.88	274.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	D120-R	890_D120-R	285089	4319931	53.88	274.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	D130-A	890_D130-A	285089	4319931	53.88	274.000	2.682	755.372	34.031	0.253	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	D130-B	890_D130-B	285089	4319931	53.88	274.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	D130-C	890_D130-C	285089	4319931	53.88	274.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	D130-D	890_D130-D	285089	4319931	53.88	274.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	D Base EG (D-PBB)	890_D Base EG (D-PBB)	285089	4319931	53.88	274.000	2.682	705.372	24.414	0.253	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	F130-B	890_F130-B	285089	4319931	53.88	267.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	F130/140-R	890_F130/140-R	285089	4319931	53.88	267.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	F140-B	890_F140-B	285089	4319931	53.88	267.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	F150-B	890_F150-B	285089	4319931	53.88	267.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414

Table A3-1: Background NO_2 Sources

Facility Name in Inventory	Stack Name in Inventory	Model ID	UTM E *m*	UTM N *m*	Distance from Roxul Facility *km*	Base Elevation *m*	Stack Height *m*	Temp. *K*	Exit Velocity *m/s*	Stack Diameter *m*	1-hour Emission Rate *g/s*	Annual Emission Rate *g/s*	Increment Consuming?	Notes
Digital Loudoun Pkwy Center N LLC	F150-D	890_F150-D	285089	4319931	53.88	267.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	F150-R	890_F150-R	285089	4319931	53.88	267.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	F160-B	890_F160-B	285089	4319931	53.88	267.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	F170-D	890_F170-D	285089	4319931	53.88	267.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	F160/170-R	890_F160/170-R	285089	4319931	53.88	267.000	5.090	750.928	31.943	0.509	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	F Base EG (F-PBB)	890_F Base EG (F-PBB)	285089	4319931	53.88	267.000	2.682	705.372	24.414	0.253	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G1-150-R GR1	890_G1-150-R GR1	285089	4319931	53.88	270.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G1-150-D G208	890_G1-150-D G208	285089	4319931	53.88	270.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G150-B G108	890_G150-B G108	285089	4319931	53.88	270.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G1-140-R GR2	890_G1-140-R GR2	285089	4319931	53.88	270.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G1-140-D G206	890_G1-140-D G206	285089	4319931	53.88	270.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G1-130-B G104	890_G1-130-B G104	285089	4319931	53.88	270.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G1-130-D G204	890_G1-130-D G204	285089	4319931	53.88	270.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G1-130-R Gen-GR3	890_G1-130-R Gen-GR3	285089	4319931	53.88	270.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G1-140-B G106	890_G1-140-B G106	285089	4319931	53.88	270.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G1-110-B G100	890_G1-110-B G100	285089	4319931	53.88	270.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G1-110-D G102	890_G1-110-D G102	285089	4319931	53.88	270.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G1-120-B G200	890_G1-120-B G200	285089	4319931	53.88	270.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G1-120-D G202	890_G1-120-D G202	285089	4319931	53.88	270.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G1-110/120-R GR4	890_G1-110/120-R GR4	285089	4319931	53.88	270.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G1 Base EG (G-PBB1)	890_G1 Base EG (G-PBB1)	285089	4319931	53.88	270.000	2.042	807.594	69.525	0.203	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 1 G210	890_Gen 1 G210	285089	4319931	53.88	270.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 2 G212	890_Gen 2 G212	285089	4319931	53.88	270.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 3 G-GR5	890_Gen 3 G-GR5	285089	4319931	53.88	270.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 4 G214	890_Gen 4 G214	285089	4319931	53.88	270.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 5 G218	890_Gen 5 G218	285089	4319931	53.88	270.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 6 G-GR9	890_Gen 6 G-GR9	285089	4319931	53.88	270.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414

Table A3-1: Background NO_2 Sources

Facility Name in Inventory	Stack Name in Inventory	Model ID	UTM E *m*	UTM N *m*	Distance from Roxul Facility *km*	Base Elevation *m*	Stack Height *m*	Temp. *K*	Exit Velocity *m/s*	Stack Diameter *m*	1-hour Emission Rate *g/s*	Annual Emission Rate *g/s*	Increment Consuming?	Notes
Digital Loudoun Pkwy Center N LLC	Gen 7 G114	890_Gen 7 G114	285089	4319931	53.88	270.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 8 G114R	890_Gen 8 G114R	285089	4319931	53.88	270.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 9 K200	890_Gen 9 K200	285089	4319931	53.88	263.000	5.060	678.706	43.891	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 10 K200-GR1	890_Gen 10 K200-GR1	285089	4319931	53.88	263.000	5.060	678.706	43.891	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 11 K100	890_Gen 11 K100	285089	4319931	53.88	263.000	5.060	678.706	43.891	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 12 K202	890_Gen 12 K202	285089	4319931	53.88	263.000	5.060	678.706	43.891	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 13 K102-GR2	890_Gen 13 K102-GR2	285089	4319931	53.88	263.000	5.060	678.706	43.891	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 14 K102	890_Gen 14 K102	285089	4319931	53.88	263.000	5.060	678.706	43.891	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 15 K104	890_Gen 15 K104	285089	4319931	53.88	263.000	5.060	678.706	43.891	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 16 K204	890_Gen 16 K204	285089	4319931	53.88	263.000	5.060	678.706	43.891	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 17 G216	890_Gen 17 G216	285089	4319931	53.88	263.000	5.060	678.706	43.891	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 18 G110 GD	890_Gen 18 G110 GD	285089	4319931	53.88	263.000	5.060	678.706	43.891	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 19 G110R CD	890_Gen 19 G110R CD	285089	4319931	53.88	263.000	5.060	678.706	43.891	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 20 G110 GB	890_Gen 20 G110 GB	285089	4319931	53.88	263.000	5.060	678.706	43.891	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 21 G110R AB	890_Gen 21 G110R AB	285089	4319931	53.88	263.000	5.060	678.706	43.891	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 22 K206	890_Gen 22 K206	285089	4319931	53.88	263.000	5.060	678.706	43.891	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 23 K206-GR3	890_Gen 23 K206-GR3	285089	4319931	53.88	263.000	5.060	678.706	43.891	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 24 K106	890_Gen 24 K106	285089	4319931	53.88	263.000	5.060	678.706	43.891	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 25	890_Gen 25	285089	4319931	53.88	263.000	5.060	678.706	43.891	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 26 K108	890_Gen 26 K108	285089	4319931	53.88	263.000	5.060	678.706	43.891	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 27 K208	890_Gen 27 K208	285089	4319931	53.88	263.000	5.060	678.706	43.891	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 28 K210	890_Gen 28 K210	285089	4319931	53.88	263.000	5.060	678.706	43.891	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 29 K110-210R-GR4	890_Gen 29 K110-210R-GR4	285089	4319931	53.88	263.000	5.060	678.706	43.891	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 30 K110	890_Gen 30 K110	285089	4319931	53.88	263.000	5.060	678.706	43.891	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 31 K212A or	890_Gen 31 K212A or K212	285089	4319931	53.88	263.000	4.267	763.706	56.388	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 32 K212B or	890_Gen 32 K212B or D214	285089	4319931	53.88	263.000	4.267	763.706	56.388	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 33 K212C or K-	890_Gen 33 K212C or K-GR5	285089	4319931	53.88	263.000	4.267	763.706	56.388	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414

Table A3-1: Background NO_2 Sources

Facility Name in Inventory	Stack Name in Inventory	Model ID	UTM E *m*	UTM N *m*	Distance from Roxul Facility *km*	Base Elevation *m*	Stack Height *m*	Temp. *K*	Exit Velocity *m/s*	Stack Diameter *m*	1-hour Emission Rate *g/s*	Annual Emission Rate *g/s*	Increment Consuming?	Notes
Digital Loudoun Pkwy Center N LLC	Gen 34 K112	890_Gen 34 K112	285089	4319931	53.88	263.000	5.060	678.706	43.891	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 35 K114	890_Gen 35 K114	285089	4319931	53.88	263.000	5.060	678.706	43.891	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 36 J200	890_Gen 36 J200	285089	4319931	53.88	263.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 37 J-GR1/J100/2	890_Gen 37 J-GR1/J100/200R	285089	4319931	53.88	263.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 38 J100	890_Gen 38 J100	285089	4319931	53.88	263.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 39 J202A	890_Gen 39 J202A	285089	4319931	53.88	270.000	5.060	823.150	52.426	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 40 J202B	890_Gen 40 J202B	285089	4319931	53.88	270.000	5.060	823.150	52.426	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 41 J202C	890_Gen 41 J202C	285089	4319931	53.88	270.000	5.060	823.150	52.426	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 42 J106A	890_Gen 42 J106A	285089	4319931	53.88	263.000	5.060	732.594	44.806	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 43 J106B	890_Gen 43 J106B	285089	4319931	53.88	263.000	5.060	732.594	44.806	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 44 J106C	890_Gen 44 J106C	285089	4319931	53.88	263.000	5.060	732.594	44.806	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 45 J106D	890_Gen 45 J106D	285089	4319931	53.88	263.000	5.060	732.594	44.806	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 46 J206A	890_Gen 46 J206A	285089	4319931	53.88	263.000	5.060	732.594	44.806	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 47 J206B	890_Gen 47 J206B	285089	4319931	53.88	263.000	5.060	732.594	44.806	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 48 J206C	890_Gen 48 J206C	285089	4319931	53.88	263.000	5.060	732.594	44.806	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 49 J206D	890_Gen 49 J206D	285089	4319931	53.88	263.000	5.060	732.594	44.806	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 50 J206E	890_Gen 50 J206E	285089	4319931	53.88	263.000	5.060	732.594	44.806	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 54 H106A	890_Gen 54 H106A	285089	4319931	53.88	263.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 55 H106B	890_Gen 55 H106B	285089	4319931	53.88	263.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 56 H106C	890_Gen 56 H106C	285089	4319931	53.88	263.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 57 H106D	890_Gen 57 H106D	285089	4319931	53.88	263.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 58 H206A	890_Gen 58 H206A	285089	4319931	53.88	263.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 59 H206B	890_Gen 59 H206B	285089	4319931	53.88	263.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 60 H206C	890_Gen 60 H206C	285089	4319931	53.88	263.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 61 H206D	890_Gen 61 H206D	285089	4319931	53.88	263.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 62 H100A	890_Gen 62 H100A	285089	4319931	53.88	263.000	5.060	763.706	56.388	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 63 H100B	890_Gen 63 H100B	285089	4319931	53.88	263.000	5.060	763.706	56.388	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414

Table A3-1: Background NO_2 Sources

Facility Name in Inventory	Stack Name in Inventory	Model ID	UTM E *m*	UTM N *m*	Distance from Roxul Facility *km*	Base Elevation *m*	Stack Height *m*	Temp. *K*	Exit Velocity *m/s*	Stack Diameter *m*	1-hour Emission Rate *g/s*	Annual Emission Rate *g/s*	Increment Consuming?	Notes
Digital Loudoun Pkwy Center N LLC	Gen 64 H100C	890_Gen 64 H100C	285089	4319931	53.88	263.000	5.060	763.706	56.388	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 65 H100D	890_Gen 65 H100D	285089	4319931	53.88	263.000	5.060	763.706	56.388	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 66 H200A	890_Gen 66 H200A	285089	4319931	53.88	263.000	5.060	763.706	56.388	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 67 H200B	890_Gen 67 H200B	285089	4319931	53.88	263.000	5.060	763.706	56.388	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 68 H200C	890_Gen 68 H200C	285089	4319931	53.88	263.000	5.060	763.706	56.388	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 69 H200D	890_Gen 69 H200D	285089	4319931	53.88	263.000	5.060	763.706	56.388	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 70 G2-G120A	890_Gen 70 G2-G120A	285089	4319931	53.88	263.000	5.060	678.706	43.525	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 71 G2-G116A	890_Gen 71 G2-G116A	285089	4319931	53.88	263.000	5.060	763.706	56.388	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 72 G2-G116BGen	890_Gen 72 G2-G116BGen 38 J100	285089	4319931	53.88	263.000	5.060	763.706	56.388	0.457	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	PBB 7 K-House (K-	890_PBB 7 K-House (K-PBB)	285089	4319931	53.88	270.000	2.042	807.594	69.525	0.203	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	PBB 8 J-PBB	890_PBB 8 J-PBB	285089	4319931	53.88	263.000	2.042	807.594	69.525	0.203	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	PBB 9 H-PBB	890_PBB 9 H-PBB	285089	4319931	53.88	263.000	2.042	807.594	69.525	0.203	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G2-HGEN2 (G-PBB2)	890_G2-HGEN2 (G-PBB2)	285089	4319931	53.88	270.000	2.060	772.594	32.492	0.203	0.000000	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414

Attachment 3
Table A3-3: Background SO_2 Sources

Facility Name in Inventory	Stack Name in Inventory	Model ID	UTM E *m*	UTM N *m*	Distance from Roxul Facility *km*	Base Elevation *m*	Stack Height *m*	Temp. *K*	Exit Velocity *m/s*	Stack Diameter *m*	1-hour Emission Rate *g/s*	24-hour Emission Rate *g/s*	Annual Emission Rate *g/s*	Increment Consuming?	Notes
CONTINENTAL BRICK - MARTINSBURG FACILITY	1	002_1	245289.1	4368976	9.38	152.76	6.096	444.261	12.410	0.610	1.755150	Exclude	Exclude	No	Stack param from stack test included in permit and estimations.
CONTINENTAL BRICK - MARTINSBURG FACILITY	2	002_2	245284.7	4368966	9.38	152.76	6.096	444.261	12.410	0.610	1.755150	Exclude	Exclude	No	Stack param from stack test included in permit and estimations.
CONTINENTAL BRICK - MARTINSBURG FACILITY	3	002_3	245365.4	4369032	9.36	152.76	6.096	422.039	0.001	0.610	0.168837	Exclude	Exclude	Yes	Stack param from stack test included in permit and estimations.
CONTINENTAL BRICK - MARTINSBURG FACILITY	4	002_4	245429.1	4369023	9.31	152.76	6.096	422.039	0.001	0.610	0.001260	Exclude	Exclude	Yes	Stack param from stack test included in permit and estimations.
Argos USA - MARTINSBURG	00B	006_00B	243700	4369200	10.73	154.04	4.877	477.594	1.039	0.363	0.000126	Exclude	Exclude	No	1.66 mmbtu/hr boiler fugitive sources assigned boiler type parameters.
Argos USA - MARTINSBURG	00E	006_00E	243700	4369200	10.73	154.04	1.829	422.039	2.865	0.204	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr, estimated stack parameters.
Argos USA - MARTINSBURG	00G	006_00G	243700	4369200	10.73	154.04	3.048	293.150	95.079	0.101	0.153717	Exclude	Exclude	No	From Argos Title V Permit 07-03-2018
Argos USA - MARTINSBURG	1	006_1	243882.3	4369246	10.62	154.04	133.198	358.150	22.921	5.188	266.019325	Exclude	Exclude	Yes	Parameters From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files, allowables from Title
Argos USA - MARTINSBURG	2	006_2	243672.8	4369384	10.87	154.04	47.244	368.150	18.806	1.753	1.272579	Exclude	Exclude	Yes	Parameters From Knauf Insulation Inwwod Facility PSD Appliation Air Quality Modeling input files, allowables from Title
Argos USA - MARTINSBURG	3	006_3	243458.5	4369277	10.97	154.04	3.901	293.150	0.001	0.396	0.021420	Exclude	Exclude	Yes	Horizontal cap assumes no vertical velocity, height from WVDEP emission inventory, other parameters from Knauf Insulation
Argos USA - MARTINSBURG	101	006_101	243700	4369200	10.73	154.04	1.829	293.150	0.001	0.610	0.219236	Exclude	Exclude	No	Estimated stack paramater off picture of crusher 440hp.
Knauf Insulation, Inc. - INWOOD, WV	EP13	012_EP13	239592.8	4365750	12.93	178	60.660	344.260	20.860	2.130	0.000000	Exclude	Exclude	Yes	
Knauf Insulation, Inc. - INWOOD, WV	EP16	012_EP16	239710.3	4365814	12.83	178	7.320	845.930	22.020	0.300	0.000000	Exclude	Exclude	Yes	Emergency Generator, exlclude from 1 hour.
Knauf Insulation, Inc. - INWOOD, WV	EP17	012_EP17	239710.3	4365814	12.83	178	7.320	739.650	21.560	0.300	0.000000	Exclude	Exclude	Yes	Emergency Generator, exlclude from 1 hour.
Knauf Insulation, Inc. - INWOOD, WV	EP18	012_EP18	239710.3	4365814	12.83	178	3.050	583.150	9.220	0.300	0.000000	Exclude	Exclude	Yes	Emergency Generator, exlclude from 1 hour.
Knauf Insulation, Inc. - INWOOD, WV	HTR	012_HTR	239677.6	4365685	12.83	178	2.438	338.706	0.000	0.914	0.001260	Exclude	Exclude	No	Estimated Stack paramaters
Knauf Insulation, Inc. - INWOOD, WV	NWGN	012_NWGN	239710.3	4365814	12.83	178	4.270	807.760	50.000	0.100	0.000000	Exclude	Exclude	Yes	Emergency Generator, exlclude from 1 hour. NSPS Permit App R14-0015M.
Knauf Insulation, Inc. - INWOOD, WV	EP23	012_EP23	239659.4	4365697	12.85	178	60.660	333.150	20.650	2.900	0.680389	Exclude	Exclude	Yes	Modified NSPS Permit App R14-0015M
Knauf Insulation, Inc. - INWOOD, WV	EP24	012_EP24	239659.4	4365698	12.85	178	36.580	449.820	20.070	1.450	0.025200	Exclude	Exclude	Yes	Modified NSPS Permit App R14-0015M
MAAX U.S. CORP	3	026_3	246300	4376200	14.84	144.57	18.288	324.817	11.643	3.048	0.000000	Exclude	Exclude	No	Parameters from WVDEP Emission Inventory.
QUAD/GRAPHICS, INC	001	042_001	246734.1	4377252	15.66	148.35	21.336	435.928	0.001	0.914	0.103318	Exclude	Exclude	Yes	Rain cap has no vertical velocity. Parameters from state inventory. Allowables from permit.
QUAD/GRAPHICS, INC	002	042_002	246751.7	4377237	15.64	148.35	21.336	435.928	0.001	0.914	0.103318	Exclude	Exclude	Yes	Rain cap has no vertical velocity. Parameters from state inventory. Allowables from permit.
QUAD/GRAPHICS, INC	003	042_003	246742.7	4377231	15.64	148.35	21.336	478.983	0.001	1.036	0.108358	Exclude	Exclude	Yes	Rain cap has no vertical velocity, parameters from state emissions inventory and PSD inventory. Allowables from permit.
QUAD/GRAPHICS, INC	004	042_004	246763.5	4377224	15.63	148.35	21.336	449.817	0.001	0.762	0.131038	Exclude	Exclude	Yes	Rain cap has no vertical velocity, parameters from state emissions inventory and PSD inventory. Allowables from permit.
QUAD/GRAPHICS, INC	005	042_005	246763.5	4377224	15.63	148.35	21.336	449.817	0.001	0.762	0.131038	Exclude	Exclude	Yes	Rain cap has no vertical velocity, listed as increment consuming in WV Inventory.
QUAD/GRAPHICS, INC	009	042_009	246737.3	4377218	15.63	148.35	11.582	435.928	0.001	0.914	0.131038	Exclude	Exclude	No	Rain cap has no vertical velocity. Parameters from state inventory. Allowables from permit.
QUAD/GRAPHICS, INC	CO	042_CO	246576.7	4377330	15.79	148.35	5.182	689.261	10.455	0.789	0.020160	Exclude	Exclude	Yes	Allowables from Title V permit, parameters from state inventory.
QUAD/GRAPHICS, INC	TO	042_TO	246546	4377308	15.78	148.35	5.182	560.928	1.920	0.972	0.073079	Exclude	Exclude	Yes	Thermal oxidixer emission units combined, allowables from Title V, parameters from state inventory.
LCS Services, Inc. - NORTH MOUNTAIN SANITARY LANDFILL	004	036_004	243500	4384500	23.59	235.98	2.438	755.372	0.661	0.152	2.402780	Exclude	Exclude	Yes	Estimated flare stack parameters, velocity is lowest allowable in permit. Allowable limits from Title V permit.

Table A3-3: Background SO_2 Sources

Facility Name in Inventory	Stack Name in Inventory	Model ID	UTM E *m*	UTM N *m*	Distance from Roxul Facility *km*	Base Elevation *m*	Stack Height *m*	Temp. *K*	Exit Velocity *m/s*	Stack Diameter *m*	1-hour Emission Rate *g/s*	24-hour Emission Rate *g/s*	Annual Emission Rate *g/s*	Increment Consuming?	Notes
O-N Minerals (Chemstone) Co - Clear Brook	1	340_1	233709	4349308	22.68	190.5	60.960	393.150	12.538	1.219	2.939531	Exclude	Exclude	No	Allowable from Title V Application 10-17-2019, Table C.10
O-N Minerals (Chemstone) Co - Clear Brook	2	340_2	233709	4349308	22.68	190.5	60.960	393.150	12.538	1.219	2.939531	Exclude	Exclude	No	Allowable from Title V Application 10-17-2019, Table C.10
O-N Minerals (Chemstone) Co - Clear Brook	4	340_4	233709	4349308	22.68	190.5	33.528	338.706	14.793	0.579	0.000000	Exclude	Exclude	No	Allowable from Title V Application 10-17-2019, Table C.10
Loudoun County Solid Waste Management Facility	LCSWMF - LFG Flare	135_LCSWMF - LFG Flare	275986.2	4324452	44.95	121.92	12.192	1005.372	0.152	2.438	0.033542	Exclude	Exclude	No	Data from 2018 Emission Statement and Response to DEQ inquiry revised application
Digital Loudoun Pkwy Center N LLC	A110-B	890_A110-B	285089	4319931	53.88	282	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	A110-D	890_A110-D	285089	4319931	53.88	282	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	A110-R	890_A110-R	285089	4319931	53.88	282	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	A120-B	890_A120-B	285089	4319931	53.88	282	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	A120-D	890_A120-D	285089	4319931	53.88	282	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	A120-R	890_A120-R	285089	4319931	53.88	282	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	A130-B	890_A130-B	285089	4319931	53.88	282	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	A130/140-R	890_A130/140-R	285089	4319931	53.88	282	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	A140-B	890_A140-B	285089	4319931	53.88	282	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	A150-B	890_A150-B	285089	4319931	53.88	282	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	A150-D	890_A150-D	285089	4319931	53.88	282	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	A150-R	890_A150-R	285089	4319931	53.88	282	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	A Base EG (A-PBB)	890_A Base EG (A-PBB)	285089	4319931	53.88	282	2.682	767.594	20.544	0.253	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	B110-B	890_B110-B	285089	4319931	53.88	276	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	B110-D	890_B110-D	285089	4319931	53.88	276	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	B110-R	890_B110-R	285089	4319931	53.88	276	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	B120-B	890_B120-B	285089	4319931	53.88	276	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	B120-D	890_B120-D	285089	4319931	53.88	276	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	B120-R	890_B120-R	285089	4319931	53.88	276	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	B130-B	890_B130-B	285089	4319931	53.88	276	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	B130-D	890_B130-D	285089	4319931	53.88	276	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	B130-R	890_B130-R	285089	4319931	53.88	276	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	B140-B	890_B140-B	285089	4319931	53.88	276	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	B140-D	890_B140-D	285089	4319931	53.88	276	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	B140-R	890_B140-R	285089	4319931	53.88	276	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -

Table A3-3: Background SO_2 Sources

Facility Name in Inventory	Stack Name in Inventory	Model ID	UTM E *m*	UTM N *m*	Distance from Roxul Facility *km*	Base Elevation *m*	Stack Height *m*	Temp. *K*	Exit Velocity *m/s*	Stack Diameter *m*	1-hour Emission Rate *g/s*	24-hour Emission Rate *g/s*	Annual Emission Rate *g/s*	Increment Consuming?	Notes
Digital Loudoun Pkwy Center N LLC	B Base EG (B-PBB)	890_B Base EG (B-PBB)	285089	4319931	53.88	276	2.682	755.372	34.046	0.253	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	D110-B	890_D110-B	285089	4319931	53.88	274	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	D110-R	890_D110-R	285089	4319931	53.88	274	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	D120-B	890_D120-B	285089	4319931	53.88	274	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	D120-D	890_D120-D	285089	4319931	53.88	274	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	D120-R	890_D120-R	285089	4319931	53.88	274	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	D130-A	890_D130-A	285089	4319931	53.88	274	2.682	755.372	34.031	0.253	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	D130-B	890_D130-B	285089	4319931	53.88	274	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	D130-C	890_D130-C	285089	4319931	53.88	274	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	D130-D	890_D130-D	285089	4319931	53.88	274	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	D Base EG (D-PBB)	890_D Base EG (D-PBB)	285089	4319931	53.88	274	2.682	705.372	24.414	0.253	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	F130-B	890_F130-B	285089	4319931	53.88	267	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	F130/140-R	890_F130/140-R	285089	4319931	53.88	267	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	F140-B	890_F140-B	285089	4319931	53.88	267	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	F150-B	890_F150-B	285089	4319931	53.88	267	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	F150-D	890_F150-D	285089	4319931	53.88	267	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	F150-R	890_F150-R	285089	4319931	53.88	267	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	F160-B	890_F160-B	285089	4319931	53.88	267	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	F170-D	890_F170-D	285089	4319931	53.88	267	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	F160/170-R	890_F160/170-R	285089	4319931	53.88	267	5.090	750.928	31.943	0.509	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	F Base EG (F-PBB)	890_F Base EG (F-PBB)	285089	4319931	53.88	267	2.682	705.372	24.414	0.253	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	G1-150-R GR1	890_G1-150-R GR1	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	G1-150-D G208	890_G1-150-D G208	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	G150-B G108	890_G150-B G108	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	G1-140-R GR2	890_G1-140-R GR2	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	G1-140-D G206	890_G1-140-D G206	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	G1-130-B G104	890_G1-130-B G104	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	G1-130-D G204	890_G1-130-D G204	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	G1-130-R Gen-GR3	890_G1-130-R Gen-GR3	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -

Table A3-3: Background SO_2 Sources

Facility Name in Inventory	Stack Name in Inventory	Model ID	UTM E *m*	UTM N *m*	Distance from Roxul Facility *km*	Base Elevation *m*	Stack Height *m*	Temp. *K*	Exit Velocity *m/s*	Stack Diameter *m*	1-hour Emission Rate *g/s*	24-hour Emission Rate *g/s*	Annual Emission Rate *g/s*	Increment Consuming?	Notes
Digital Loudoun Pkwy Center N LLC	G1-140-B G106	890_G1-140-B G106	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	G1-110-B G100	890_G1-110-B G100	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	G1-110-D G102	890_G1-110-D G102	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	G1-120-B G200	890_G1-120-B G200	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	G1-120-D G202	890_G1-120-D G202	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	G1-110/120-R GR4	890_G1-110/120-R GR4	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	G1 Base EG (G-PBB1)	890_G1 Base EG (G-PBB1)	285089	4319931	53.88	270	2.042	807.594	69.525	0.203	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 1 G210	890_Gen 1 G210	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 2 G212	890_Gen 2 G212	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 3 G-GR5	890_Gen 3 G-GR5	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 4 G214	890_Gen 4 G214	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 5 G218	890_Gen 5 G218	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 6 G-GR9	890_Gen 6 G-GR9	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 7 G114	890_Gen 7 G114	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 8 G114R	890_Gen 8 G114R	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 9 K200	890_Gen 9 K200	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 10 K200-GR1	890_Gen 10 K200-GR1	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 11 K100	890_Gen 11 K100	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 12 K202	890_Gen 12 K202	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 13 K102-GR2	890_Gen 13 K102-GR2	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 14 K102	890_Gen 14 K102	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 15 K104	890_Gen 15 K104	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 16 K204	890_Gen 16 K204	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 17 G216	890_Gen 17 G216	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 18 G110 GD	890_Gen 18 G110 GD	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 19 G110R CD	890_Gen 19 G110R CD	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 20 G110 GB	890_Gen 20 G110 GB	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 21 G110R AB	890_Gen 21 G110R AB	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 22 K206	890_Gen 22 K206	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -

Table A3-3: Background SO_2 Sources

Facility Name in Inventory	Stack Name in Inventory	Model ID	UTM E *m*	UTM N *m*	Distance from Roxul Facility *km*	Base Elevation *m*	Stack Height *m*	Temp. *K*	Exit Velocity *m/s*	Stack Diameter *m*	1-hour Emission Rate *g/s*	24-hour Emission Rate *g/s*	Annual Emission Rate *g/s*	Increment Consuming?	Notes
Digital Loudoun Pkwy Center N LLC	Gen 23 K206-GR3	890_Gen 23 K206-GR3	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 24 K106	890_Gen 24 K106	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 25	890_Gen 25	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 26 K108	890_Gen 26 K108	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 27 K208	890_Gen 27 K208	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 28 K210	890_Gen 28 K210	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 29 K110-210R-GR4	890_Gen 29 K110-210R-GR4	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 30 K110	890_Gen 30 K110	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 31 K212A or	890_Gen 31 K212A or K212	285089	4319931	53.88	263	4.267	763.706	56.388	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 32 K212B or	890_Gen 32 K212B or D214	285089	4319931	53.88	263	4.267	763.706	56.388	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 33 K212C or K-	890_Gen 33 K212C or K-GR5	285089	4319931	53.88	263	4.267	763.706	56.388	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 34 K112	890_Gen 34 K112	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 35 K114	890_Gen 35 K114	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 36 J200	890_Gen 36 J200	285089	4319931	53.88	263	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 37 J-GR1/J100/2	890_Gen 37 J-GR1/J100/200R	285089	4319931	53.88	263	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 38 J100	890_Gen 38 J100	285089	4319931	53.88	263	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 39 J202A	890_Gen 39 J202A	285089	4319931	53.88	270	5.060	823.150	52.426	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 40 J202B	890_Gen 40 J202B	285089	4319931	53.88	270	5.060	823.150	52.426	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 41 J202C	890_Gen 41 J202C	285089	4319931	53.88	270	5.060	823.150	52.426	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 42 J106A	890_Gen 42 J106A	285089	4319931	53.88	263	5.060	732.594	44.806	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 43 J106B	890_Gen 43 J106B	285089	4319931	53.88	263	5.060	732.594	44.806	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 44 J106C	890_Gen 44 J106C	285089	4319931	53.88	263	5.060	732.594	44.806	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 45 J106D	890_Gen 45 J106D	285089	4319931	53.88	263	5.060	732.594	44.806	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 46 J206A	890_Gen 46 J206A	285089	4319931	53.88	263	5.060	732.594	44.806	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 47 J206B	890_Gen 47 J206B	285089	4319931	53.88	263	5.060	732.594	44.806	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 48 J206C	890_Gen 48 J206C	285089	4319931	53.88	263	5.060	732.594	44.806	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 49 J206D	890_Gen 49 J206D	285089	4319931	53.88	263	5.060	732.594	44.806	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 50 J206E	890_Gen 50 J206E	285089	4319931	53.88	263	5.060	732.594	44.806	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 54 H106A	890_Gen 54 H106A	285089	4319931	53.88	263	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -

Table A3-3: Background SO_2 Sources

Facility Name in Inventory	Stack Name in Inventory	Model ID	UTM E *m*	UTM N *m*	Distance from Roxul Facility *km*	Base Elevation *m*	Stack Height *m*	Temp. *K*	Exit Velocity *m/s*	Stack Diameter *m*	1-hour Emission Rate *g/s*	24-hour Emission Rate *g/s*	Annual Emission Rate *g/s*	Increment Consuming?	Notes
Digital Loudoun Pkwy Center N LLC	Gen 55 H106B	890_Gen 55 H106B	285089	4319931	53.88	263	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 56 H106C	890_Gen 56 H106C	285089	4319931	53.88	263	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 57 H106D	890_Gen 57 H106D	285089	4319931	53.88	263	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 58 H206A	890_Gen 58 H206A	285089	4319931	53.88	263	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 59 H206B	890_Gen 59 H206B	285089	4319931	53.88	263	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 60 H206C	890_Gen 60 H206C	285089	4319931	53.88	263	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 61 H206D	890_Gen 61 H206D	285089	4319931	53.88	263	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 62 H100A	890_Gen 62 H100A	285089	4319931	53.88	263	5.060	763.706	56.388	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 63 H100B	890_Gen 63 H100B	285089	4319931	53.88	263	5.060	763.706	56.388	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 64 H100C	890_Gen 64 H100C	285089	4319931	53.88	263	5.060	763.706	56.388	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 65 H100D	890_Gen 65 H100D	285089	4319931	53.88	263	5.060	763.706	56.388	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 66 H200A	890_Gen 66 H200A	285089	4319931	53.88	263	5.060	763.706	56.388	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 67 H200B	890_Gen 67 H200B	285089	4319931	53.88	263	5.060	763.706	56.388	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 68 H200C	890_Gen 68 H200C	285089	4319931	53.88	263	5.060	763.706	56.388	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 69 H200D	890_Gen 69 H200D	285089	4319931	53.88	263	5.060	763.706	56.388	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 70 G2-G120A	890_Gen 70 G2-G120A	285089	4319931	53.88	263	5.060	678.706	43.525	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 71 G2-G116A	890_Gen 71 G2-G116A	285089	4319931	53.88	263	5.060	763.706	56.388	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	Gen 72 G2-G116BGen	890_Gen 72 G2-G116BGen 38	285089	4319931	53.88	263	5.060	763.706	56.388	0.457	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	PBB 7 K-House (K-	890_PBB 7 K-House (K-PBB)	285089	4319931	53.88	270	2.042	807.594	69.525	0.203	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	PBB 8 J-PBB	890_PBB 8 J-PBB	285089	4319931	53.88	263	2.042	807.594	69.525	0.203	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	PBB 9 H-PBB	890_PBB 9 H-PBB	285089	4319931	53.88	263	2.042	807.594	69.525	0.203	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -
Digital Loudoun Pkwy Center N LLC	G2-HGEN2 (G-PBB2)	890_G2-HGEN2 (G-PBB2)	285089	4319931	53.88	270	2.060	772.594	32.492	0.203	0.000000	Exclude	Exclude	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414 and 73670 - Application -

Attachment 3
Table A3-4: Background PM_{10} Sources

Facility Name in Inventory	Stack Name in Inventory	Model ID	UTM E *m*	UTM N *m*	Distance from Roxul Facility *km*	Base Elevation *m*	Stack Height *m*	Temp. *K*	Exit Velocity *m/s*	Stack Diameter *m*	Initial Lateral Dimension *m*	Initial Vertical Dimention *m*	24-hour Emission Rate *g/s*	Annual Emission Rate *g/s*	Type	Increment Consuming?	Comments
CONTINENTAL BRICK - MARTINSBURG FACILITY	1	002_1	245289	4368976	9.38	152.76	6.096	444.261	12.410	0.610	-	-	1.197	1.455	POINT	No	Stack param from stack test included in permit and estimations.
CONTINENTAL BRICK - MARTINSBURG FACILITY	2	002_2	245285	4368966	9.38	152.76	6.096	444.261	12.410	0.610	-	-	1.197	1.455	POINT	No	Stack param from stack test included in permit and estimations.
CONTINENTAL BRICK - MARTINSBURG FACILITY	3	002_3	245365	4369032	9.36	152.76	6.096	422.039	0.001	0.610	-	-	0.013	0.001	POINT	Yes	Stack param from stack test included in permit and estimations.
CONTINENTAL BRICK - MARTINSBURG FACILITY	4	002_4	245429	4369023	9.31	152.76	6.096	422.039	0.001	0.610	-	-	0.252	0.035	POINT	Yes	Stack param from stack test included in permit and estimations.
CONTINENTAL BRICK - MARTINSBURG FACILITY	5	002_5	245400	4368700	9.11	152.76	1.000	-	-	-	24.168	0.465	1.047	0.411	VOLUME	Yes	Volume 120m x 90m fugitive sources assigned pseudo-point stack parameters. Not sure on
CONTINENTAL BRICK - MARTINSBURG FACILITY	6	002_6	245400	4368700	9.11	152.76	3.048	349.817	1.202	0.991	-	-	0.246	0.246	POINT	Yes	Baghouse, assumed horizontal, parameters from permit app. Not sure on increment consuming,
Argos USA - MARTINSBURG	00B	006_00B	243700	4369200	10.73	154.04	4.877	477.594	1.039	0.363	-	-	0.003	0.003	POINT	No	1.66 mmbtu/hr boiler fugitive sources assigned boiler type parameters.
Argos USA - MARTINSBURG	00E	006_00E	243700	4369200	10.73	154.04	1.829	422.039	2.865	0.204	-	-	0.097	0.005	POINT	No	Intermitten Generators excluded from 1 hour. Assigned estimated stack parameters.
Argos USA - MARTINSBURG	00G	006_00G	243700	4369200	10.73	154.04	3.048	293.150	147.218	0.101	-	-	0.025	0.010	POINT	No	From Argos Title V Permit 07-03-2018
Argos USA - MARTINSBURG	1	006_1	243882	4369246	10.62	154.04	133.200	358.150	22.920	5.190	-	-	7.383	6.478	POINT	No	Parameters From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files, allowables from Title V permit.
Argos USA - MARTINSBURG	10	006_10	243700	4369200	10.73	154.04	28.650	293.150	35.660	0.200	-	-	0.025	0.022	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	100	006_100	243700	4369200	10.73	154.04	6.710	373.150	12.920	0.150	-	-	0.003	0.003	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	11	006_11	243700	4369200	10.73	154.04	6.100	293.150	76.140	0.150	-	-	0.030	0.027	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	12	006_12	243700	4369200	10.73	154.04	19.810	293.150	12.860	1.390	-	-	0.205	0.180	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	13	006_13	243700	4369200	10.73	154.04	11.280	293.150	31.700	0.300	-	-	0.024	0.020	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	14	006_14	243700	4369200	10.73	154.04	23.160	293.150	22.890	0.410	-	-	0.067	0.058	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	15	006_15	243700	4369200	10.73	154.04	7.010	293.150	4.790	0.520	-	-	0.023	0.020	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	16	006_16	243700	4369200	10.73	154.04	7.010	293.150	4.790	0.520	-	-	0.023	0.020	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	17	006_17	243700	4369200	10.73	154.04	14.330	293.150	11.890	1.220	-	-	0.309	0.270	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	18	006_18	243700	4369200	10.73	154.04	49.680	293.150	5.490	0.900	-	-	0.078	0.068	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	19	006_19	243700	4369200	10.73	154.04	36.580	293.150	4.790	0.520	-	-	0.023	0.020	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	2	006_2	243673	4369384	10.87	154.04	47.244	368.150	18.806	1.753	-	-	0.063	0.058	POINT	No	Parameters From Knauf Insulation Inwwod Facility PSD Appliation Air Quality Modeling input files,
Argos USA - MARTINSBURG	20	006_20	243700	4369200	10.73	154.04	36.270	293.150	4.720	0.730	-	-	0.000	0.000	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	21	006_21	243700	4369200	10.73	154.04	44.810	293.150	4.480	0.650	-	-	0.078	0.068	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	22	006_22	243700	4369200	10.73	154.04	7.920	293.150	1.830	0.830	-	-	0.023	0.020	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	23	006_23	243700	4369200	10.73	154.04	15.540	293.150	19.020	0.530	-	-	0.078	0.068	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	24	006_24	243700	4369200	10.73	154.04	39.320	293.150	21.310	0.460	-	-	0.078	0.068	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	25	006_25	243700	4369200	10.73	154.04	13.720	363.150	9.050	0.630	-	-	0.050	0.044	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	26	006_26	243700	4369200	10.73	154.04	92.960	363.150	15.210	0.510	-	-	0.055	0.049	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	27	006_27	243700	4369200	10.73	154.04	18.590	363.150	15.090	0.460	-	-	0.044	0.039	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	28	006_28	243700	4369200	10.73	154.04	78.940	363.150	20.570	0.280	-	-	0.020	0.020	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.

Table A3-4: Background PM_{10} Sources

Facility Name in Inventory	Stack Name in Inventory	Model ID	UTM E *m*	UTM N *m*	Distance from Roxul Facility *km*	Base Elevation *m*	Stack Height *m*	Temp. *K*	Exit Velocity *m/s*	Stack Diameter *m*	Initial Lateral Dimension *m*	Initial Vertical Dimention *m*	24-hour Emission Rate *g/s*	Annual Emission Rate *g/s*	Type	Increment Consuming?	Comments
Argos USA - MARTINSBURG	29	006_29	243700	4369200	10.73	154.04	115.210	363.150	21.030	0.430	-	-	0.055	0.049	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	3	006_3	243459	4369277	10.97	154.04	3.900	293.150	0.001	0.400	-	-	0.023	0.009	POINT	No	Horizontal cap assumes no vertical velocity, height from WVDEP emission inventory, other parameters
Argos USA - MARTINSBURG	30	006_30	243700	4369200	10.73	154.04	115.210	363.150	36.520	0.510	-	-	0.134	0.117	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	31	006_31	243700	4369200	10.73	154.04	114.910	363.150	16.980	0.300	-	-	0.023	0.020	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	32	006_32	243700	4369200	10.73	154.04	33.530	352.040	10.970	0.710	-	-	0.081	0.070	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	33	006_33	243700	4369200	10.73	154.04	33.220	293.150	25.880	0.150	-	-	0.010	0.009	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	34	006_34	243700	4369200	10.73	154.04	22.860	403.150	29.080	0.450	-	-	0.055	0.049	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	35	006_35	243700	4369200	10.73	154.04	39.320	403.150	27.310	0.280	-	-	0.068	0.060	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	36	006_36	243700	4369200	10.73	154.04	54.560	403.150	13.620	0.440	-	-	0.033	0.029	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	37	006_37	243700	4369200	10.73	154.04	54.560	293.150	16.920	0.270	-	-	0.003	0.002	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	38	006_38	243700	4369200	10.73	154.04	22.860	293.150	17.310	0.270	-	-	0.003	0.002	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	39	006_39	243700	4369200	10.73	154.04	3.050	293.150	17.310	0.270	-	-	0.003	0.002	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	4	006_4	243700	4369200	10.73	154.04	13.110	293.150	23.740	0.400	-	-	0.205	0.180	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	40	006_40	243700	4369200	10.73	154.04	3.050	293.150	17.310	0.270	-	-	0.003	0.002	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	41	006_41	243700	4369200	10.73	154.04	3.050	293.150	17.310	0.270	-	-	0.003	0.002	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	42	006_42	243700	4369200	10.73	154.04	38.710	293.150	11.190	0.530	-	-	0.111	0.097	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	43	006_43	243700	4369200	10.73	154.04	30.180	293.150	10.240	0.560	-	-	0.055	0.049	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	44	006_44	243700	4369200	10.73	154.04	17.680	383.150	27.310	0.280	-	-	0.100	0.087	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	45	006_45	243700	4369200	10.73	154.04	20.730	293.150	10.180	0.430	-	-	0.068	0.060	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	46	006_46	243700	4369200	10.73	154.04	20.730	293.150	10.180	0.430	-	-	0.033	0.029	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	47	006_47	243700	4369200	10.73	154.04	4.570	293.150	2.990	0.650	-	-	0.023	0.020	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	48	006_48	243700	4369200	10.73	154.04	9.140	293.150	10.180	0.430	-	-	0.033	0.029	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	49	006_49	243700	4369200	10.73	154.04	8.840	293.150	10.180	0.430	-	-	0.033	0.029	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	5	006_5	243700	4369200	10.73	154.04	3.350	293.150	20.060	1.170	-	-	0.000	0.000	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	50	006_50	243700	4369200	10.73	154.04	37.190	293.150	4.480	0.650	-	-	0.033	0.029	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	51	006_51	243700	4369200	10.73	154.04	38.710	293.150	5.490	0.900	-	-	0.078	0.068	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	52	006_52	243700	4369200	10.73	154.04	12.190	373.150	5.940	0.740	-	-	0.044	0.039	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	53	006_53	243700	4369200	10.73	154.04	47.240	368.150	18.810	1.750	-	-	0.801	0.702	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	54	006_54	243700	4369200	10.73	154.04	21.950	403.150	4.450	0.630	-	-	0.023	0.020	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	55	006_55	243700	4369200	10.73	154.04	37.490	293.150	4.480	0.650	-	-	0.033	0.029	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	56	006_56	243700	4369200	10.73	154.04	39.010	293.150	5.490	0.900	-	-	0.078	0.068	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	57	006_57	243700	4369200	10.73	154.04	12.190	373.150	5.940	0.740	-	-	0.044	0.039	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.

Table A3-4: Background PM_{10} Sources

Facility Name in Inventory	Stack Name in Inventory	Model ID	UTM E *m*	UTM N *m*	Distance from Roxul Facility *km*	Base Elevation *m*	Stack Height *m*	Temp. *K*	Exit Velocity *m/s*	Stack Diameter *m*	Initial Lateral Dimension *m*	Initial Vertical Dimention *m*	24-hour Emission Rate *g/s*	Annual Emission Rate *g/s*	Type	Increment Consuming?	Comments
Argos USA - MARTINSBURG	58	006_58	243700	4369200	10.73	154.04	47.550	368.150	18.810	1.750	-	-	0.801	0.702	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	59	006_59	243700	4369200	10.73	154.04	22.250	403.150	4.450	0.630	-	-	0.023	0.020	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	6	006_6	243700	4369200	10.73	154.04	17.370	293.150	19.900	0.570	-	-	0.000	0.000	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	60	006_60	243700	4369200	10.73	154.04	7.620	373.150	20.030	0.400	-	-	0.048	0.042	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	61	006_61	243700	4369200	10.73	154.04	7.620	373.150	20.030	0.400	-	-	0.048	0.042	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	62	006_62	243700	4369200	10.73	154.04	65.230	373.150	15.730	0.390	-	-	0.033	0.029	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	63	006_63	243700	4369200	10.73	154.04	64.920	373.150	15.730	0.390	-	-	0.033	0.029	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	64	006_64	243700	4369200	10.73	154.04	64.920	373.150	16.700	0.480	-	-	0.053	0.047	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	65	006_65	243700	4369200	10.73	154.04	64.920	373.150	16.700	0.480	-	-	0.053	0.047	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	66	006_66	243700	4369200	10.73	154.04	64.920	373.150	17.470	0.480	-	-	0.055	0.049	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	67	006_67	243700	4369200	10.73	154.04	13.110	373.150	26.150	0.300	-	-	0.033	0.029	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	68	006_68	243700	4369200	10.73	154.04	13.410	373.150	29.350	0.270	-	-	0.029	0.026	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	69	006_69	243700	4369200	10.73	154.04	13.720	373.150	25.790	0.290	-	-	0.029	0.026	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	7	006_7	243700	4369200	10.73	154.04	25.910	353.150	21.000	1.460	-	-	1.294	1.135	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	70	006_70	243700	4369200	10.73	154.04	14.020	373.150	26.150	0.300	-	-	0.033	0.029	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	71	006_71	243700	4369200	10.73	154.04	9.750	293.150	11.250	0.280	-	-	0.015	0.014	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	72	006_72	243700	4369200	10.73	154.04	16.460	373.150	40.660	0.210	-	-	0.025	0.022	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	73	006_73	243700	4369200	10.73	154.04	33.220	366.480	14.970	0.480	-	-	0.048	0.042	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	74	006_74	243700	4369200	10.73	154.04	33.220	366.480	14.970	0.480	-	-	0.048	0.042	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	75	006_75	243700	4369200	10.73	154.04	33.220	366.480	14.970	0.480	-	-	0.048	0.042	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	76	006_76	243700	4369200	10.73	154.04	32.610	366.480	14.970	0.480	-	-	0.048	0.042	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	77	006_77	243700	4369200	10.73	154.04	32.920	366.480	14.970	0.480	-	-	0.048	0.042	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	78	006_78	243700	4369200	10.73	154.04	3.660	355.370	18.380	0.250	-	-	0.016	0.015	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	79	006_79	243700	4369200	10.73	154.04	3.660	355.370	18.380	0.250	-	-	0.016	0.015	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	8	006_8	243700	4369200	10.73	154.04	15.540	310.930	13.930	0.570	-	-	0.147	0.129	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	80	006_80	243700	4369200	10.73	154.04	3.660	355.370	22.770	0.250	-	-	0.004	0.003	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	81	006_81	243700	4369200	10.73	154.04	3.960	355.370	22.770	0.250	-	-	0.004	0.003	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	82	006_82	243700	4369200	10.73	154.04	15.540	408.150	28.620	0.280	-	-	0.029	0.025	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	83	006_83	243700	4369200	10.73	154.04	15.540	408.150	28.620	0.280	-	-	0.029	0.025	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	84	006_84	243700	4369200	10.73	154.04	24.380	322.040	20.630	0.330	-	-	0.035	0.030	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	85	006_85	243700	4369200	10.73	154.04	24.380	322.040	9.300	0.720	-	-	0.152	0.134	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	86	006_86	243700	4369200	10.73	154.04	24.380	322.040	15.540	0.330	-	-	0.026	0.023	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.

Table A3-4: Background PM_{10} Sources

Facility Name in Inventory	Stack Name in Inventory	Model ID	UTM E *m*	UTM N *m*	Distance from Roxul Facility *km*	Base Elevation *m*	Stack Height *m*	Temp. *K*	Exit Velocity *m/s*	Stack Diameter *m*	Initial Lateral Dimension *m*	Initial Vertical Dimention *m*	24-hour Emission Rate *g/s*	Annual Emission Rate *g/s*	Type	Increment Consuming?	Comments
Argos USA - MARTINSBURG	87	006_87	243700	4369200	10.73	154.04	24.380	322.040	15.540	0.330	-	-	0.026	0.023	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	88	006_88	243700	4369200	10.73	154.04	24.380	353.710	16.030	0.330	-	-	0.025	0.022	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	89	006_89	243700	4369200	10.73	154.04	12.190	310.930	14.200	0.280	-	-	0.038	0.033	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	9	006_9	243700	4369200	10.73	154.04	4.270	293.150	35.660	0.200	-	-	0.025	0.022	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	90	006_90	243700	4369200	10.73	154.04	12.190	310.930	14.200	0.280	-	-	0.038	0.033	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	91	006_91	243700	4369200	10.73	154.04	33.530	366.480	18.750	0.390	-	-	0.040	0.035	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	92	006_92	243700	4369200	10.73	154.04	33.530	366.480	18.750	0.390	-	-	0.040	0.035	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	93	006_93	243700	4369200	10.73	154.04	33.220	366.480	18.750	0.390	-	-	0.040	0.035	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	94	006_94	243700	4369200	10.73	154.04	13.410	294.260	18.530	0.660	-	-	0.141	0.123	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	95	006_95	243700	4369200	10.73	154.04	33.830	293.150	6.460	0.300	-	-	0.077	0.068	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	96	006_96	243700	4369200	10.73	154.04	33.830	293.150	6.460	0.300	-	-	0.077	0.068	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	97	006_97	243700	4369200	10.73	154.04	33.830	293.150	6.460	0.300	-	-	0.077	0.068	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	98	006_98	243700	4369200	10.73	154.04	33.830	293.150	6.460	0.300	-	-	0.077	0.068	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	99	006_99	243700	4369200	10.73	154.04	23.770	293.150	20.570	0.280	-	-	0.029	0.025	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Knauf Insulation, Inc. - INWOOD, WV	EP18	012_EP18	239836	4365622	12.66	178.77	3.050	583.150	9.220	0.300	-	-	Exclude	Exclude	POINT	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling
Knauf Insulation, Inc. - INWOOD, WV	CT45	012_CT45	239696	4365677	12.81	178.77	7.920	302.590	15.160	2.440	-	-	Exclude	Exclude	POINT	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling.
Knauf Insulation, Inc. - INWOOD, WV	EP24	012_EP24	239703	4365722	12.82	178.77	36.580	449.820	20.070	1.450	-	-	Exclude	Exclude	POINT	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling
Knauf Insulation, Inc. - INWOOD, WV	CT123	012_CT123	239691	4365683	12.82	178.77	8.840	302.590	19.760	1.830	-	-	Exclude	Exclude	POINT	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling.
Knauf Insulation, Inc. - INWOOD, WV	EP11B	012_EP11B	239688	4365710	12.83	178.77	25.460	294.260	0.001	0.100	-	-	Exclude	Exclude	POINT	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling. Only CT's 3,4,5 Increment
Knauf Insulation, Inc. - INWOOD, WV	EP11A	012_EP11A	239685	4365713	12.83	178.77	25.460	294.260	0.001	0.100	-	-	Exclude	Exclude	POINT	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling. Only CT's 3,4,5 Increment
Knauf Insulation, Inc. - INWOOD, WV	HTR	012_HTR	239678	4365685	12.83	178	2.438	338.706	0.000	0.914	-	-	Exclude	Exclude	POINT	No	Estimated Stack paramaters
Knauf Insulation, Inc. - INWOOD, WV	EP23	012_EP23	239657	4365698	12.86	178.77	60.660	333.150	20.650	2.900	-	-	Exclude	Exclude	POINT	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling.
Knauf Insulation, Inc. - INWOOD, WV	FP11	012_FP11	239659	4365771	12.87	178	1.000	-	-	-	59.595	0.465	Exclude	Exclude	VOLUME	No	fugitive sources assigned pseudo-point stack parameters
Knauf Insulation, Inc. - INWOOD, WV	FP13	012_FP13	239659	4365771	12.87	178	1.000	-	-	-	59.595	0.465	Exclude	Exclude	VOLUME	No	fugitive sources assigned pseudo-point stack parameters
Knauf Insulation, Inc. - INWOOD, WV	FP19	012_FP19	239659	4365771	12.87	178	1.000	-	-	-	59.595	0.465	Exclude	Exclude	VOLUME	No	Assigned Volume Parameters, Dust control allowables from Title V permit.
Knauf Insulation, Inc. - INWOOD, WV	Road	012_Road	239659	4365771	12.87	178	1.000	-	-	-	59.595	0.465	Exclude	Exclude	VOLUME	No	Assigned Volume parameters.
Knauf Insulation, Inc. - INWOOD, WV	EP16	012_EP16	239631	4365693	12.88	178.77	7.320	845.930	22.020	0.300	-	-	Exclude	Exclude	POINT	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling.
Knauf Insulation, Inc. - INWOOD, WV	NWGN	012_NWGN	239624	4365676	12.88	178.77	4.270	807.760	50.000	0.100	-	-	Exclude	Exclude	POINT	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling.
Knauf Insulation, Inc. - INWOOD, WV	EP17	012_EP17	239621	4365699	12.89	178.77	7.320	739.650	21.560	0.300	-	-	Exclude	Exclude	POINT	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling.
Knauf Insulation, Inc. - INWOOD, WV	EP14	012_EP14	239601	4365787	12.93	178.77	36.580	385.930	21.130	1.320	-	-	Exclude	Exclude	POINT	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling.
Knauf Insulation, Inc. - INWOOD, WV	EP12	012_EP12	239586	4365746	12.94	178.77	18.380	316.480	17.820	0.710	-	-	Exclude	Exclude	POINT	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling.
Knauf Insulation, Inc. - INWOOD, WV	EP13	012_EP13	239587	4365780	12.94	178.77	60.660	344.260	20.860	2.130	-	-	Exclude	Exclude	POINT	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling.

Table A3-4: Background PM_{10} Sources

Facility Name in Inventory	Stack Name in Inventory	Model ID	UTM E *m*	UTM N *m*	Distance from Roxul Facility *km*	Base Elevation *m*	Stack Height *m*	Temp. *K*	Exit Velocity *m/s*	Stack Diameter *m*	Initial Lateral Dimension *m*	Initial Vertical Dimention *m*	24-hour Emission Rate *g/s*	Annual Emission Rate *g/s*	Type	Increment Consuming?	Comments
MAAX U.S. CORP	002	026_002	246300	4376200	14.84	144.57	13.716	299.817	38.801	0.152	-	-	Exclude	Exclude	POINT	No	Parameters from WVDEP Emission Inventory.
MAAX U.S. CORP	3	026_3	246300	4376200	14.84	144.57	18.288	324.817	11.643	3.048	-	-	Exclude	Exclude	POINT	No	Parameters from WVDEP Emission Inventory.
QUAD/GRAPHICS, INC	001	042_001	246734	4377252	15.66	148.35	21.336	435.928	0.001	0.914	-	-	Exclude	Exclude	POINT	No	Rain cap has no vertical velocity. Parameters from state inventory. Allowables from permit.
QUAD/GRAPHICS, INC	002	042_002	246752	4377237	15.64	148.35	21.336	435.928	0.001	0.914	-	-	Exclude	Exclude	POINT	No	Rain cap has no vertical velocity. Parameters from state inventory. Allowables from permit.
QUAD/GRAPHICS, INC	003	042_003	246743	4377231	15.64	148.35	21.336	478.983	0.001	1.036	-	-	Exclude	Exclude	POINT	No	Rain cap has no vertical velocity, parameters from state emissions inventory and PSD inventory. Allowables from permit.
QUAD/GRAPHICS, INC	004	042_004	246764	4377224	15.63	148.35	21.336	449.817	0.001	0.762	-	-	Exclude	Exclude	POINT	No	Rain cap has no vertical velocity, parameters from state emissions inventory and PSD inventory. Allowables from permit.
QUAD/GRAPHICS, INC	CO	042_CO	246577	4377330	15.79	148.35	5.182	689.261	10.455	0.789	-	-	Exclude	Exclude	POINT	No	
QUAD/GRAPHICS, INC	TO	042_TO	246546	4377308	15.78	148.35	5.182	560.928	1.920	0.972	-	-	Exclude	Exclude	POINT	Yes	
LCS Services, Inc. - NORTH MOUNTAIN SANITARY LANDFILL	004	036_004	243500	4384500	23.59	235.98	2.438	755.372	0.661	0.152	-	-	Exclude	Exclude	POINT	No	Estimated flare stack parameters, velocity is lowest allowable in permit. Allowable limits from Title V permit
LCS Services, Inc. - NORTH MOUNTAIN SANITARY LANDFILL	1	036_1	243500	4384500	23.59	235.98	1.000	0.000	0.001	0.001	-	-	Exclude	Exclude	POINT	No	fugitive sources assigned pseudo-point stack parameters
O-N Minerals (Chemstone) Co - Clear Brook	1	340_1	233709	4349308	22.68	190.5	60.960	393.150	12.538	1.219	-	-	Exclude	Exclude	POINT	No	Allowable from Title V Application 10-17-2019, Table C.10
O-N Minerals (Chemstone) Co - Clear Brook	2	340_2	233709	4349308	22.68	190.5	60.960	393.150	12.538	1.219	-	-	Exclude	Exclude	POINT	No	Allowable from Title V Application 10-17-2019, Table C.10
O-N Minerals (Chemstone) Co - Clear Brook	3	340_3	233709	4349308	22.68	190.5	48.768	294.261	24.268	0.610	-	-	Exclude	Exclude	POINT	No	Allowable from Title V Application 10-17-2019, Table C.10
O-N Minerals (Chemstone) Co - Clear Brook	4	340_4	233709	4349308	22.68	190.5	33.528	338.706	14.793	0.579	-	-	Exclude	Exclude	POINT	No	Allowable from Title V Application 10-17-2019, Table C.10
O-N Minerals (Chemstone) Co - Clear Brook	5	340_5	233709	4349308	22.68	190.5	30.480	294.261	24.268	0.610	-	-	Exclude	Exclude	POINT	No	Allowable from Title V Application 10-17-2019, Table C.10
O-N Minerals (Chemstone) Co - Clear Brook	6	340_6	233709	4349308	22.68	190.5	1.000	-	-	-	59.595	0.465	Exclude	Exclude	VOLUME	No	Assigned Volume parameters.
Loudoun County Solid Waste Management Facility	LCSWMF - LFG Flare	135_LCSWMF - LFG Flare	275986	4324452	44.95	121.92	12.192	1005.372	0.152	2.438	-	-	Exclude	Exclude	POINT	No	Data from 2018 Emission Statement and Response to DEQ inquiry revised application
Digital Loudoun Pkwy Center N LLC	A110-B	890_A110-B	285089	4319931	53.88	282	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	A110-D	890_A110-D	285089	4319931	53.88	282	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	A110-R	890_A110-R	285089	4319931	53.88	282	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	A120-B	890_A120-B	285089	4319931	53.88	282	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	A120-D	890_A120-D	285089	4319931	53.88	282	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	A120-R	890_A120-R	285089	4319931	53.88	282	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	A130-B	890_A130-B	285089	4319931	53.88	282	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	A130/140-R	890_A130/140-R	285089	4319931	53.88	282	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	A140-B	890_A140-B	285089	4319931	53.88	282	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	A150-B	890_A150-B	285089	4319931	53.88	282	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	A150-D	890_A150-D	285089	4319931	53.88	282	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	A150-R	890_A150-R	285089	4319931	53.88	282	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	A Base EG (A-PBB)	890_A Base EG (A-PBB)	285089	4319931	53.88	282	2.682	767.594	20.544	0.253	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	B110-B	890_B110-B	285089	4319931	53.88	276	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414

Table A3-4: Background PM_{10} Sources

Facility Name in Inventory	Stack Name in Inventory	Model ID	UTM E *m*	UTM N *m*	Distance from Roxul Facility *km*	Base Elevation *m*	Stack Height *m*	Temp. *K*	Exit Velocity *m/s*	Stack Diameter *m*	Initial Lateral Dimension *m*	Initial Vertical Dimention *m*	24-hour Emission Rate *g/s*	Annual Emission Rate *g/s*	Type	Increment Consuming?	Comments
Digital Loudoun Pkwy Center N LLC	B110-D	890_B110-D	285089	4319931	53.88	276	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	B110-R	890_B110-R	285089	4319931	53.88	276	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	B120-B	890_B120-B	285089	4319931	53.88	276	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	B120-D	890_B120-D	285089	4319931	53.88	276	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	B120-R	890_B120-R	285089	4319931	53.88	276	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	B130-B	890_B130-B	285089	4319931	53.88	276	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	B130-D	890_B130-D	285089	4319931	53.88	276	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	B130-R	890_B130-R	285089	4319931	53.88	276	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	B140-B	890_B140-B	285089	4319931	53.88	276	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	B140-D	890_B140-D	285089	4319931	53.88	276	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	B140-R	890_B140-R	285089	4319931	53.88	276	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	B Base EG (B-PBB)	890_B Base EG (B-PBB)	285089	4319931	53.88	276	2.682	755.372	34.046	0.253	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	D110-B	890_D110-B	285089	4319931	53.88	274	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	D110-R	890_D110-R	285089	4319931	53.88	274	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	D120-B	890_D120-B	285089	4319931	53.88	274	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	D120-D	890_D120-D	285089	4319931	53.88	274	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	D120-R	890_D120-R	285089	4319931	53.88	274	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	D130-A	890_D130-A	285089	4319931	53.88	274	2.682	755.372	34.031	0.253	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	D130-B	890_D130-B	285089	4319931	53.88	274	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	D130-C	890_D130-C	285089	4319931	53.88	274	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	D130-D	890_D130-D	285089	4319931	53.88	274	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	D Base EG (D-PBB)	890_D Base EG (D-PBB)	285089	4319931	53.88	274	2.682	705.372	24.414	0.253	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	F130-B	890_F130-B	285089	4319931	53.88	267	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	F130/140-R	890_F130/140-R	285089	4319931	53.88	267	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	F140-B	890_F140-B	285089	4319931	53.88	267	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	F150-B	890_F150-B	285089	4319931	53.88	267	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	F150-D	890_F150-D	285089	4319931	53.88	267	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	F150-R	890_F150-R	285089	4319931	53.88	267	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	F160-B	890_F160-B	285089	4319931	53.88	267	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	F170-D	890_F170-D	285089	4319931	53.88	267	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	F160/170-R	890_F160/170-R	285089	4319931	53.88	267	5.090	750.928	31.943	0.509	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	F Base EG (F-PBB)	890_F Base EG (F-PBB)	285089	4319931	53.88	267	2.682	705.372	24.414	0.253	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414

Table A3-4: Background PM_{10} Sources

Facility Name in Inventory	Stack Name in Inventory	Model ID	UTM E *m*	UTM N *m*	Distance from Roxul Facility *km*	Base Elevation *m*	Stack Height *m*	Temp. *K*	Exit Velocity *m/s*	Stack Diameter *m*	Initial Lateral Dimension *m*	Initial Vertical Dimention *m*	24-hour Emission Rate *g/s*	Annual Emission Rate *g/s*	Type	Increment Consuming?	Comments
Digital Loudoun Pkwy Center N LLC	G1-150-R GR1	890_G1-150-R GR1	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G1-150-D G208	890_G1-150-D G208	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G150-B G108	890_G150-B G108	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G1-140-R GR2	890_G1-140-R GR2	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G1-140-D G206	890_G1-140-D G206	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G1-130-B G104	890_G1-130-B G104	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G1-130-D G204	890_G1-130-D G204	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G1-130-R Gen-GR3	890_G1-130-R Gen-GR3	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G1-140-B G106	890_G1-140-B G106	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G1-110-B G100	890_G1-110-B G100	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G1-110-D G102	890_G1-110-D G102	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G1-120-B G200	890_G1-120-B G200	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G1-120-D G202	890_G1-120-D G202	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G1-110/120-R GR4	890_G1-110/120-R GR4	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G1 Base EG (G-PBB1)	890_G1 Base EG (G-PBB1)	285089	4319931	53.88	270	2.042	807.594	69.525	0.203	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 1 G210	890_Gen 1 G210	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 2 G212	890_Gen 2 G212	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 3 G-GR5	890_Gen 3 G-GR5	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 4 G214	890_Gen 4 G214	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 5 G218	890_Gen 5 G218	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 6 G-GR9	890_Gen 6 G-GR9	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 7 G114	890_Gen 7 G114	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 8 G114R	890_Gen 8 G114R	285089	4319931	53.88	270	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 9 K200	890_Gen 9 K200	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 10 K200-GR1	890_Gen 10 K200-GR1	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 11 K100	890_Gen 11 K100	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 12 K202	890_Gen 12 K202	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 13 K102-GR2	890_Gen 13 K102-GR2	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 14 K102	890_Gen 14 K102	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 15 K104	890_Gen 15 K104	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 16 K204	890_Gen 16 K204	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 17 G216	890_Gen 17 G216	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414

Table A3-4: Background PM_{10} Sources

Facility Name in Inventory	Stack Name in Inventory	Model ID	UTM E *m*	UTM N *m*	Distance from Roxul Facility *km*	Base Elevation *m*	Stack Height *m*	Temp. *K*	Exit Velocity *m/s*	Stack Diameter *m*	Initial Lateral Dimension *m*	Initial Vertical Dimention *m*	24-hour Emission Rate *g/s*	Annual Emission Rate *g/s*	Type	Increment Consuming?	Comments
Digital Loudoun Pkwy Center N LLC	Gen 18 G110 GD	890_Gen 18 G110 GD	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 19 G110R CD	890_Gen 19 G110R CD	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 20 G110 GB	890_Gen 20 G110 GB	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 21 G110R AB	890_Gen 21 G110R AB	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 22 K206	890_Gen 22 K206	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 23 K206-GR3	890_Gen 23 K206-GR3	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 24 K106	890_Gen 24 K106	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 25	890_Gen 25	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 26 K108	890_Gen 26 K108	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 27 K208	890_Gen 27 K208	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 28 K210	890_Gen 28 K210	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 29 K110-210R-GR4	890_Gen 29 K110-210R-GR4	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 30 K110	890_Gen 30 K110	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 31 K212A or	890_Gen 31 K212A or K212	285089	4319931	53.88	263	4.267	763.706	56.388	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 32 K212B or	890_Gen 32 K212B or D214	285089	4319931	53.88	263	4.267	763.706	56.388	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 33 K212C or K-	890_Gen 33 K212C or K-GR5	285089	4319931	53.88	263	4.267	763.706	56.388	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 34 K112	890_Gen 34 K112	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 35 K114	890_Gen 35 K114	285089	4319931	53.88	263	5.060	678.706	43.891	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 36 J200	890_Gen 36 J200	285089	4319931	53.88	263	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 37 J-GR1/J100/2	890_Gen 37 J-GR1/J100/200R	285089	4319931	53.88	263	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 38 J100	890_Gen 38 J100	285089	4319931	53.88	263	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 39 J202A	890_Gen 39 J202A	285089	4319931	53.88	270	5.060	823.150	52.426	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 40 J202B	890_Gen 40 J202B	285089	4319931	53.88	270	5.060	823.150	52.426	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 41 J202C	890_Gen 41 J202C	285089	4319931	53.88	270	5.060	823.150	52.426	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 42 J106A	890_Gen 42 J106A	285089	4319931	53.88	263	5.060	732.594	44.806	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 43 J106B	890_Gen 43 J106B	285089	4319931	53.88	263	5.060	732.594	44.806	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 44 J106C	890_Gen 44 J106C	285089	4319931	53.88	263	5.060	732.594	44.806	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 45 J106D	890_Gen 45 J106D	285089	4319931	53.88	263	5.060	732.594	44.806	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 46 J206A	890_Gen 46 J206A	285089	4319931	53.88	263	5.060	732.594	44.806	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 47 J206B	890_Gen 47 J206B	285089	4319931	53.88	263	5.060	732.594	44.806	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 48 J206C	890_Gen 48 J206C	285089	4319931	53.88	263	5.060	732.594	44.806	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 49 J206D	890_Gen 49 J206D	285089	4319931	53.88	263	5.060	732.594	44.806	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414

Table A3-4: Background PM_{10} Sources

Facility Name in Inventory	Stack Name in Inventory	Model ID	UTM E *m*	UTM N *m*	Distance from Roxul Facility *km*	Base Elevation *m*	Stack Height *m*	Temp. *K*	Exit Velocity *m/s*	Stack Diameter *m*	Initial Lateral Dimension *m*	Initial Vertical Dimention *m*	24-hour Emission Rate *g/s*	Annual Emission Rate *g/s*	Type	Increment Consuming?	Comments
Digital Loudoun Pkwy Center N LLC	Gen 50 J206E	890_Gen 50 J206E	285089	4319931	53.88	263	5.060	732.594	44.806	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 54 H106A	890_Gen 54 H106A	285089	4319931	53.88	263	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 55 H106B	890_Gen 55 H106B	285089	4319931	53.88	263	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 56 H106C	890_Gen 56 H106C	285089	4319931	53.88	263	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 57 H106D	890_Gen 57 H106D	285089	4319931	53.88	263	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 58 H206A	890_Gen 58 H206A	285089	4319931	53.88	263	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 59 H206B	890_Gen 59 H206B	285089	4319931	53.88	263	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 60 H206C	890_Gen 60 H206C	285089	4319931	53.88	263	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 61 H206D	890_Gen 61 H206D	285089	4319931	53.88	263	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 62 H100A	890_Gen 62 H100A	285089	4319931	53.88	263	5.060	763.706	56.388	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 63 H100B	890_Gen 63 H100B	285089	4319931	53.88	263	5.060	763.706	56.388	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 64 H100C	890_Gen 64 H100C	285089	4319931	53.88	263	5.060	763.706	56.388	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 65 H100D	890_Gen 65 H100D	285089	4319931	53.88	263	5.060	763.706	56.388	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 66 H200A	890_Gen 66 H200A	285089	4319931	53.88	263	5.060	763.706	56.388	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 67 H200B	890_Gen 67 H200B	285089	4319931	53.88	263	5.060	763.706	56.388	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 68 H200C	890_Gen 68 H200C	285089	4319931	53.88	263	5.060	763.706	56.388	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 69 H200D	890_Gen 69 H200D	285089	4319931	53.88	263	5.060	763.706	56.388	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 70 G2-G120A	890_Gen 70 G2-G120A	285089	4319931	53.88	263	5.060	678.706	43.525	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 71 G2-G116A	890_Gen 71 G2-G116A	285089	4319931	53.88	263	5.060	763.706	56.388	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	Gen 72 G2-G116BGen	890_Gen 72 G2-G116BGen 38	285089	4319931	53.88	263	5.060	763.706	56.388	0.457	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	PBB 7 K-House (K-	890_PBB 7 K-House (K-PBB)	285089	4319931	53.88	270	2.042	807.594	69.525	0.203	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	PBB 8 J-PBB	890_PBB 8 J-PBB	285089	4319931	53.88	263	2.042	807.594	69.525	0.203	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	PBB 9 H-PBB	890_PBB 9 H-PBB	285089	4319931	53.88	263	2.042	807.594	69.525	0.203	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414
Digital Loudoun Pkwy Center N LLC	G2-HGEN2 (G-PBB2)	890_G2-HGEN2 (G-PBB2)	285089	4319931	53.88	270	2.060	772.594	32.492	0.203	-	-	Exclude	Exclude	POINT	No	Emergency Generator exclude 1 Hr. Data from 73670 - Emission Statement - 20180628_22685414

Attachment 3
Table A3-5: Background $PM_{2.5}$ Sources

Facility Name in Inventory	Stack Name in Inventory	Model ID	UTM E *m*	UTM N *m*	Distance from Roxul Facility *km*	Base Elevation *m*	Stack Height *m*	Temp. *K*	Exit Velocity *m/s*	Stack Diameter *m*	Initial Lateral Dimension *m*	Initial Vertical Dimention *m*	24-hour Emission Rate *g/s*	Annual Emission Rate *g/s*	Type	Increment Consuming?	Notes
CONTINENTAL BRICK - MARTINSBURG FACILITY	1	002_1	245289.13	4368975.56	9.38	152.76	6.096	444.261	12.410	0.610	-	-	0.905	0.904	POINT	No	Stack param from stack test included in permit and estimations.
CONTINENTAL BRICK - MARTINSBURG FACILITY	2	002_2	245284.65	4368966	9.38	152.76	6.096	444.261	12.410	0.610	-	-	0.905	0.904	POINT	No	Stack param from stack test included in permit and estimations.
CONTINENTAL BRICK - MARTINSBURG FACILITY	3	002_3	245365.42	4369031.5	9.36	152.76	6.096	422.039	0.001	0.610	-	-	0.013	0.001	POINT	No	Stack param from stack test included in permit and estimations.
CONTINENTAL BRICK - MARTINSBURG FACILITY	4	002_4	245429.09	4369022.71	9.31	152.76	6.096	422.039	0.001	0.610	-	-	0.252	0.035	POINT	No	Stack param from stack test included in permit and estimations.
CONTINENTAL BRICK - MARTINSBURG FACILITY	5	002_5	245400	4368700	9.11	152.76	1.000	0.000	0.001	0.001	24.168	0.465	0.115	0.050	VOLUME	Yes	Volume 120m x 90m fugitive sources assigned pseudo-point stack parameters.Not sure on
CONTINENTAL BRICK - MARTINSBURG FACILITY	6	002_6	245400	4368700	9.11	152.76	3.048	349.817	1.202	0.991	-	-	0.246	0.246	POINT	Yes	Baghouse, assumed horizontal, parameters from permit app. Not sure on increment consuming,
Argos USA - MARTINSBURG	00B	006_00B	243700	4369200	10.73	154.04	4.877	477.594	1.039	0.363	-	-	0.003	0.003	POINT	No	1.66 mmbtu/hr boiler fugitive sources assigned boiler type parameters.
Argos USA - MARTINSBURG	00E	006_00E	243700	4369200	10.73	154.04	1.829	422.039	2.865	0.204	-	-	0.094	0.005	POINT	No	Intermitten Generators excluded from 1 hour. Assigned estimated stack parameters.
Argos USA - MARTINSBURG	00G	006_00G	243700	4369200	10.73	154.04	3.048	293.150	147.218	0.101	-	-	0.025	0.010	POINT	No	From Argos Title V Permit 07-03-2018
Argos USA - MARTINSBURG	1	006_1	243882.33	4369246.49	10.62	154.04	133.200	358.150	22.920	5.190	-	-	7.383	6.478	POINT	No	Parameters From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files,
Argos USA - MARTINSBURG	10	006_10	243700	4369200	10.73	154.04	28.650	293.150	35.660	0.200	-	-	0.009	0.008	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	100	006_100	243700	4369200	10.73	154.04	6.710	373.150	12.920	0.150	-	-	0.001	0.001	POINT	Yes	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	11	006_11	243700	4369200	10.73	154.04	6.100	293.150	76.140	0.150	-	-	0.011	0.009	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	12	006_12	243700	4369200	10.73	154.04	19.810	293.150	12.860	1.390	-	-	0.072	0.063	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	13	006_13	243700	4369200	10.73	154.04	47.244	293.150	31.700	1.753	-	-	0.009	0.007	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	14	006_14	243700	4369200	10.73	154.04	23.160	293.150	22.890	0.410	-	-	0.024	0.078	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	15	006_15	243700	4369200	10.73	154.04	7.010	293.150	4.790	0.520	-	-	0.008	0.007	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	16	006_16	243700	4369200	10.73	154.04	7.010	293.150	4.790	0.520	-	-	0.008	0.007	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	17	006_17	243700	4369200	10.73	154.04	14.330	293.150	11.890	1.220	-	-	0.108	0.095	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	18	006_18	243700	4369200	10.73	154.04	49.680	293.150	5.490	0.900	-	-	0.028	0.082	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	19	006_19	243700	4369200	10.73	154.04	36.580	293.150	4.790	0.520	-	-	0.008	0.007	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	2	006_2	243672.83	4369384.14	10.87	154.04	47.244	368.150	18.806	1.753	-	-	0.063	0.058	POINT	No	Parameters From Knauf Insulation Inwwod Facility PSD Appliation Air Quality Modeling input files,
Argos USA - MARTINSBURG	20	006_20	243700	4369200	10.73	154.04	36.270	293.150	4.720	0.730	-	-	0.000	0.000	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	21	006_21	243700	4369200	10.73	154.04	44.810	293.150	4.480	0.650	-	-	0.028	0.024	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	22	006_22	243700	4369200	10.73	154.04	7.920	293.150	1.830	0.830	-	-	0.008	0.007	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	23	006_23	243700	4369200	10.73	154.04	15.540	293.150	19.020	0.530	-	-	0.028	0.024	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	24	006_24	243700	4369200	10.73	154.04	39.320	293.150	21.310	0.460	-	-	0.028	0.024	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	25	006_25	243700	4369200	10.73	154.04	13.720	363.150	9.050	0.630	-	-	0.018	0.016	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	26	006_26	243700	4369200	10.73	154.04	92.960	363.150	15.210	0.510	-	-	0.020	0.017	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	27	006_27	243700	4369200	10.73	154.04	18.590	363.150	15.090	0.460	-	-	0.015	0.014	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	28	006_28	243700	4369200	10.73	154.04	78.940	363.150	20.570	0.280	-	-	0.008	0.007	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	29	006_29	243700	4369200	10.73	154.04	115.210	363.150	21.030	0.430	-	-	0.020	0.017	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	3	006_3	243458.51	4369277.28	10.97	154.04	3.900	293.150	0.001	0.400	-	-	0.023	0.009	POINT	Yes	Horizontal cap assumes no vertical velocity, height from WVDEP emission inventory, other parameters

Table A3-5: Background $PM_{2.5}$ Sources

Facility Name in Inventory	Stack Name in Inventory	Model ID	UTM E *m*	UTM N *m*	Distance from Roxul Facility *km*	Base Elevation *m*	Stack Height *m*	Temp. *K*	Exit Velocity *m/s*	Stack Diameter *m*	Initial Lateral Dimension *m*	Initial Vertical Dimention *m*	24-hour Emission Rate *g/s*	Annual Emission Rate *g/s*	Type	Increment Consuming?	Notes
Argos USA - MARTINSBURG	30	006_30	243700	4369200	10.73	154.04	115.210	363.150	36.520	0.510	-	-	0.047	0.041	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	31	006_31	243700	4369200	10.73	154.04	114.910	363.150	16.980	0.300	-	-	0.008	0.007	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	32	006_32	243700	4369200	10.73	154.04	33.530	352.040	10.970	0.710	-	-	0.028	0.025	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	33	006_33	243700	4369200	10.73	154.04	33.220	293.150	25.880	0.150	-	-	0.004	0.003	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	34	006_34	243700	4369200	10.73	154.04	22.860	403.150	29.080	0.450	-	-	0.020	0.017	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	35	006_35	243700	4369200	10.73	154.04	39.320	403.150	27.310	0.280	-	-	0.024	0.079	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	36	006_36	243700	4369200	10.73	154.04	54.560	403.150	13.620	0.440	-	-	0.011	0.010	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	37	006_37	243700	4369200	10.73	154.04	54.560	293.150	16.920	0.270	-	-	0.001	0.001	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	38	006_38	243700	4369200	10.73	154.04	22.860	293.150	17.310	0.270	-	-	0.001	0.001	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	39	006_39	243700	4369200	10.73	154.04	3.050	293.150	17.310	0.270	-	-	0.001	0.001	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	4	006_4	243700	4369200	10.73	154.04	13.110	293.150	23.740	0.400	-	-	0.072	0.063	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	40	006_40	243700	4369200	10.73	154.04	3.050	293.150	17.310	0.270	-	-	0.001	0.001	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	41	006_41	243700	4369200	10.73	154.04	3.050	293.150	17.310	0.270	-	-	0.001	0.001	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	42	006_42	243700	4369200	10.73	154.04	38.710	293.150	11.190	0.530	-	-	0.040	0.035	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	43	006_43	243700	4369200	10.73	154.04	30.180	293.150	10.240	0.560	-	-	0.020	0.017	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	44	006_44	243700	4369200	10.73	154.04	17.680	383.150	27.310	0.280	-	-	0.035	0.031	POINT	Yes	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	45	006_45	243700	4369200	10.73	154.04	20.730	293.150	10.180	0.430	-	-	0.024	0.021	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	46	006_46	243700	4369200	10.73	154.04	20.730	293.150	10.180	0.430	-	-	0.011	0.010	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	47	006_47	243700	4369200	10.73	154.04	4.570	293.150	2.990	0.650	-	-	0.008	0.007	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	48	006_48	243700	4369200	10.73	154.04	9.140	293.150	10.180	0.430	-	-	0.011	0.010	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	49	006_49	243700	4369200	10.73	154.04	8.840	293.150	10.180	0.430	-	-	0.011	0.010	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	5	006_5	243700	4369200	10.73	154.04	3.350	293.150	20.060	1.170	-	-	0.000	0.000	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	50	006_50	243700	4369200	10.73	154.04	37.190	293.150	4.480	0.650	-	-	0.011	0.010	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	51	006_51	243700	4369200	10.73	154.04	38.710	293.150	5.490	0.900	-	-	0.028	0.024	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	52	006_52	243700	4369200	10.73	154.04	12.190	373.150	5.940	0.740	-	-	0.015	0.014	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	53	006_53	243700	4369200	10.73	154.04	47.240	368.150	18.810	1.750	-	-	0.282	0.248	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	54	006_54	243700	4369200	10.73	154.04	21.950	403.150	4.450	0.630	-	-	0.008	0.007	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	55	006_55	243700	4369200	10.73	154.04	37.490	293.150	4.480	0.650	-	-	0.011	0.010	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	56	006_56	243700	4369200	10.73	154.04	39.010	293.150	5.490	0.900	-	-	0.028	0.024	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	57	006_57	243700	4369200	10.73	154.04	12.190	373.150	5.940	0.740	-	-	0.015	0.014	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	58	006_58	243700	4369200	10.73	154.04	47.550	368.150	18.810	1.750	-	-	0.282	0.248	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	59	006_59	243700	4369200	10.73	154.04	22.250	403.150	4.450	0.630	-	-	0.008	0.007	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	6	006_6	243700	4369200	10.73	154.04	17.370	293.150	19.900	0.570	-	-	0.000	0.000	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	60	006_60	243700	4369200	10.73	154.04	7.620	373.150	20.030	0.400	-	-	0.018	0.015	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.

Table A3-5: Background $PM_{2.5}$ Sources

Facility Name in Inventory	Stack Name in Inventory	Model ID	UTM E *m*	UTM N *m*	Distance from Roxul Facility *km*	Base Elevation *m*	Stack Height *m*	Temp. *K*	Exit Velocity *m/s*	Stack Diameter *m*	Initial Lateral Dimension *m*	Initial Vertical Dimention *m*	24-hour Emission Rate *g/s*	Annual Emission Rate *g/s*	Type	Increment Consuming?	Notes
Argos USA - MARTINSBURG	61	006_61	243700	4369200	10.73	154.04	7.620	373.150	20.030	0.400	-	-	0.018	0.015	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	62	006_62	243700	4369200	10.73	154.04	65.230	373.150	15.730	0.390	-	-	0.011	0.010	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	63	006_63	243700	4369200	10.73	154.04	64.920	373.150	15.730	0.390	-	-	0.011	0.010	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	64	006_64	243700	4369200	10.73	154.04	64.920	373.150	16.700	0.480	-	-	0.019	0.016	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	65	006_65	243700	4369200	10.73	154.04	64.920	373.150	16.700	0.480	-	-	0.019	0.016	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	66	006_66	243700	4369200	10.73	154.04	64.920	373.150	17.470	0.480	-	-	0.020	0.017	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	67	006_67	243700	4369200	10.73	154.04	13.110	373.150	26.150	0.300	-	-	0.011	0.010	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	68	006_68	243700	4369200	10.73	154.04	13.410	373.150	29.350	0.270	-	-	0.010	0.009	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	69	006_69	243700	4369200	10.73	154.04	13.720	373.150	25.790	0.290	-	-	0.010	0.009	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	7	006_7	243700	4369200	10.73	154.04	25.910	353.150	21.000	1.460	-	-	0.457	0.400	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	70	006_70	243700	4369200	10.73	154.04	14.020	373.150	26.150	0.300	-	-	0.011	0.010	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	71	006_71	243700	4369200	10.73	154.04	9.750	293.150	11.250	0.280	-	-	0.005	0.005	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	72	006_72	243700	4369200	10.73	154.04	16.460	373.150	40.660	0.210	-	-	0.009	0.008	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	73	006_73	243700	4369200	10.73	154.04	33.220	366.480	14.970	0.480	-	-	0.016	0.015	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	74	006_74	243700	4369200	10.73	154.04	33.220	366.480	14.970	0.480	-	-	0.016	0.015	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	75	006_75	243700	4369200	10.73	154.04	33.220	366.480	14.970	0.480	-	-	0.016	0.015	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	76	006_76	243700	4369200	10.73	154.04	32.610	366.480	14.970	0.480	-	-	0.016	0.015	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	77	006_77	243700	4369200	10.73	154.04	32.920	366.480	14.970	0.480	-	-	0.016	0.015	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	78	006_78	243700	4369200	10.73	154.04	3.660	355.370	18.380	0.250	-	-	0.006	0.005	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	79	006_79	243700	4369200	10.73	154.04	3.660	355.370	18.380	0.250	-	-	0.006	0.005	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	8	006_8	243700	4369200	10.73	154.04	15.540	310.930	13.930	0.570	-	-	0.052	0.046	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	80	006_80	243700	4369200	10.73	154.04	3.660	355.370	22.770	0.250	-	-	0.001	0.001	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	81	006_81	243700	4369200	10.73	154.04	3.960	355.370	22.770	0.250	-	-	0.001	0.001	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	82	006_82	243700	4369200	10.73	154.04	15.540	408.150	28.620	0.280	-	-	0.010	0.009	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	83	006_83	243700	4369200	10.73	154.04	15.540	408.150	28.620	0.280	-	-	0.010	0.009	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	84	006_84	243700	4369200	10.73	154.04	24.380	322.040	20.630	0.330	-	-	0.013	0.011	POINT	Yes	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	85	006_85	243700	4369200	10.73	154.04	24.380	322.040	9.300	0.720	-	-	0.054	0.047	POINT	Yes	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	86	006_86	243700	4369200	10.73	154.04	24.380	322.040	15.540	0.330	-	-	0.009	0.008	POINT	Yes	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	87	006_87	243700	4369200	10.73	154.04	24.380	322.040	15.540	0.330	-	-	0.009	0.008	POINT	Yes	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	88	006_88	243700	4369200	10.73	154.04	24.380	353.710	16.030	0.330	-	-	0.009	0.008	POINT	Yes	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	89	006_89	243700	4369200	10.73	154.04	12.190	310.930	14.200	0.280	-	-	0.014	0.012	POINT	Yes	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	9	006_9	243700	4369200	10.73	154.04	4.270	293.150	35.660	0.200	-	-	0.009	0.008	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	90	006_90	243700	4369200	10.73	154.04	12.190	310.930	14.200	0.280	-	-	0.014	0.012	POINT	Yes	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	91	006_91	243700	4369200	10.73	154.04	33.530	366.480	18.750	0.390	-	-	0.014	0.012	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.

Table A3-5: Background $PM_{2.5}$ Sources

Facility Name in Inventory	Stack Name in Inventory	Model ID	UTM E *m*	UTM N *m*	Distance from Roxul Facility *km*	Base Elevation *m*	Stack Height *m*	Temp. *K*	Exit Velocity *m/s*	Stack Diameter *m*	Initial Lateral Dimension *m*	Initial Vertical Dimention *m*	24-hour Emission Rate *g/s*	Annual Emission Rate *g/s*	Type	Increment Consuming?	Notes
Argos USA - MARTINSBURG	92	006_92	243700	4369200	10.73	154.04	33.530	366.480	18.750	0.390	-	-	0.014	0.012	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	93	006_93	243700	4369200	10.73	154.04	33.220	366.480	18.750	0.390	-	-	0.014	0.012	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	94	006_94	243700	4369200	10.73	154.04	13.410	294.260	18.530	0.660	-	-	0.049	0.043	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	95	006_95	243700	4369200	10.73	154.04	33.830	293.150	6.460	0.300	-	-	0.028	0.024	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	96	006_96	243700	4369200	10.73	154.04	33.830	293.150	6.460	0.300	-	-	0.028	0.024	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	97	006_97	243700	4369200	10.73	154.04	33.830	293.150	6.460	0.300	-	-	0.028	0.024	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	98	006_98	243700	4369200	10.73	154.04	33.830	293.150	6.460	0.300	-	-	0.028	0.024	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Argos USA - MARTINSBURG	99	006_99	243700	4369200	10.73	154.04	23.770	293.150	20.570	0.280	-	-	0.010	0.009	POINT	No	From Knauf Insulation Inwwod Facility PSD Application Air Quality Modeling input files.
Knauf Insulation, Inc. - INWOOD, WV	EP18	012_EP18	239835.8	4365622	12.66	178.77	3.050	583.150	9.220	0.300	-	-	0.076	Exclude	POINT	No	Stack Parameter and allowables from Knauff PSD Application Modeling
Knauf Insulation, Inc. - INWOOD, WV	CT45	012_CT45	239696.3	4365677	12.81	178.77	7.920	302.590	15.160	2.440	-	-	0.000	Exclude	POINT	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling.
Knauf Insulation, Inc. - INWOOD, WV	EP24	012_EP24	239703	4365722	12.82	178.77	36.580	449.820	20.070	1.450	-	-	0.924	Exclude	POINT	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling
Knauf Insulation, Inc. - INWOOD, WV	CT123	012_CT123	239691.3	4365683	12.82	178.77	8.840	302.590	19.760	1.830	-	-	0.000	Exclude	POINT	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling.
Knauf Insulation, Inc. - INWOOD, WV	EP11B	012_EP11B	239688.1	4365710	12.83	178.77	25.460	294.260	0.001	0.100	-	-	0.00139	Exclude	POINT	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling. Only CT's 3,4,5 Increment
Knauf Insulation, Inc. - INWOOD, WV	EP11A	012_EP11A	239684.7	4365713	12.83	178.77	25.460	294.260	0.001	0.100	-	-	0.00139	Exclude	POINT	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling. Only CT's 3,4,5 Increment
Knauf Insulation, Inc. - INWOOD, WV	HTR	012_HTR	239677.57	4365684.57	12.83	178	2.438	338.706	0.000	0.914	-	-	0.006	Exclude	POINT	No	Estimated Stack paramaters
Knauf Insulation, Inc. - INWOOD, WV	EP23	012_EP23	239657.2	4365698	12.86	178.77	60.660	333.150	20.650	2.900	-	-	3.011	Exclude	POINT	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling.
Knauf Insulation, Inc. - INWOOD, WV	FP11	012_FP11	239659.41	4365771	12.87	178	1.000	0.000	0.001	0.001	59.595	0.465	0.021	Exclude	VOLUME	No	Volume
Knauf Insulation, Inc. - INWOOD, WV	FP16	012_FP16	239659.41	4365771	12.87	178	1.000	0.000	0.001	0.001	59.595	0.465	0.023	Exclude	VOLUME	No	Assigned Volume Parameters, Dust control allowables from Title V permit.
Knauf Insulation, Inc. - INWOOD, WV	FP19	012_FP19	239659.41	4365771	12.87	178	1.000	0.000	0.001	0.001	59.595	0.465	0.014	Exclude	VOLUME	No	Assigned Volume Parameters, Dust control allowables from Title V permit.
Knauf Insulation, Inc. - INWOOD, WV	Road	012_Road	239659.41	4365771	12.87	178	1.000	0.000	0.001	0.001	59.595	0.465	0.005	Exclude	VOLUME	No	Assigned Volume parameters.
Knauf Insulation, Inc. - INWOOD, WV	EP16	012_EP16	239630.6	4365693	12.88	178.77	7.320	845.930	22.020	0.300	-	-	0.073	Exclude	POINT	No	Stack Parameter and allowables from Knauff PSD Application Modeling.
Knauf Insulation, Inc. - INWOOD, WV	NWGN	012_NWGN	239624.1	4365676	12.88	178.77	4.270	807.760	50.000	0.100	-	-	0.023	Exclude	POINT	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling.
Knauf Insulation, Inc. - INWOOD, WV	EP17	012_EP17	239620.9	4365699	12.89	178.77	7.320	739.650	21.560	0.300	-	-	0.011	Exclude	POINT	No	Stack Parameter and allowables from Knauff PSD Application Modeling.
Knauf Insulation, Inc. - INWOOD, WV	EP14	012_EP14	239600.5	4365787	12.93	178.77	36.580	385.930	21.130	1.320	-	-	0.000	Exclude	POINT	No	Stack Parameter and allowables from Knauff PSD Application Modeling.
Knauf Insulation, Inc. - INWOOD, WV	EP12	012_EP12	239586.2	4365746	12.94	178.77	18.380	316.480	17.820	0.710	-	-	0.040	Exclude	POINT	No	Stack Parameter and allowables from Knauff PSD Application Modeling.
Knauf Insulation, Inc. - INWOOD, WV	EP13	012_EP13	239586.6	4365780	12.94	178.77	60.660	344.260	20.860	2.130	-	-	1.979	Exclude	POINT	Yes	Stack Parameter and allowables from Knauff PSD Application Modeling.
MAAX U.S. CORP	002	026_002	246300	4376200	14.84	144.57	13.716	299.817	38.801	0.152	-	-	0.000	Exclude	POINT	No	Parameters from WVDEP Emission Inventory.
MAAX U.S. CORP	3	026_3	246300	4376200	14.84	144.57	18.288	324.817	11.643	3.048	-	-	0.000	Exclude	POINT	No	Parameters from WVDEP Emission Inventory.
QUAD/GRAPHICS, INC	001	042_001	246734.14	4377251.68	15.66	148.35	21.336	435.928	0.001	0.914	-	-	0.000	Exclude	POINT	No	Rain cap has no vertical velocity. Parameters from state inventory. Allowables from permit.
QUAD/GRAPHICS, INC	002	042_002	246751.72	4377237.49	15.64	148.35	21.336	435.928	0.001	0.914	-	-	0.000	Exclude	POINT	No	Rain cap has no vertical velocity. Parameters from state inventory. Allowables from permit.
QUAD/GRAPHICS, INC	003	042_003	246742.71	4377230.67	15.64	148.35	21.336	478.983	0.001	1.036	-	-	0.000	Exclude	POINT	No	Rain cap has no vertical velocity, parameters from state emissions inventory and PSD inventory.
QUAD/GRAPHICS, INC	004	042_004	246763.5	4377223.94	15.63	148.35	21.336	449.817	0.001	0.762	-	-	0.000	Exclude	POINT	No	Rain cap has no vertical velocity, parameters from state emissions inventory and PSD inventory.
QUAD/GRAPHICS, INC	CO	042_CO	246576.67	4377329.64	15.79	148.35	5.182	689.261	10.455	0.789	-	-	0.000	Exclude	POINT	No	
QUAD/GRAPHICS, INC	TO	042_TO	246546	4377307.99	15.78	148.35	5.182	560.928	1.920	0.972	-	-	0.000	Exclude	POINT	No	

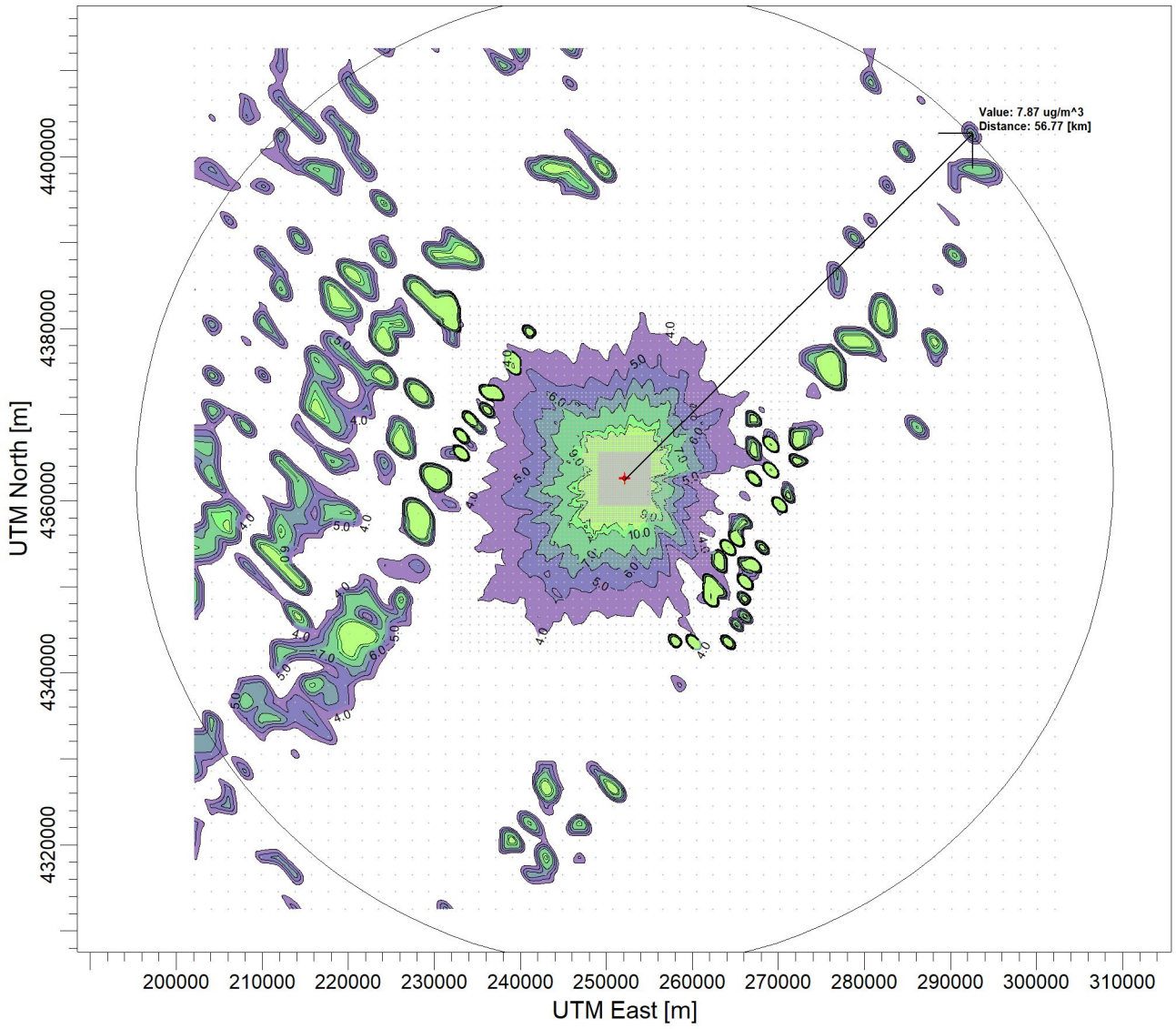
Table A3-5: Background $PM_{2.5}$ Sources

Facility Name in Inventory	Stack Name in Inventory	Model ID	UTM E *m*	UTM N *m*	Distance from Roxul Facility *km*	Base Elevation *m*	Stack Height *m*	Temp. *K*	Exit Velocity *m/s*	Stack Diameter *m*	Initial Lateral Dimension *m*	Initial Vertical Dimention *m*	24-hour Emission Rate *g/s*	Annual Emission Rate *g/s*	Type	Increment Consuming?	Notes
LCS Services, Inc. - NORTH MOUNTAIN SANITARY LANDFILL	001	036_001	243500	4384500	23.59	235.98	1.000	0.000	0.001	0.001	-	-	0.000	Exclude	POINT	No	fugitive sources assigned pseudo-point stack parameters
LCS Services, Inc. - NORTH MOUNTAIN SANITARY LANDFILL	004	036_004	243500	4384500	23.59	235.98	2.438	755.372	0.661	0.152	-	-	0.151	Exclude	POINT	No	Estimated flare stack parameters, velocity is lowest allowable in permit. Allowable limits from Title V
O-N Minerals (Chemstone) Co - Clear Brook	1	340_1	233709	4349308	22.68	190.5	60.960	393.150	12.538	1.219	-	-	0.572	Exclude	POINT	No	Allowable from Title V Application 10-17-2019, Table C.10
O-N Minerals (Chemstone) Co - Clear Brook	2	340_2	233709	4349308	22.68	190.5	60.960	393.150	12.538	1.219	-	-	0.572	Exclude	POINT	No	Allowable from Title V Application 10-17-2019, Table C.10
O-N Minerals (Chemstone) Co - Clear Brook	3	340_3	233709	4349308	22.68	190.5	48.768	294.261	24.268	0.610	-	-	0.087	Exclude	POINT	No	Allowable from Title V Application 10-17-2019, Table C.10
O-N Minerals (Chemstone) Co - Clear Brook	4	340_4	233709	4349308	22.68	190.5	33.528	338.706	14.793	0.579	-	-	0.072	Exclude	POINT	No	Allowable from Title V Application 10-17-2019, Table C.10
O-N Minerals (Chemstone) Co - Clear Brook	5	340_5	233709	4349308	22.68	190.5	30.480	294.261	24.268	0.610	-	-	0.300	Exclude	POINT	No	Allowable from Title V Application 10-17-2019, Table C.10
O-N Minerals (Chemstone) Co - Clear Brook	6	340_6	233709	4349308	22.68	190.5	1.000	0.000	0.001	0.001	59.595	0.465	0.009	Exclude	VOLUME	No	Assigned Volume parameters.

Attachment 4
AERMOD Concentration Plots

PROJECT TITLE:

Prevention of Significant Deterioration Application
NO2 1-Hour SIL



PLOT FILE OF 1ST-HIGHEST MAX DAILY 1-HR VALUES AVERAGED OVER 5 YEARS FOR SOURCE GROUP: ALL ug/m^3

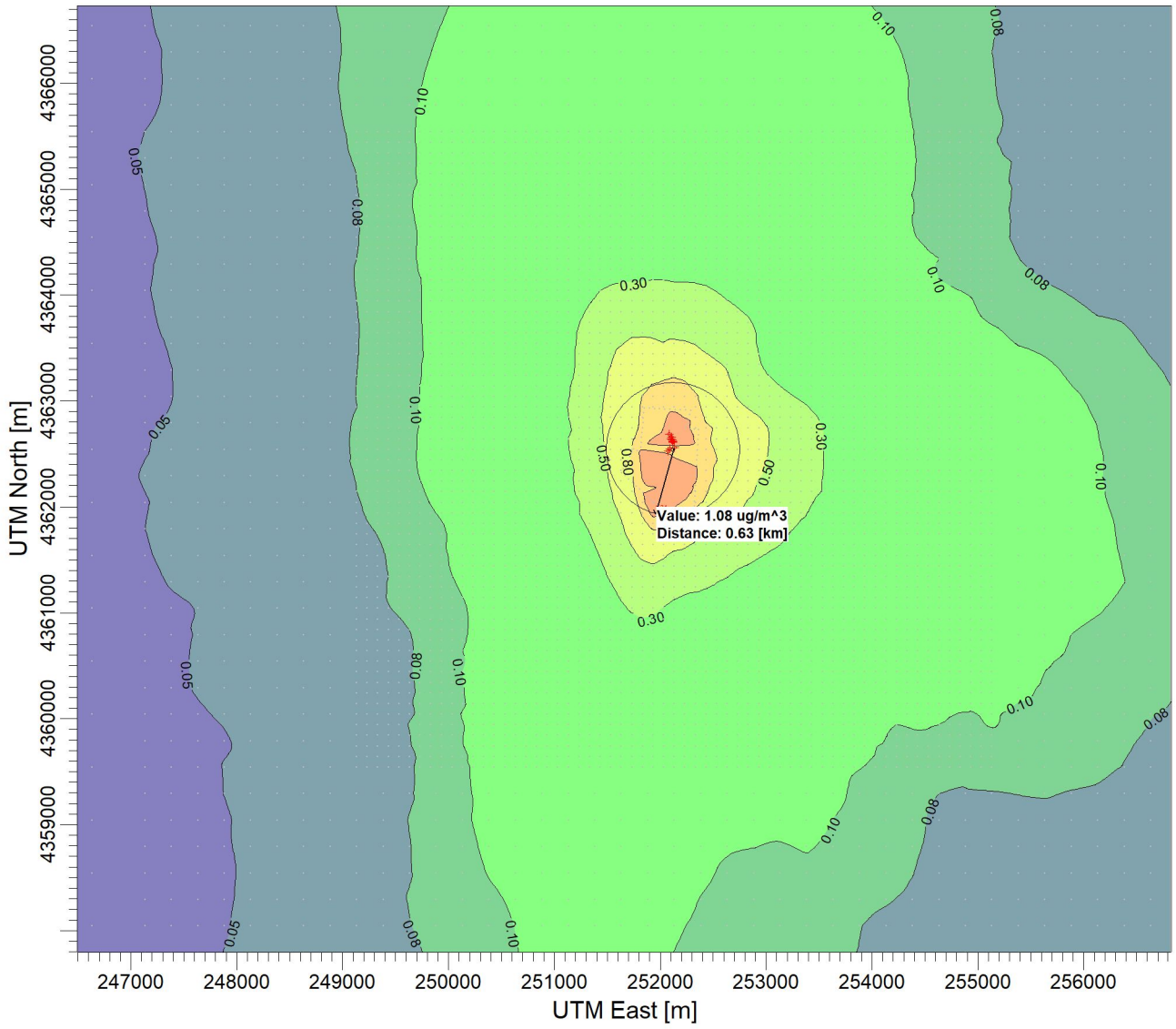
Max: 34.7 [ug/m^3] at (239130.36, 4375545.00)

4.0 5.0 6.0 7.0 9.0 10.0 30.0 40.0 50.0 53.0

COMMENTS:	SOURCES: **12**	COMPANY NAME:	
	RECEPTORS: **9466**	MODELER: **Environmental Resources Management**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:800,009 0 30 km	
	MAX: **34.7 ug/m^3**		PROJECT NO.:

PROJECT TITLE:

Prevention of Significant Deterioration Application
NO2 Annual SIL - Worst Case Year 2017



PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 1 YEARS FOR SOURCE GROUP: ALL ug/m^3

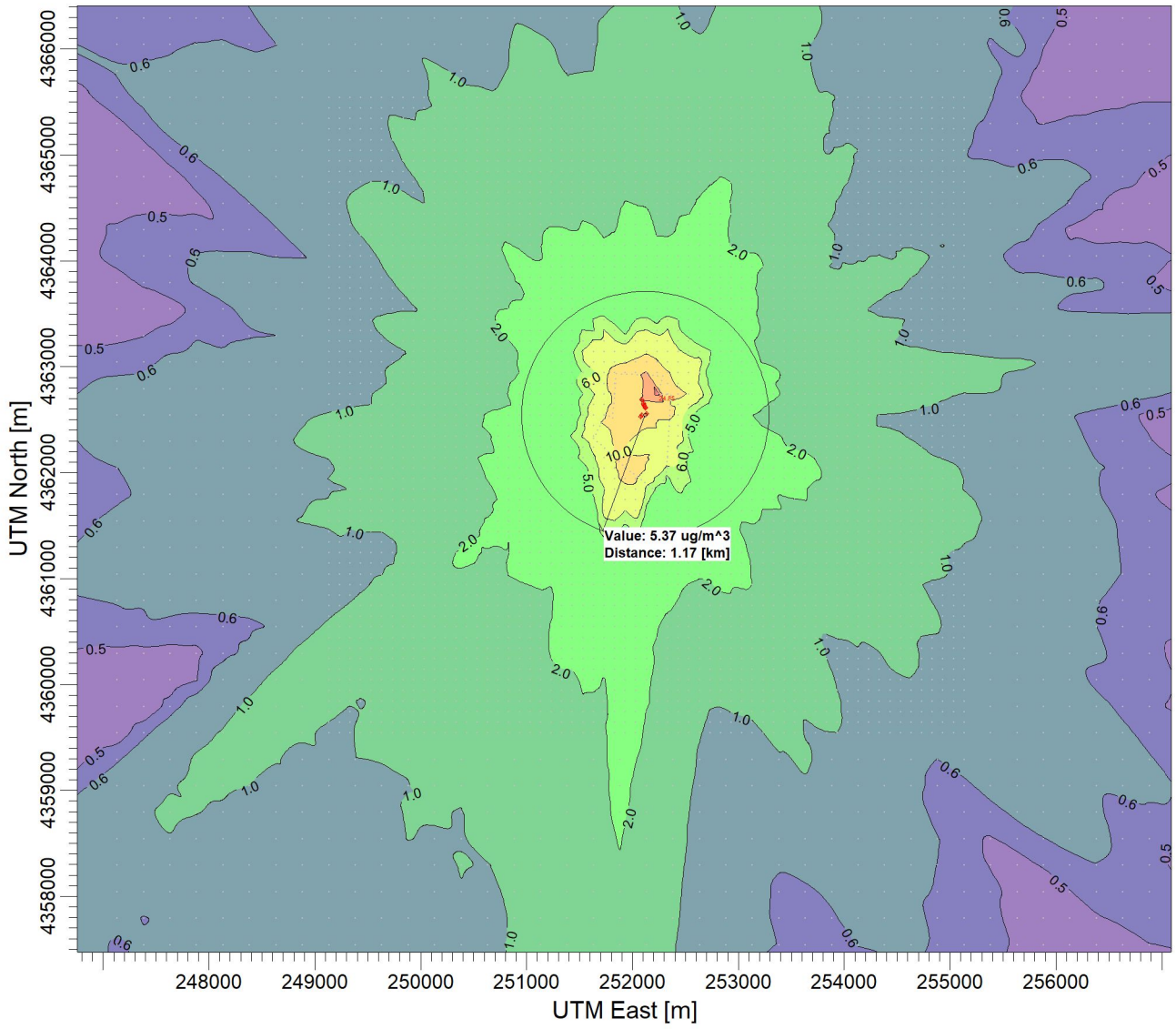
Max: 1.34 [ug/m^3] at (251942.23, 4362040.63)

0.02 0.03 0.05 0.08 0.10 0.30 0.50 0.80 1.00 1.50

COMMENTS:	SOURCES: **12**	COMPANY NAME:	
	RECEPTORS: **9466**	MODELER: **Environmental Resources Management**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:65,000 0 2 km	
	MAX: **1.34 ug/m^3**		PROJECT NO.:

PROJECT TITLE:

Prevention of Significant Deterioration Application
PM10 24-Hour SIL - Worst Case year 2019



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

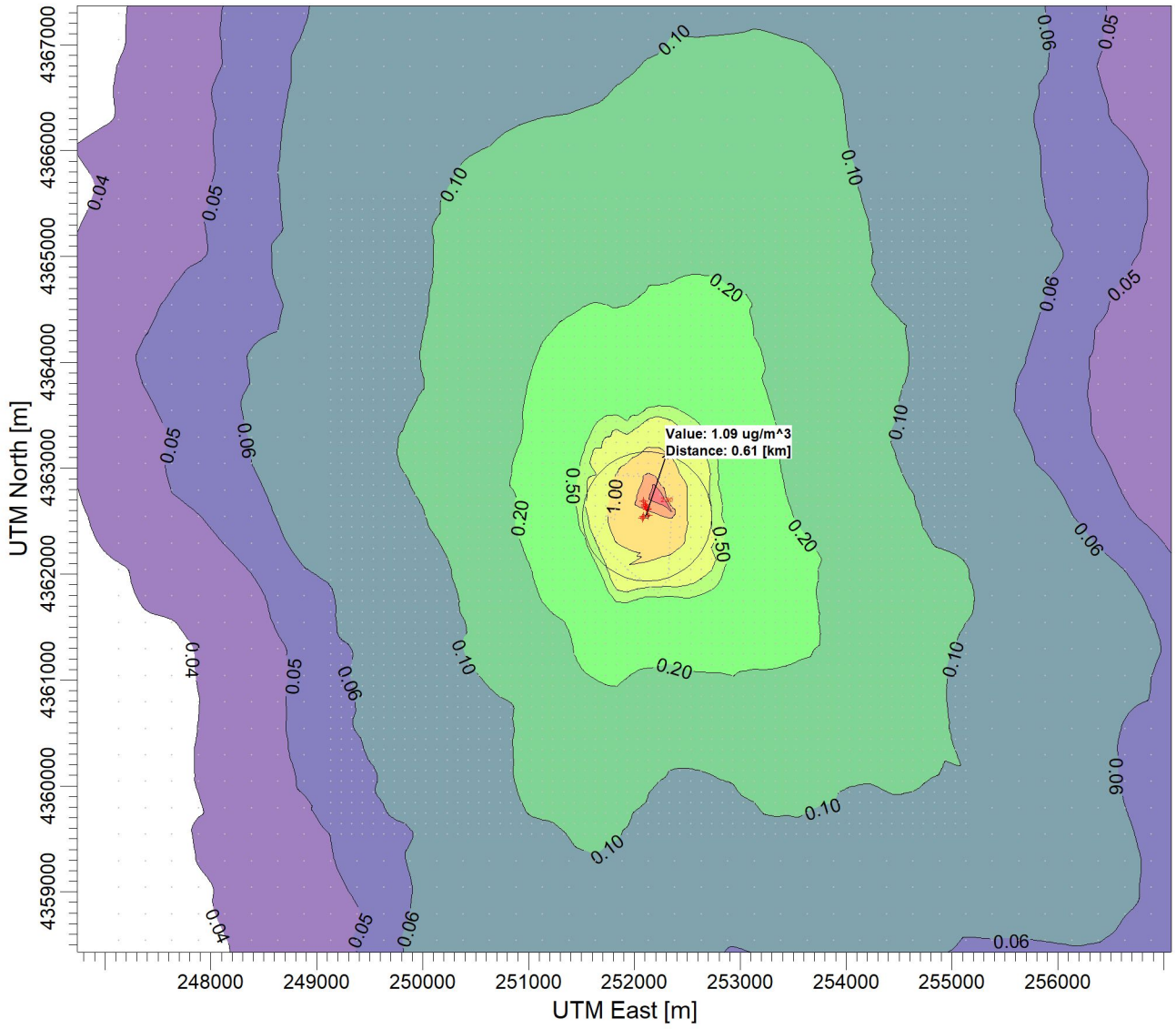
Max: 24.8 [ug/m^3] at (252241.53, 4362750.41)

0.2 0.5 0.6 1.0 2.0 5.0 6.0 10.0 20.0 23.8

COMMENTS:	SOURCES: **99**	COMPANY NAME:	
	RECEPTORS: **9466**	MODELER: **Environmental Resources Management**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:65,000 (0 — 2 km)	
	MAX: **24.8 ug/m^3**		PROJECT NO.:

PROJECT TITLE:

Prevention of Significant Deterioration Application
PM10 Annual SIL - Worst Case year 2021



PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 1 YEARS FOR SOURCE GROUP: ALL ug/m^3

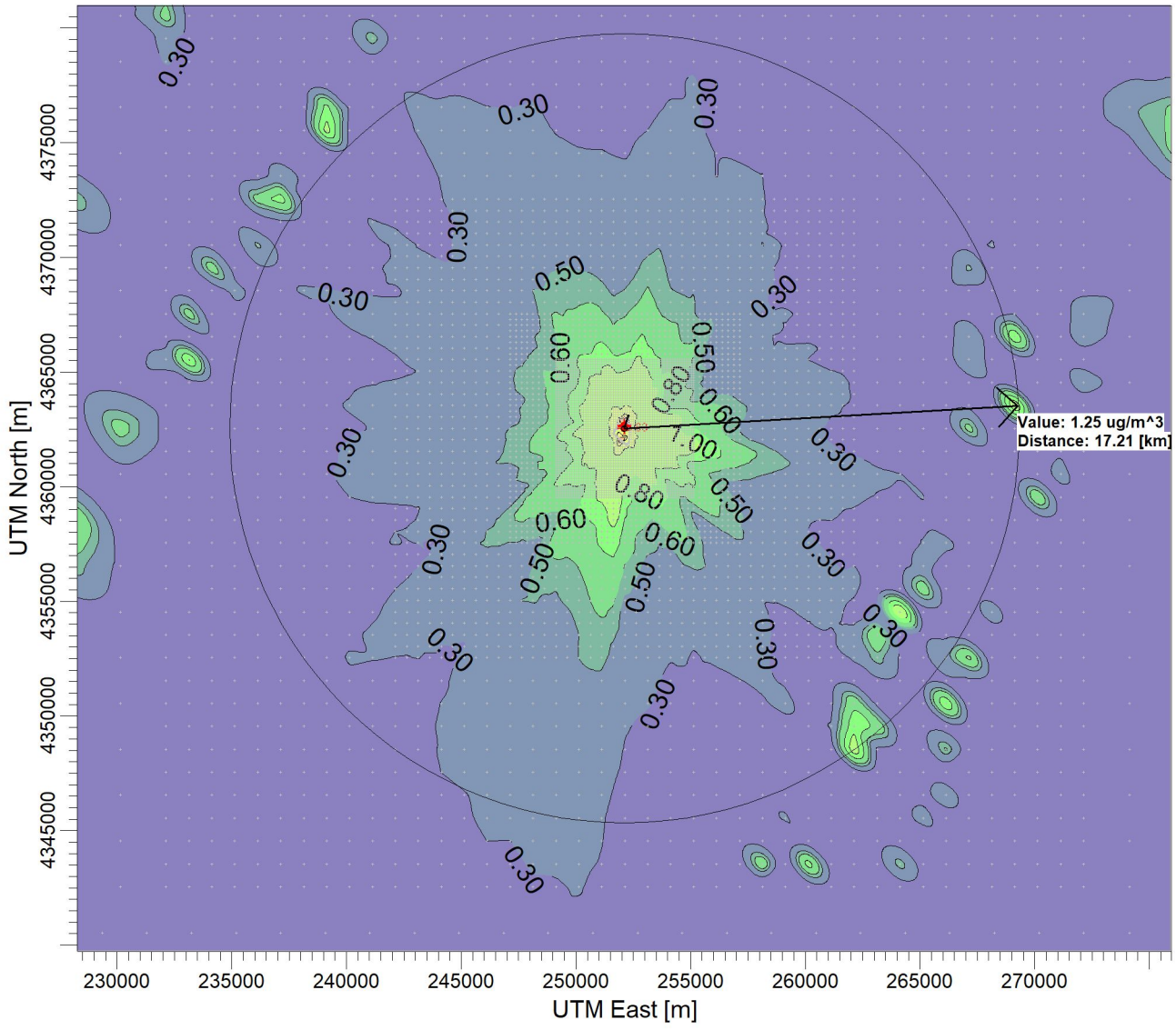
Max: 2.90 [ug/m^3] at (252241.53, 4362750.41)

0.04 0.05 0.06 0.10 0.20 0.50 0.60 1.00 2.00 2.50

COMMENTS:	SOURCES: **99**	COMPANY NAME:	
	RECEPTORS: **9466**	MODELER: **Environmental Resources Management**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:65,000 0 2 km	
	MAX: **2.90 ug/m^3**		PROJECT NO.:

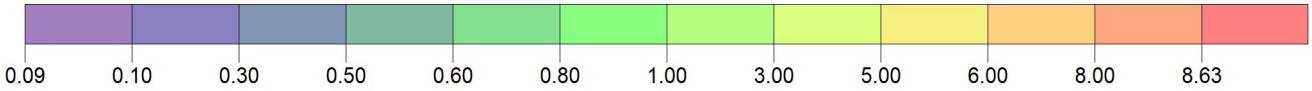
PROJECT TITLE:

Prevention of Significant Deterioration Application
PM2.5 24-Hour SIL



PLOT FILE OF 1ST-HIGHEST MAX DAILY 24-HR VALUES AVERAGED OVER 5 YEARS FOR SOURCE GROUP: ALL ug/m^3

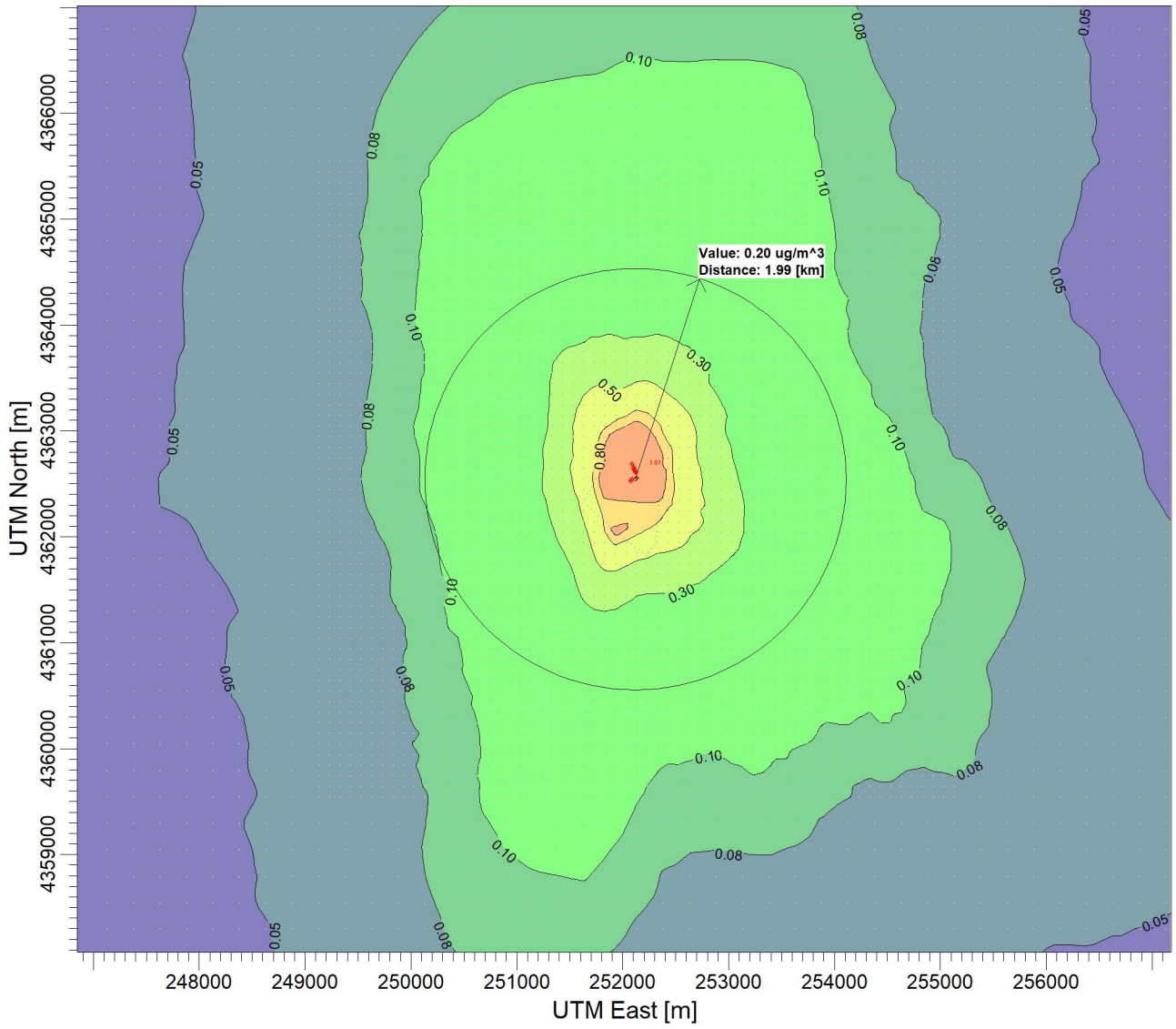
Max: 8.63 [ug/m^3] at (252141.07, 4362920.66)



COMMENTS:	SOURCES: **99**	COMPANY NAME:	
	RECEPTORS: **9466**	MODELER: **Environmental Resources Management**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:300,000 0 10 km	
	MAX: **8.63 ug/m^3**		PROJECT NO.:

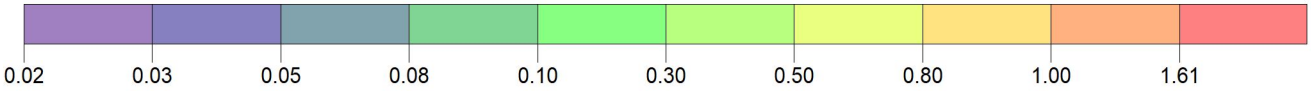
PROJECT TITLE:

Prevention of Significant Deterioration Application
PM2.5 Annual SIL



PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 5 YEARS FOR SOURCE GROUP: ALL ug/m^3

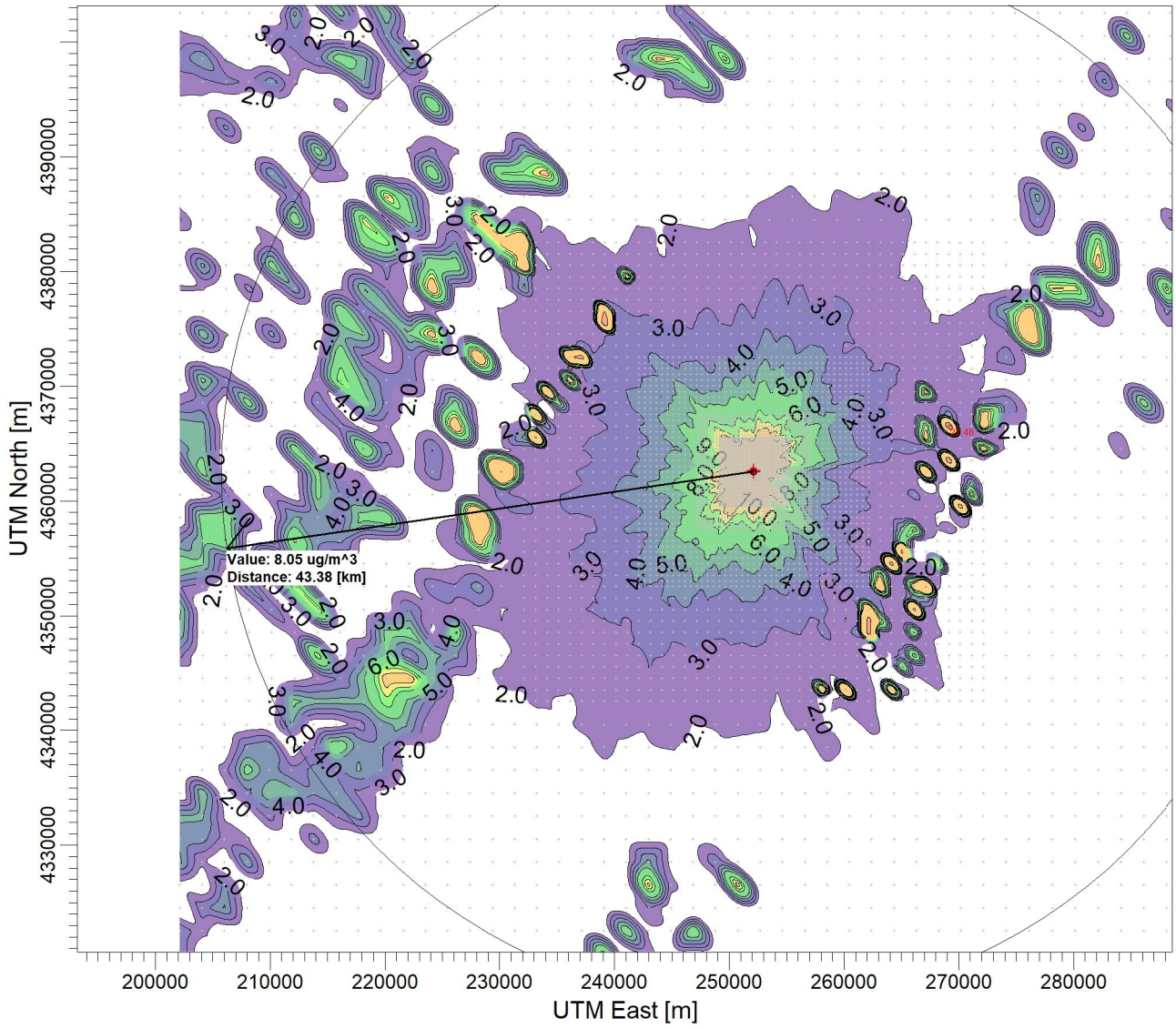
Max: 1.61 [ug/m^3] at (252241.53, 4362750.41)



COMMENTS:	SOURCES: **99**	COMPANY NAME:	
	RECEPTORS: **9466**	MODELER: **Environmental Resources Management**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:65,000 0 2 km	
	MAX: **1.61 ug/m^3**		PROJECT NO.:

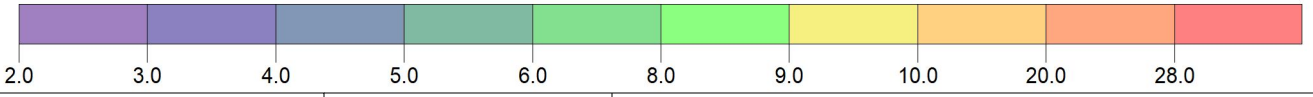
PROJECT TITLE:

Prevention of Significant Deterioration Application
SO2 1-Hour SIL



PLOT FILE OF 1ST-HIGHEST MAX DAILY 1-HR VALUES AVERAGED OVER 5 YEARS FOR SOURCE GROUP: ALL ug/m^3

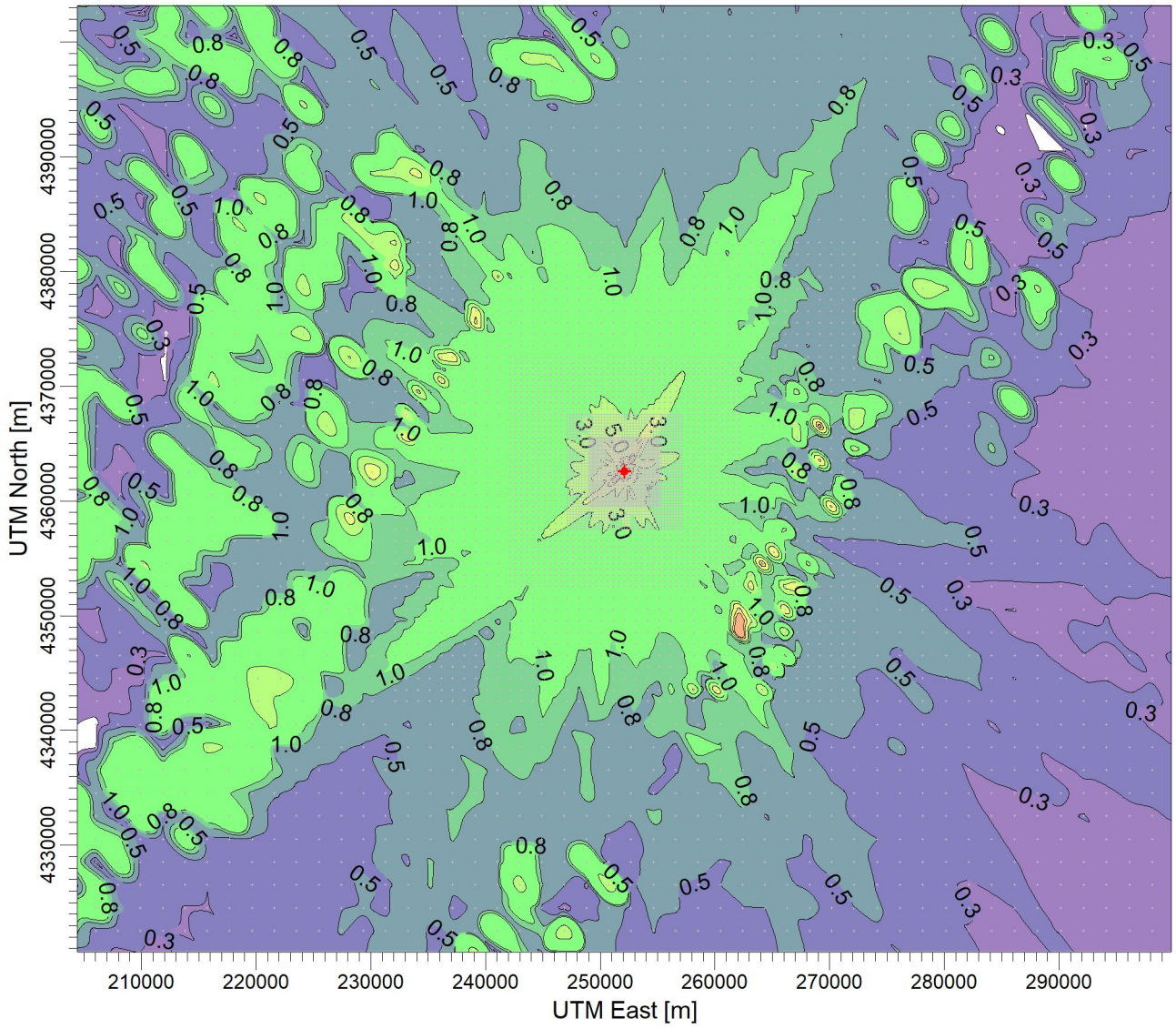
Max: 27.5 [ug/m^3] at (269130.38, 4366545.00)



COMMENTS:	SOURCES: **12**	COMPANY NAME:	
	RECEPTORS: **9466**	MODELER: **Environmental Resources Management**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:600,000 0 20 km	
	MAX: **27.5 ug/m^3**		PROJECT NO.:

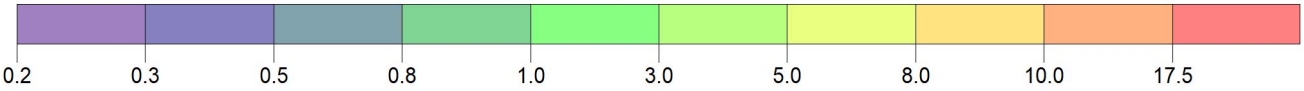
PROJECT TITLE:

Prevention of Significant Deterioration Application
SO2 3-Hour SIL - Worst Case Year 2017



PLOT FILE OF HIGH 1ST HIGH 3-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

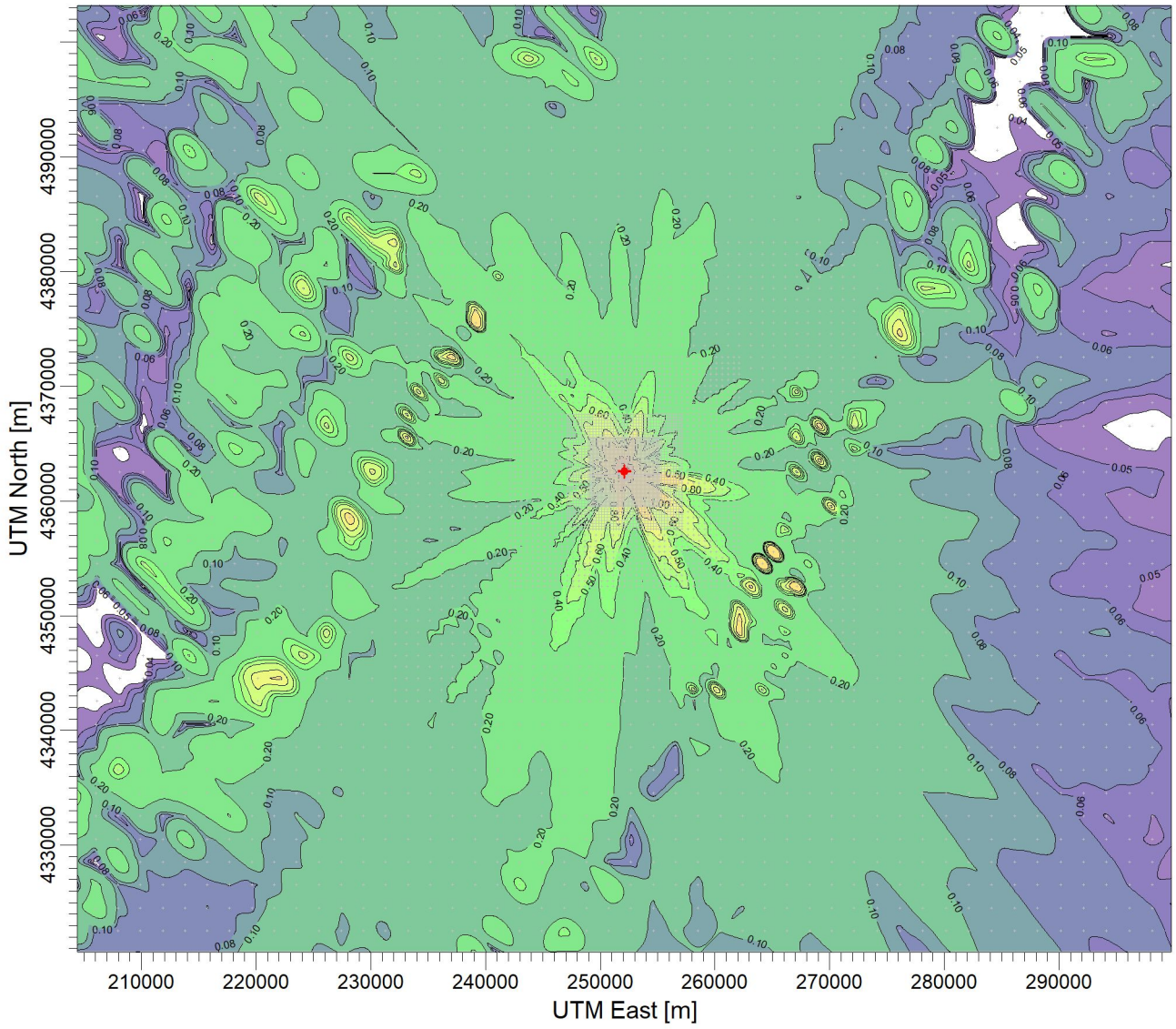
Max: 16.9 [ug/m^3] at (262130.36, 4348545.00)



COMMENTS:	SOURCES: **12**	COMPANY NAME:	
	RECEPTORS: **9466**	MODELER: **Environmental Resources Management**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:600,000 0 20 km	
	MAX: **16.9 ug/m^3**		PROJECT NO.:

PROJECT TITLE:

Prevention of Significant Deterioration Application
SO2 24-Hour SIL - Worst Case Year 2021



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

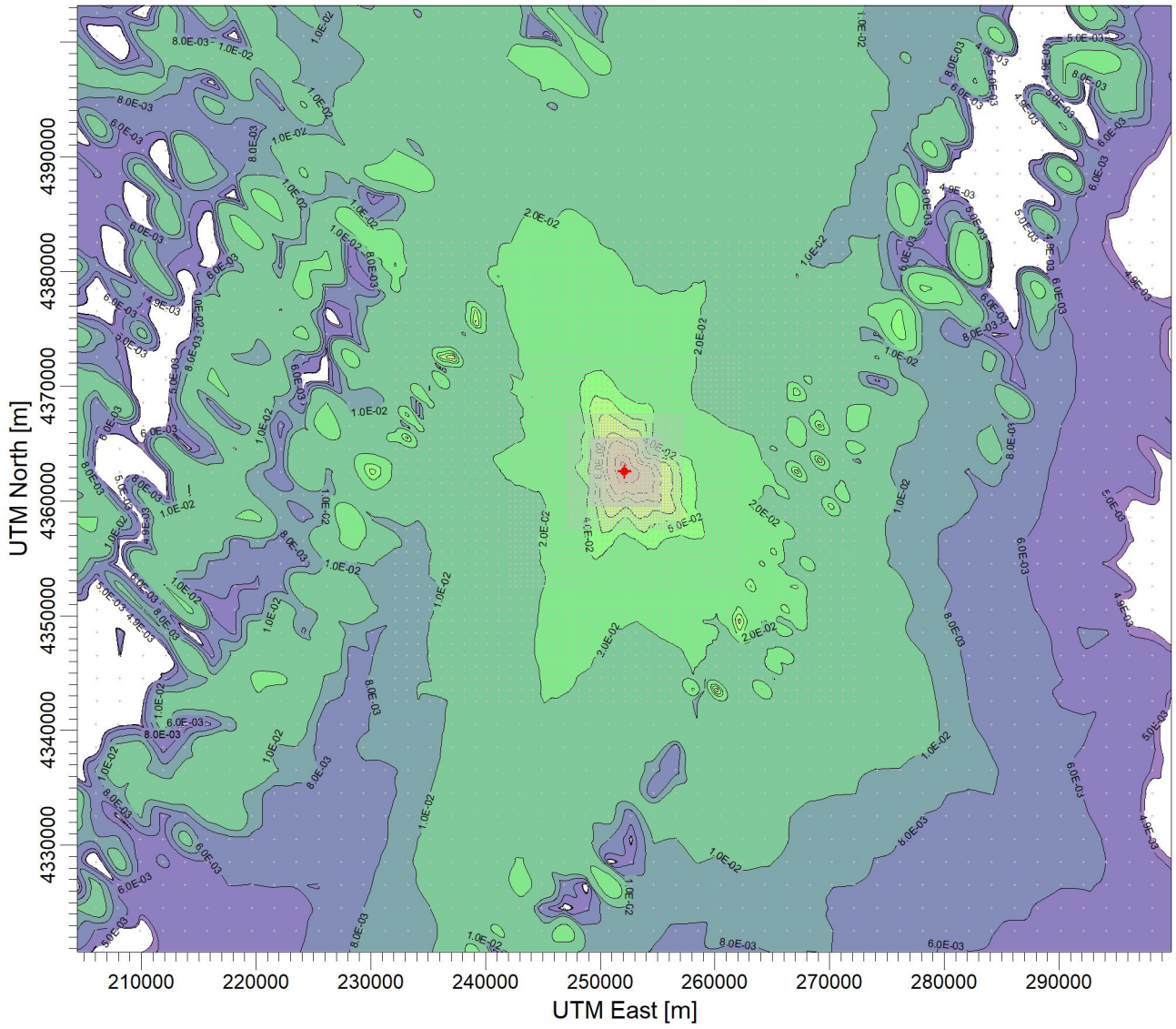
Max: 4.25 [ug/m^3] at (252030.36, 4363145.00)

0.04 0.05 0.06 0.08 0.10 0.20 0.40 0.50 0.60 0.80 1.00 2.00 4.00 4.27

COMMENTS:	SOURCES: **12**	COMPANY NAME:	
	RECEPTORS: **9466**	MODELER: **Environmental Resources Management**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:600,000 0 20 km	
	MAX: **4.25 ug/m^3**		PROJECT NO.:

PROJECT TITLE:

Prevention of Significant Deterioration Application
SO2 Annual SIL - Worst Case Year 2020



PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 1 YEARS FOR SOURCE GROUP: ALL ug/m^3

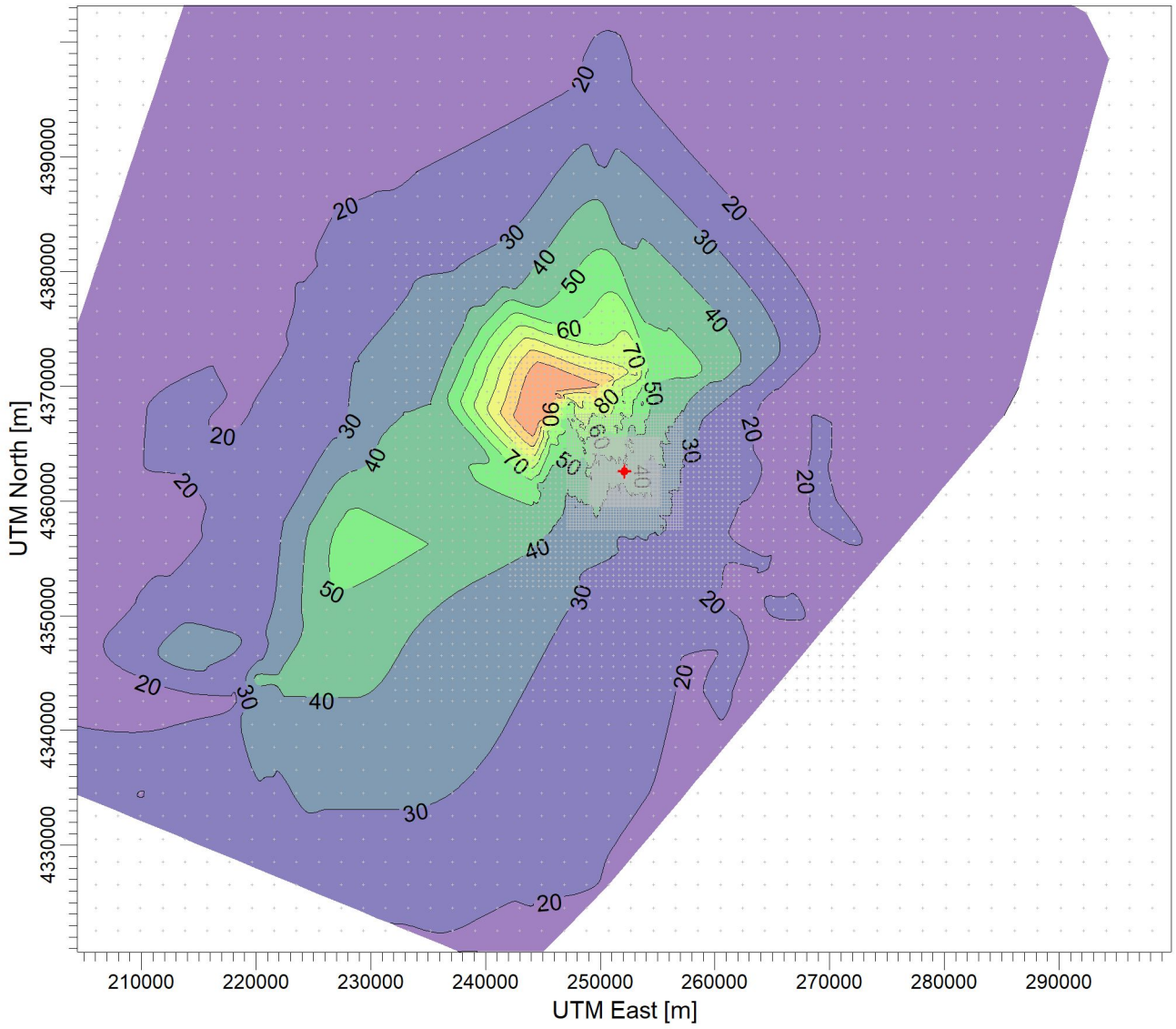
Max: 4.9E-01 [ug/m^3] at (252030.36, 4363145.00)

4.9E-03 5.0E-03 6.0E-03 8.0E-03 1.0E-02 2.0E-02 4.0E-02 5.0E-02 6.0E-02 8.0E-02 1.0E-01 2.0E-01 4.0E-01 4.9E-01

COMMENTS:	SOURCES: **12**	COMPANY NAME:	
	RECEPTORS: **9466**	MODELER: **Environmental Resources Management**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:600,000 0 20 km	
	MAX: **4.9E-01 ug/m^3**		PROJECT NO.:

PROJECT TITLE:

Prevention of Significant Deterioration Application
NO2 1- Hour NAAQS



PLOT FILE OF 8TH-HIGHEST MAX DAILY 1-HR VALUES AVERAGED OVER 5 YEARS FOR SOURCE GROUP: ALL ug/m^3

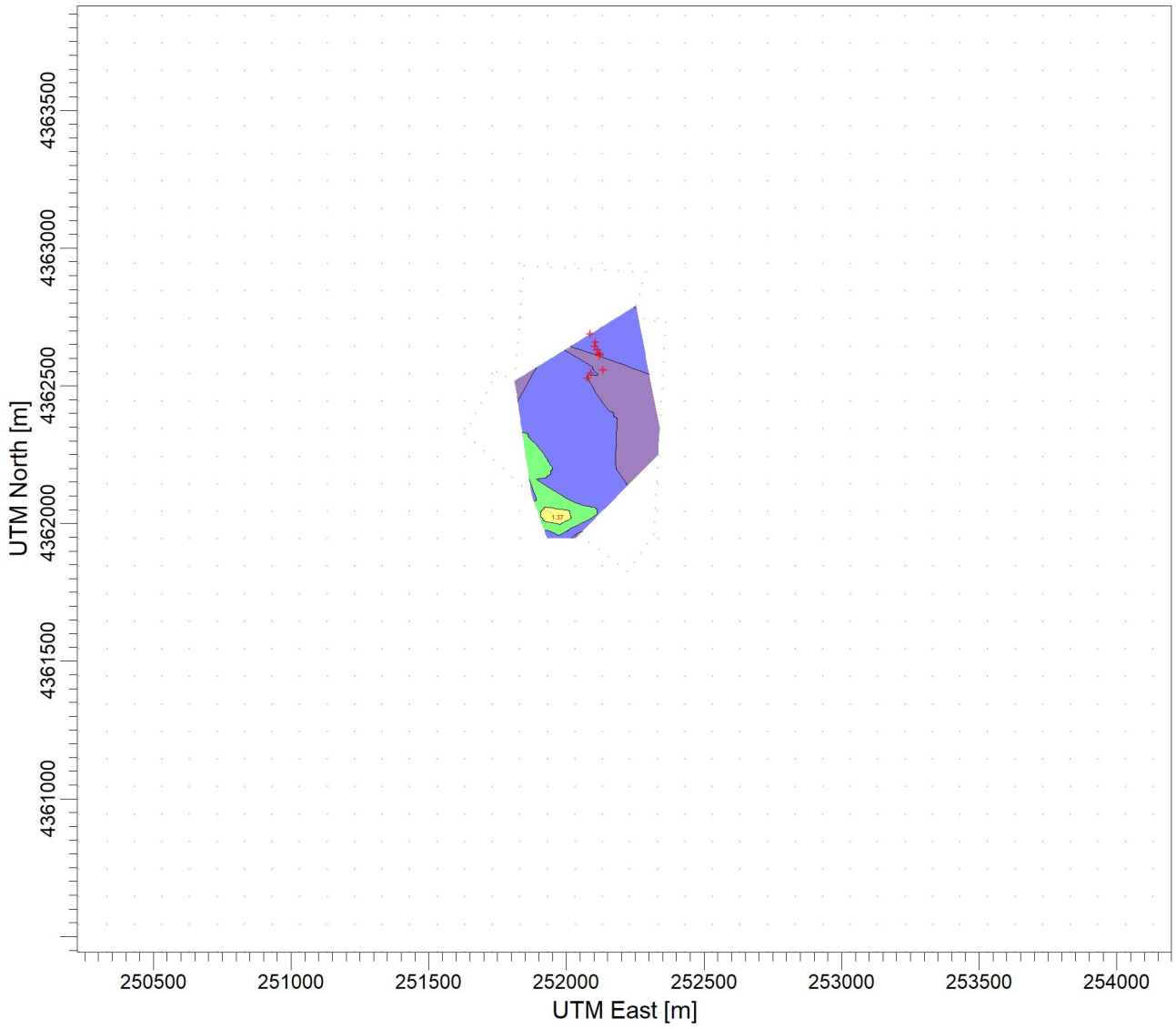
Max: 121 [ug/m^3] at (244630.36, 4367545.00)

10 20 30 40 50 60 70 80 90 100 133

COMMENTS:	SOURCES: **16**	COMPANY NAME:	
	RECEPTORS: **9466**	MODELER: **Environmental Resources Management**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:600,000 0 20 km	
	MAX: **121 ug/m^3**		PROJECT NO.:

PROJECT TITLE:

Prevention of Significant Deterioration Application
NO2 Annual NAAQS - Worst Case Year 2017



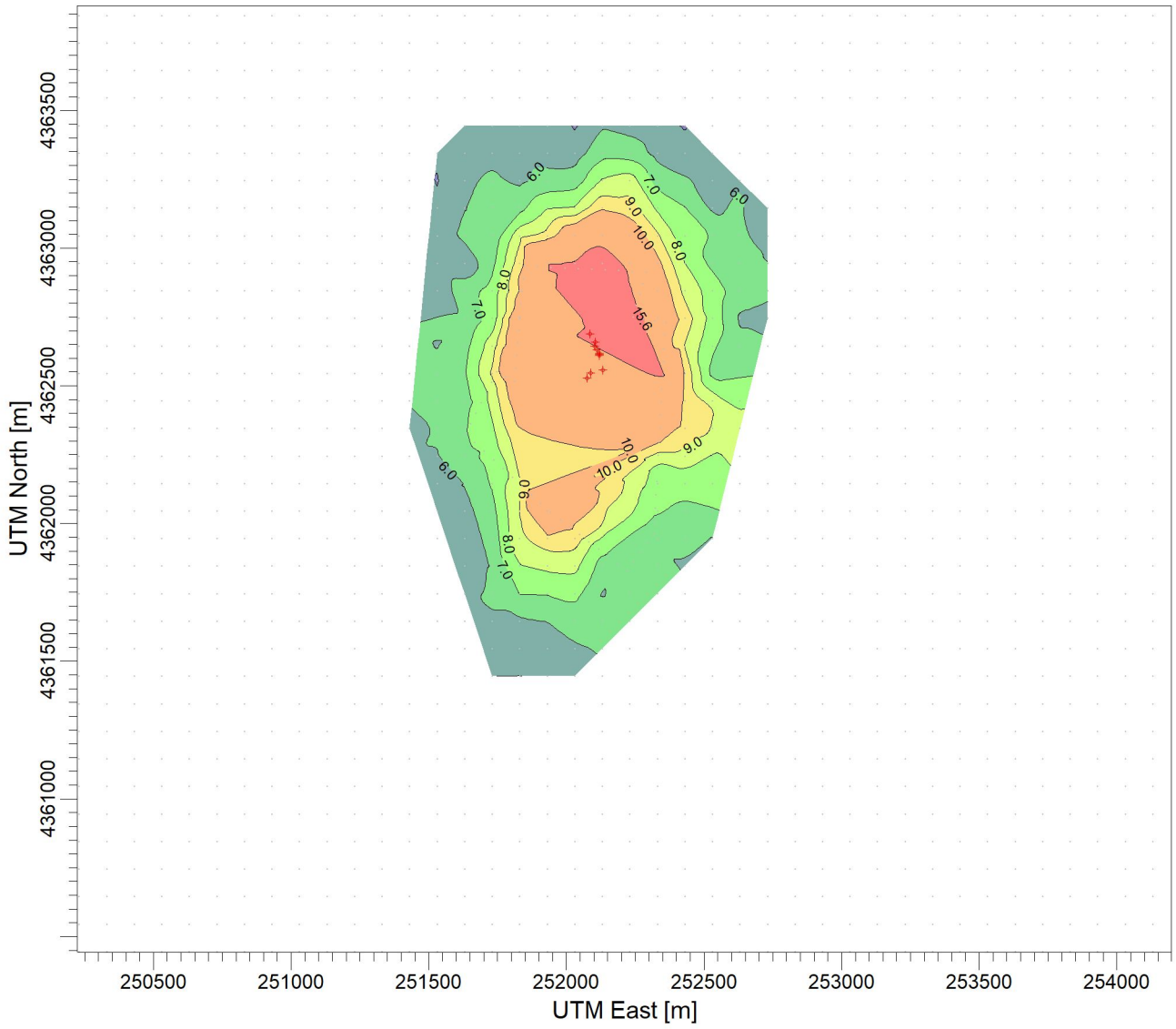
PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 1 YEARS FOR SOURCE GROUP: ALL ug/m^3

Max: 1.369 [ug/m^3] at (251942.23, 4362040.63)

COMMENTS:	SOURCES: **16**	COMPANY NAME:	
	RECEPTORS: **9466**	MODELER: **Environmental Resources Management**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:25,000 0 1 km	
	MAX: **1.369 ug/m^3**		PROJECT NO.:

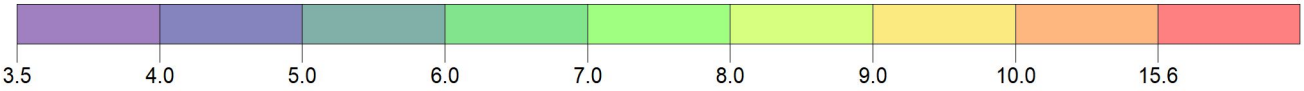
PROJECT TITLE:

Prevention of Significant Deterioration Application
PM10 24-Hour NAAQS



PLOT FILE OF HIGH 6TH HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

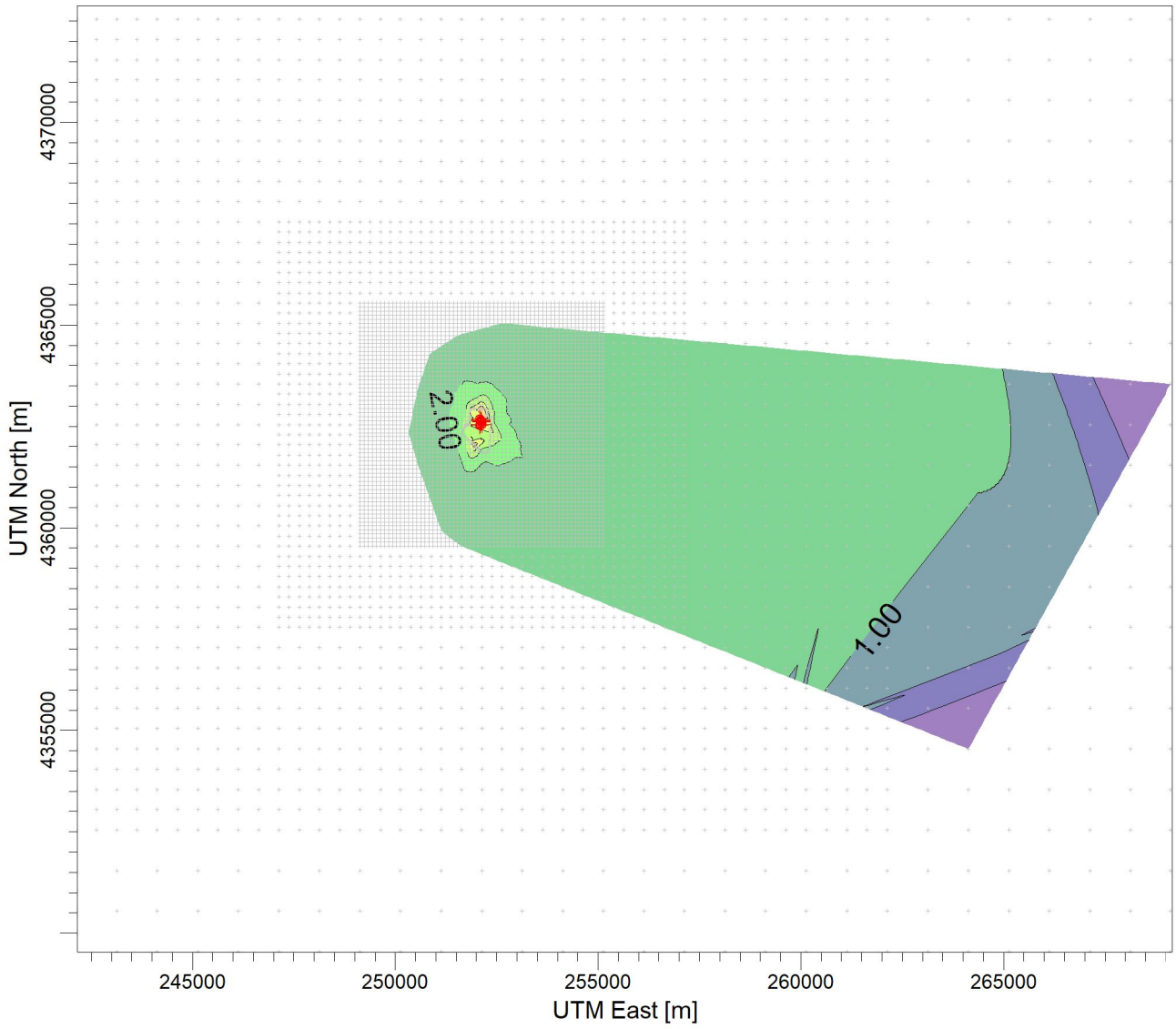
Max: 21.1 [ug/m^3] at (252141.07, 4362920.66)



COMMENTS:	SOURCES: **377**	COMPANY NAME:	
	RECEPTORS: **9466**	MODELER: **Environmental Resources Management**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:25,000 (0 — 1 km)	
	MAX: **21.1 ug/m^3**		PROJECT NO.:

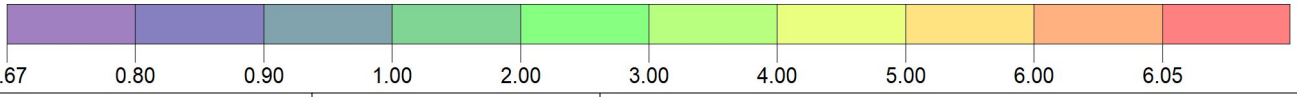
PROJECT TITLE:

Prevention of Significant Deterioration Application
PM2.5 24-Hour NAAQS



PLOT FILE OF 8TH-HIGHEST MAX DAILY 24-HR VALUES AVERAGED OVER 5 YEARS FOR SOURCE GROUP: ALL ug/m^3

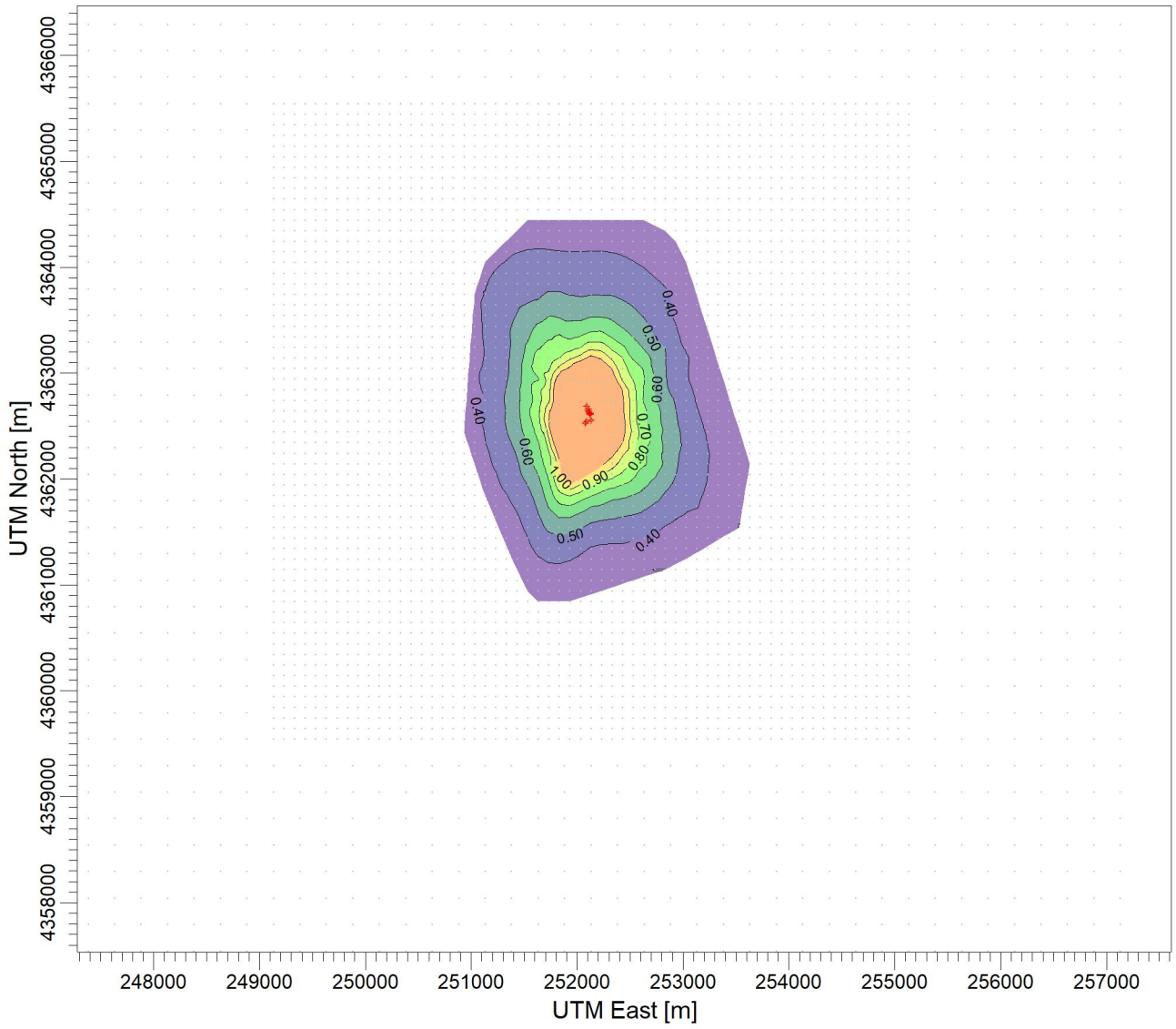
Max: 6.02 [ug/m^3] at (252141.07, 4362920.66)



COMMENTS:	SOURCES: **206**	COMPANY NAME:	
	RECEPTORS: **9466**	MODELER: **Environmental Resources Management**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:169,814 0 5 km	
	MAX: **6.02 ug/m^3**		PROJECT NO.:

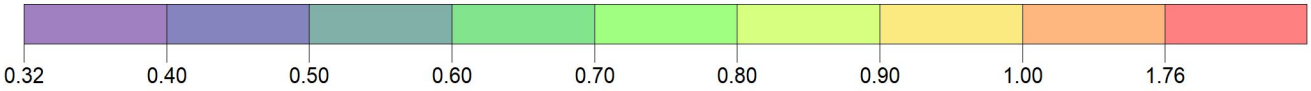
PROJECT TITLE:

Prevention of Significant Deterioration Application
PM2.5 Annual NAAQS



PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 5 YEARS FOR SOURCE GROUP: ALL ug/m^3

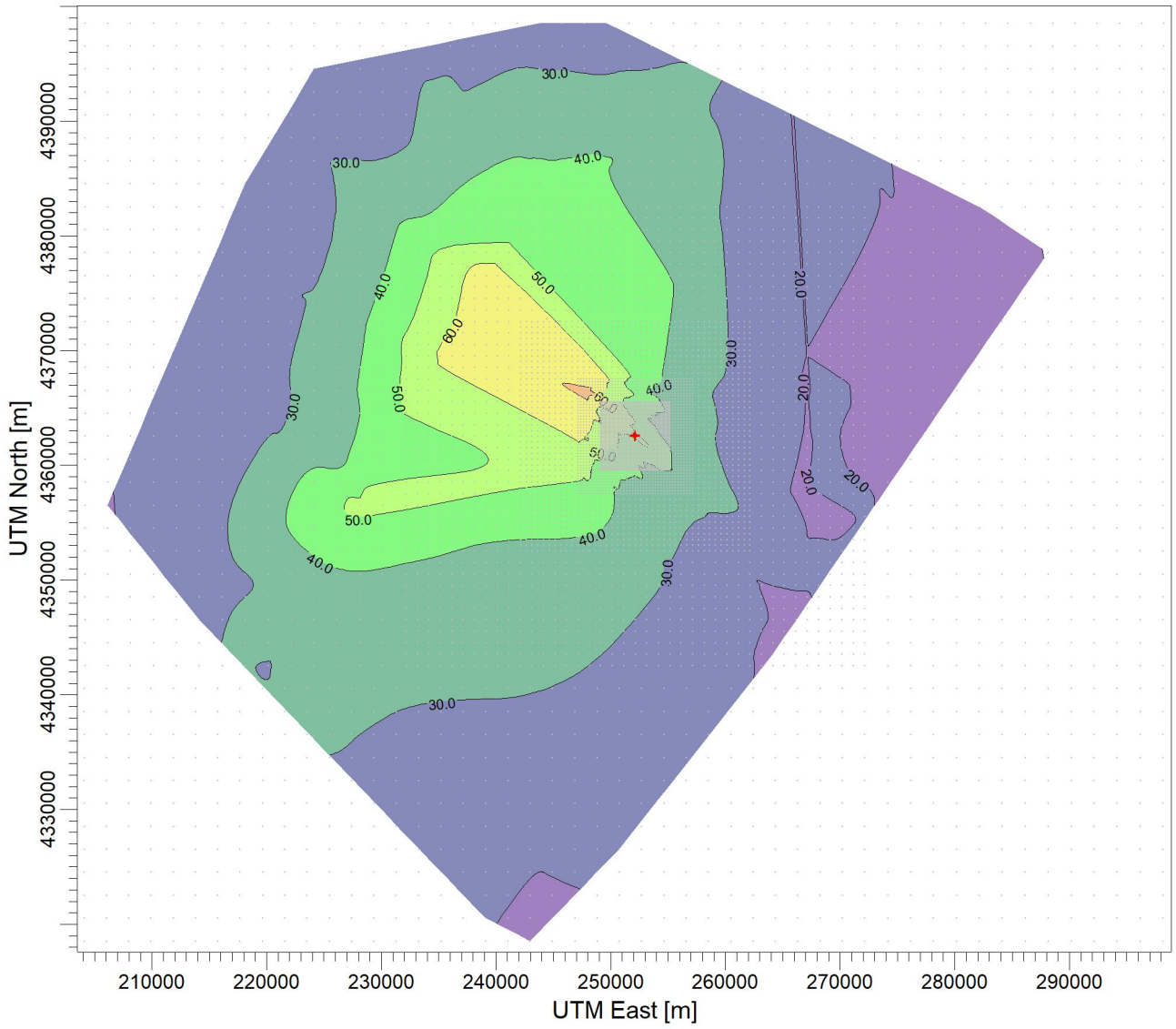
Max: 1.75 [ug/m^3] at (252241.53, 4362750.41)



COMMENTS:	SOURCES: **206**	COMPANY NAME:	
	RECEPTORS: **9466**	MODELER: **Environmental Resources Management**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:65,000 0 2 km	
	MAX: **1.75 ug/m^3**		PROJECT NO.:

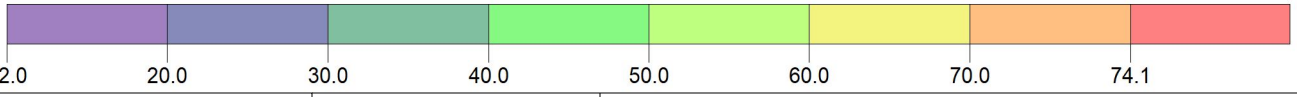
PROJECT TITLE:

Prevention of Significant Deterioration Application
SO2 1-Hour NAAQS



PLOT FILE OF 4TH-HIGHEST MAX DAILY 1-HR VALUES AVERAGED OVER 5 YEARS FOR SOURCE GROUP: ALL ug/m^3

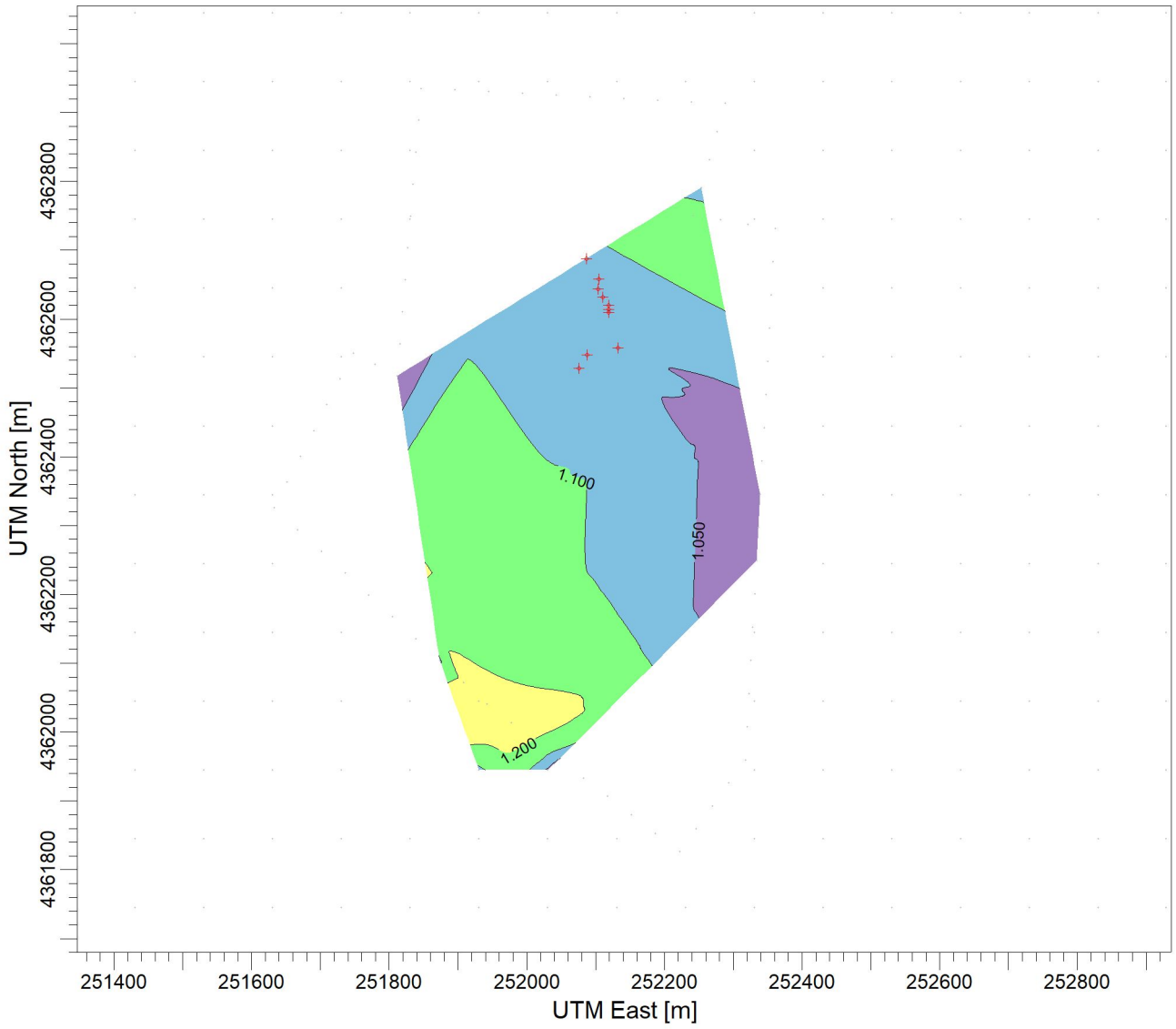
Max: 71.9 [ug/m^3] at (248130.36, 4366295.00)



COMMENTS:	SOURCES: **16**	COMPANY NAME:	
	RECEPTORS: **9466**	MODELER: **Environmental Resources Management**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:600,000 0 20 km	
	MAX: **71.9 ug/m^3**		PROJECT NO.:

PROJECT TITLE:

Prevention of Significant Deterioration Application
NO2 Annual PDSI - Worst Case Year 2017



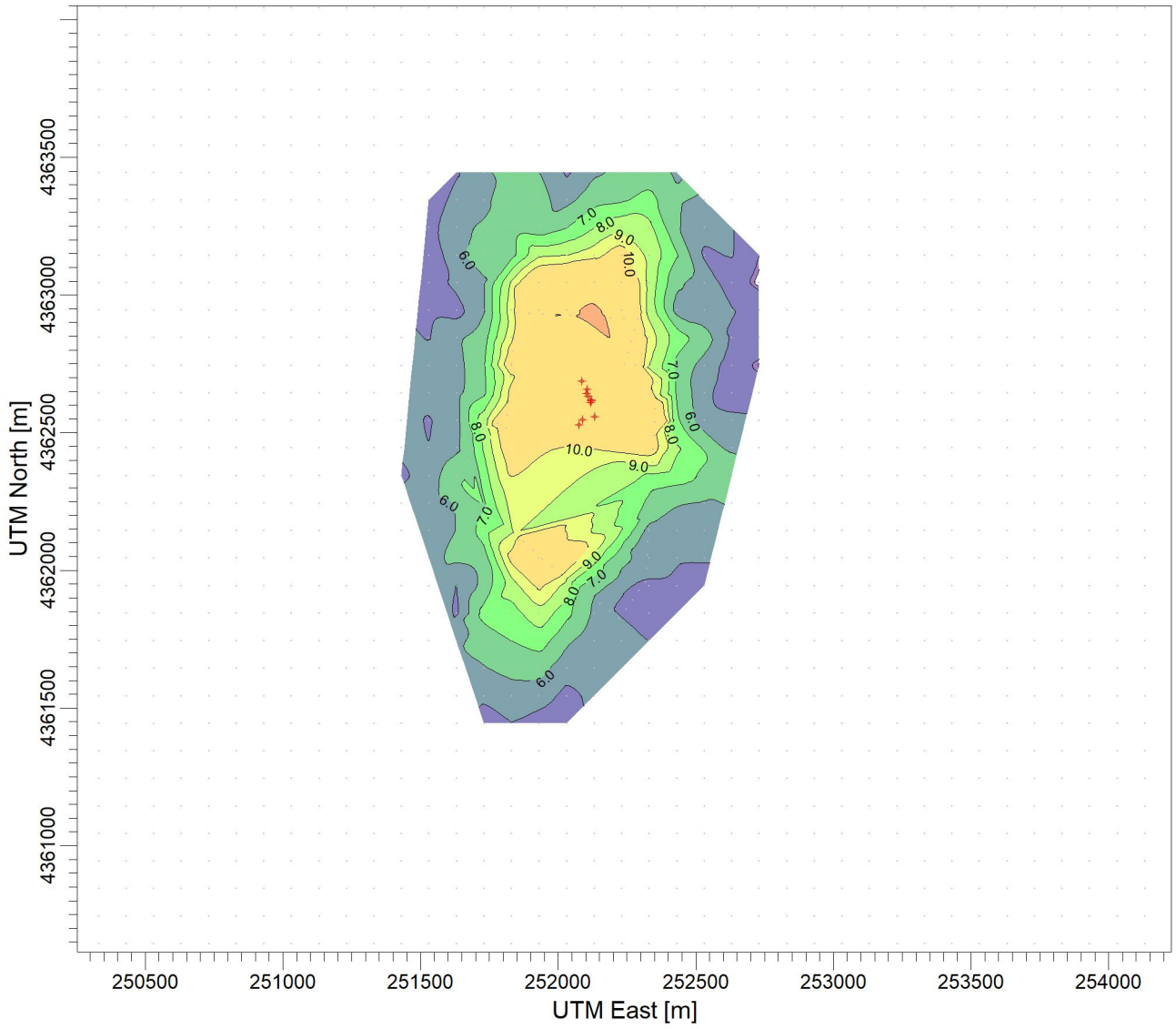
PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 1 YEARS FOR SOURCE GROUP: ALL ug/m^3

Max: 1.339 [ug/m^3] at (251942.23, 4362040.63)

COMMENTS:	SOURCES: **16**	COMPANY NAME:	
	RECEPTORS: **9466**	MODELER: **Environmental Resources Management**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:10,000 0 0.3 km	
	MAX: **1.339 ug/m^3**		PROJECT NO.:

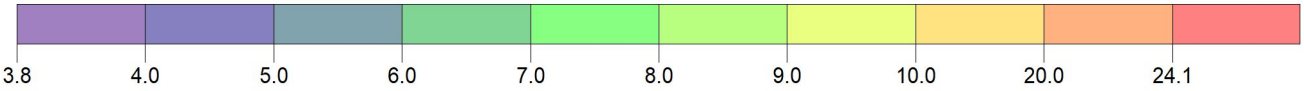
PROJECT TITLE:

Prevention of Significant Deterioration Application
PM10 24-Hour PSDI - Worst Case Year 2018



PLOT FILE OF HIGH 2ND HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

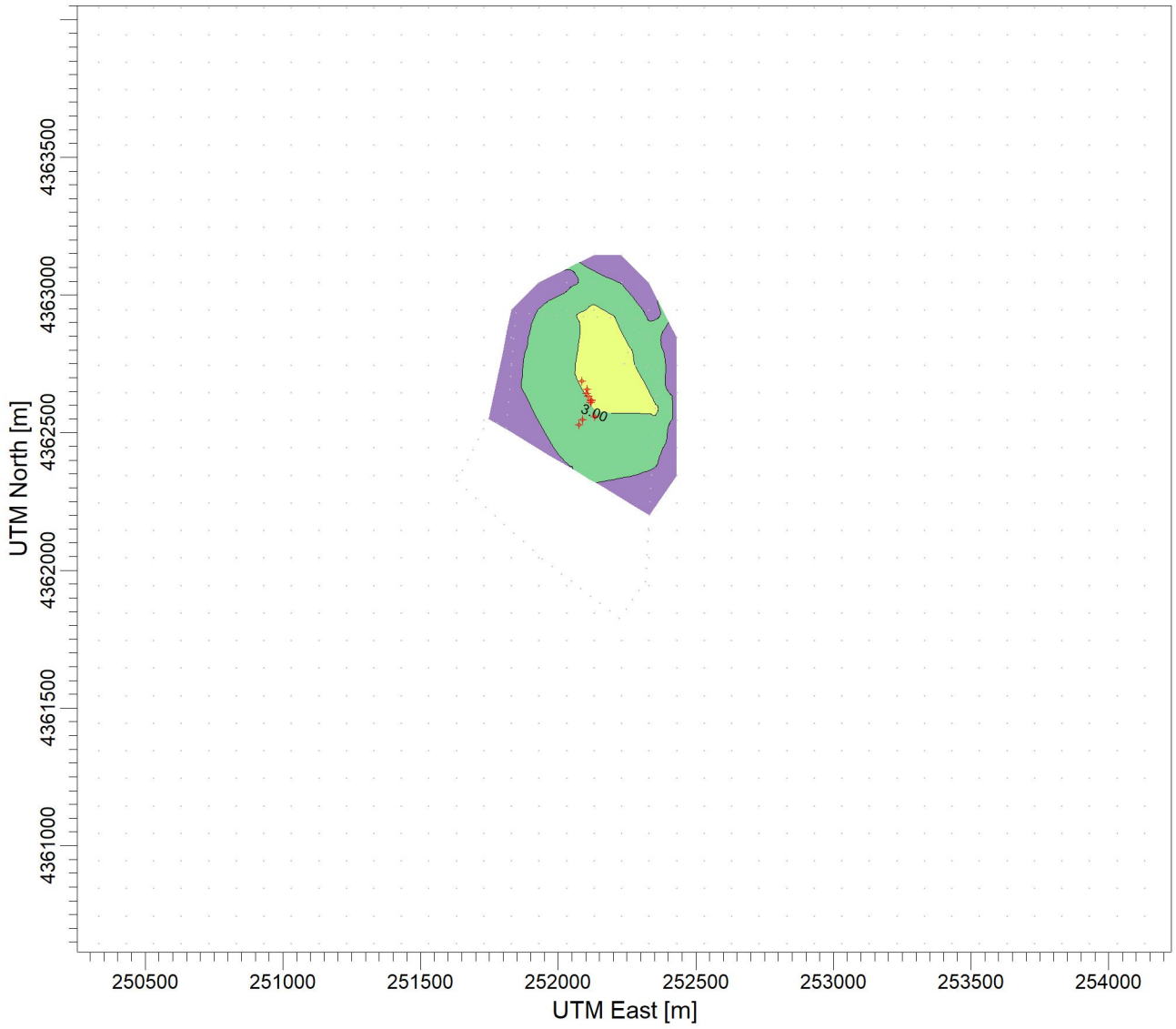
Max: 24.1 [ug/m^3] at (252141.07, 4362920.66)



COMMENTS:	SOURCES: **377**	COMPANY NAME:	
	RECEPTORS: **9466**	MODELER: **Environmental Resources Management**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:25,000 (0 — 1 km)	
	MAX: **24.1 ug/m^3**		PROJECT NO.:

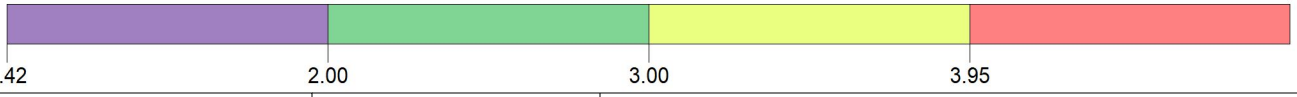
PROJECT TITLE:

Prevention of Significant Deterioration Application
PM10 Annual PSDI - Worst Case Year 2021



PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 1 YEARS FOR SOURCE GROUP: ALL ug/m^3

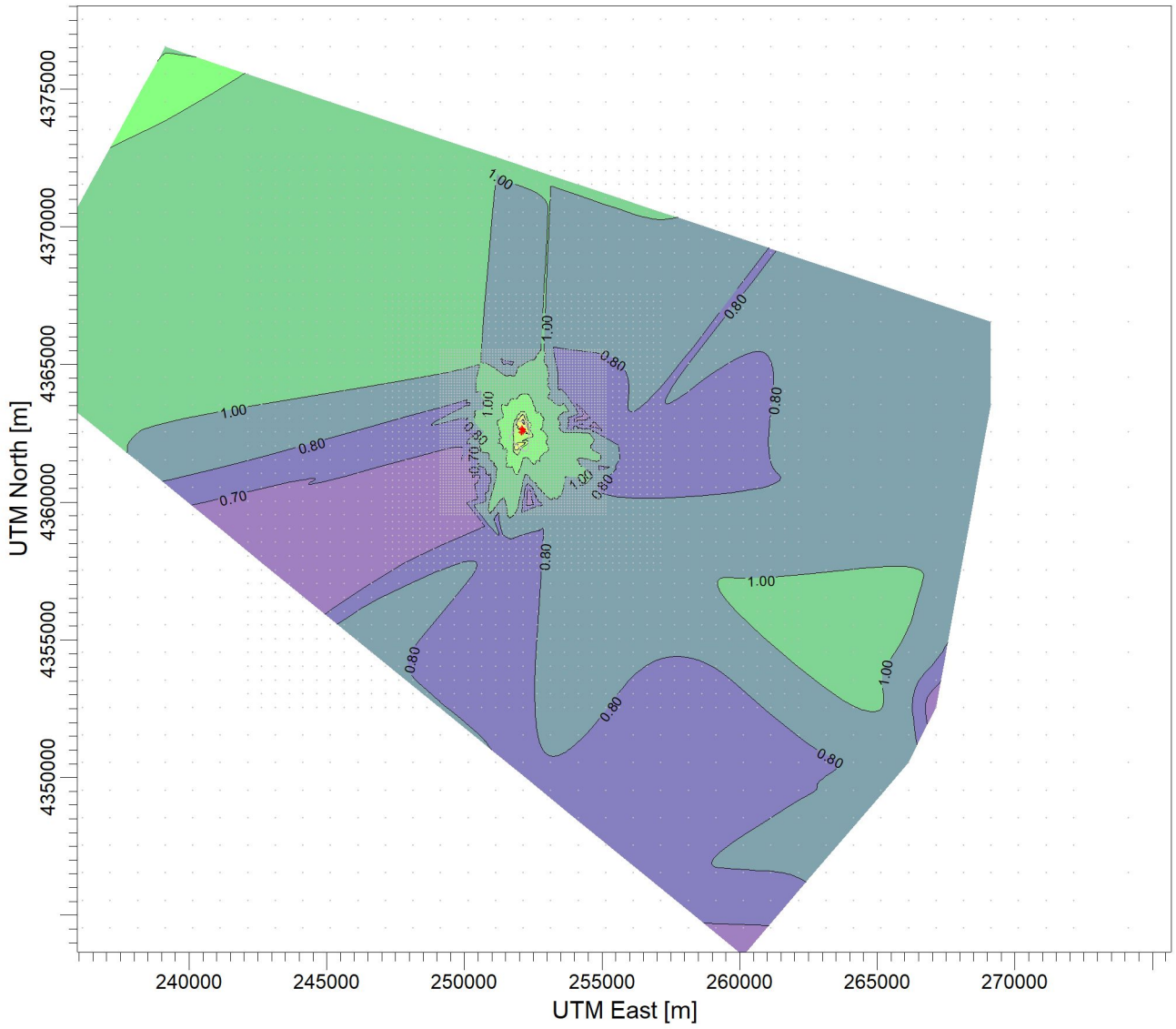
Max: 3.93 [ug/m^3] at (252241.53, 4362750.41)



COMMENTS:	SOURCES: **377**	COMPANY NAME:	
	RECEPTORS: **9466**	MODELER: **Environmental Resources Management**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:25,000 (0 — 1 km)	
	MAX: **3.93 ug/m^3**		PROJECT NO.:

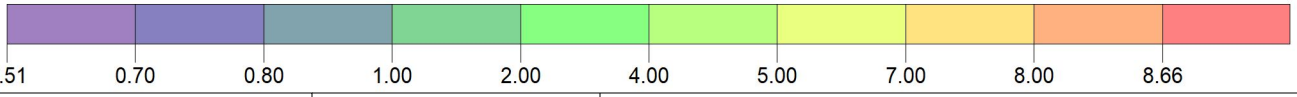
PROJECT TITLE:

Prevention of Significant Deterioration Application
PM2.5 24-Hour PSDI - Worst Case Year 2021



PLOT FILE OF 2ND-HIGHEST MAX DAILY 24-HR VALUES AVERAGED OVER 1 YEARS FOR SOURCE GROUP: ALL ug/m^3

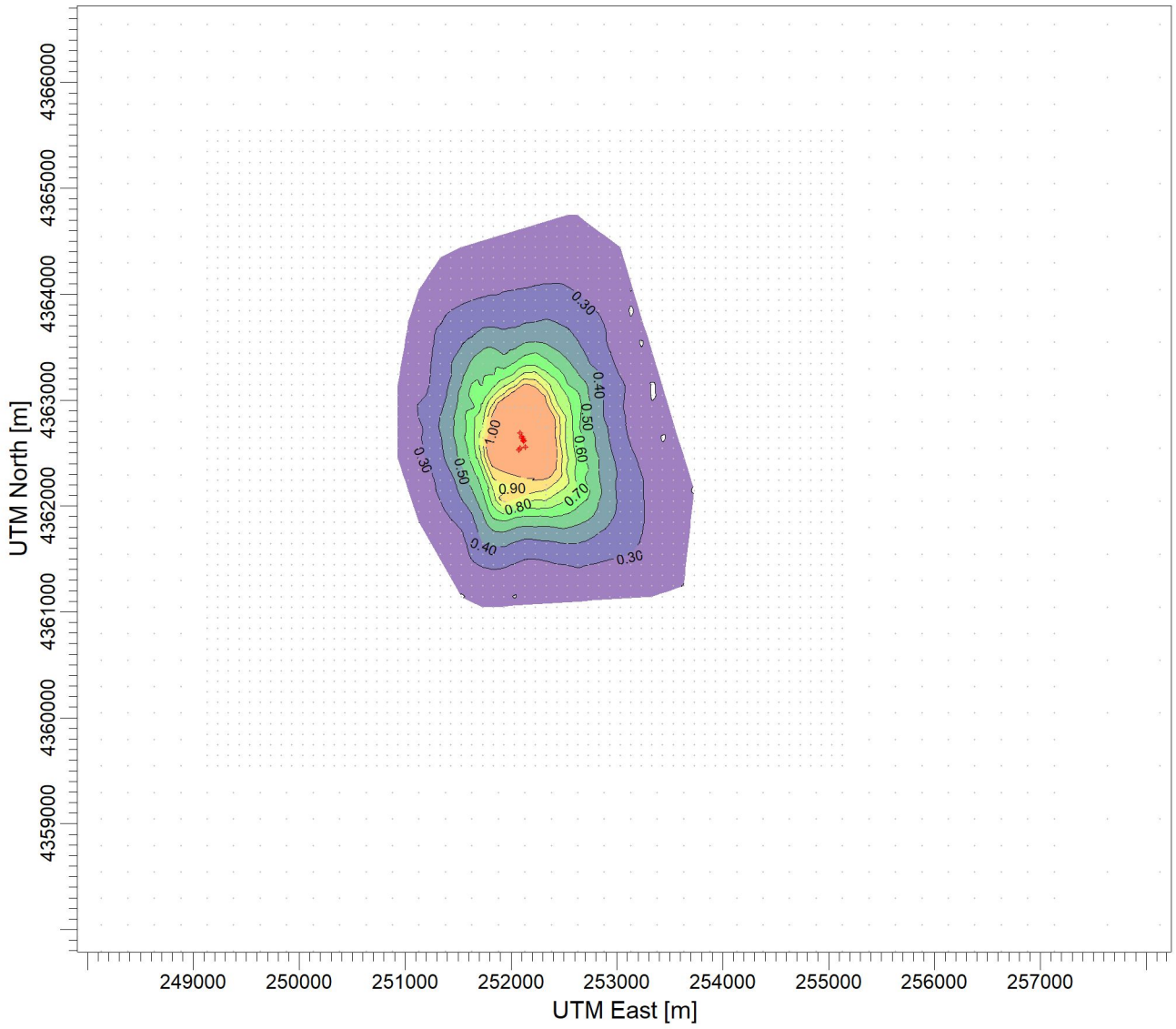
Max: 8.64 [ug/m^3] at (252091.96, 4362923.09)



COMMENTS:	SOURCES: **206**	COMPANY NAME:	
	RECEPTORS: **9466**	MODELER: **Environmental Resources Management**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:250,000 0 5 km	
	MAX: **8.64 ug/m^3**		PROJECT NO.:

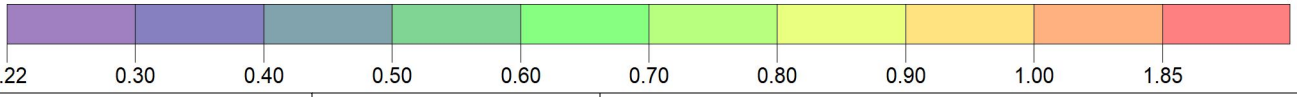
PROJECT TITLE:

Prevention of Significant Deterioration Application
PM2.5 Annual PSDI - Worst Case Year 2021



PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 1 YEARS FOR SOURCE GROUP: ALL ug/m^3

Max: 1.84 [ug/m^3] at (252141.07, 4362920.66)



COMMENTS:	SOURCES: **206**	COMPANY NAME:	
	RECEPTORS: **9466**	MODELER: **Environmental Resources Management**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:65,000 0 2 km	
	MAX: **1.84 ug/m^3**		PROJECT NO.:

Attachment 5

Comparison of Hypothetical Unity AERMOD Concentrations (Airport vs Site Surface Characteristics)

Attachment 5

Comparison of Hypothetical Unity AERMOD Concentrations - Airport vs Site Surface Characteristics

In order to assess how sensitive the AERMOD predicted concentrations are to the surface characteristics that were used to process the meteorological data, AERMET was used to process the meteorological data into two data sets. One relies on surface characteristics based on the meteorological station location at the airport. The second set of meteorological data was produced using AERMET and surface characteristics based on a representative location of the site. AERMOD simulations used a unit emission rate for the WESP stack (HE01) and the melting furnace stack (IMF01), assuming SO_2 is emitted. A unit emission rate is equivalent to an emission rate of 1 g/s. These two stacks have relatively large emission rates and have larger release heights, thus they are expected to have higher concentrations covering a larger spatial area around the facility.

Maximum high-1st-high concentrations based on surface characteristics of both the airport and the project site for 1-hour, 24-hour and annual averages are predicted and compared.

Comparison of AERMOD SO_2 Concentrations (Airport vs Site Surface Characteristics)

Source	Averaging Period	Maximum AERMOD Concentration (Airport surface characteristics)[1] (µg/m³)	Maximum AERMOD Concentration (Site surface characteristics)[1] (µg/m³)
IMF01	1-Hour	6.49	6.50
	24-Hour	1.00	0.96
	Annual	0.12	0.12
HE01	1-Hour	5.96	6.09
	24-Hour	0.81	0.68
	Annual	0.07	0.08

[1] Averages are maximum high-first-high values

The results of this analysis are shown in the table above and indicate no significant change in the predicted concentrations based on either the airport and project site surface characteristics.

Appendix C - BACT Evaluation

TABLE OF CONTENTS

C.0 BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

ROCKWOOL has compiled this voluntary BACT Assessment to document that the sources modified in the air permit application meet the BACT technologies included in R14-0037. In general, there are two (2) types of changes included in this BACT assessment. The first type of modification includes minor changes to selected equipment sizing where selected BACT technology is not impacted. These sources are noted for inclusion in Section C.2. The second is the inclusion of a top-down BACT approach for sources added to the RAN facility. These are discussed is Section C.3.

C.1 BACT ANALYSIS PROCESS

BACT is defined in 45 CSR 14 as:

> *Best available control technology (BACT) means an emissions limitation (including a visible emissions standard) based on the maximum degree of reduction for each regulated NSR pollutant which would be emitted from any proposed major stationary source or major modification which the Secretary, on a case-by-case basis, taking into account energy, environmental and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any federally enforceable emissions limitations or emissions limitations enforceable by the Secretary. If the Secretary determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment work practice, operational standard or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means which achieve equivalent results.*

Federal guidance on BACT requires an evaluation that follows a "top down" approach, as described in the New Source Review Workshop Manual[1] issued by the United States Environmental Protection Agency (USEPA) in 1990. The five basic steps of a top-down BACT analysis are:

Step 1: Identify potential control technologies;
Step 2: Eliminate technically infeasible options;
Step 3: Rank remaining control technologies by control effectiveness;
Step 4: Evaluate the most effective controls and document results; and

[1] *New Source Review Workshop Manual Prevention of Significant Deterioration and Nonattainment Area Permitting*, EPA, Draft October 1990.

Step 5: Select BACT.

The first step is to identify potentially "available" control options for each emission unit and for each pollutant under review. Available options consist of a comprehensive list of those technologies with a potentially practical application to the emissions unit in question. The list includes lowest achievable emission rate (LAER) technologies, innovative technologies, and controls applied to similar source categories. Reasonably available control technology (RACT), State regulations, and federal regulations were reviewed as a starting point for potential BACT limits.

For this analysis, the following sources were investigated to identify potentially available control technologies:

- USEPA's RACT/BACT/LAER Clearinghouse (RBLC) database;
- USEPA's New Source Review (NSR) website;
- In-house experts;
- Technical books and articles;
- State permits issued for similar sources that have not been entered into the RBLC;
- Vendor quotes and communications with control device equipment manufacturers;
- Guidance documents referenced within this application; and
- Proposed and existing New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP), including Maximum Achievable Control Technology (MACT).

After identifying potential technologies, the second step is to eliminate technically infeasible options from further consideration. To be considered feasible, a technology must be both available and applicable. In this step, technical arguments for eliminating a technology from further consideration must be clearly documented based on physical, chemical, engineering, and source-specific factors related to safe and successful use of the controls.

The third step is to rank the technologies not eliminated in the second step in order of descending control effectiveness for each pollutant of concern. If the highest ranked technology is proposed as BACT, it is not necessary to perform any further technical or economic evaluation. Potential adverse impacts must still be identified and evaluated.

The fourth step entails an evaluation of energy, environmental, and economic impacts for determining a final level of control. The evaluation begins with the most stringent control option and continues until a technology under consideration cannot be eliminated based on adverse energy, environmental, or economic impacts. The economic or "cost-effectiveness" analysis is conducted in

a manner consistent with USEPA's Office of Air Quality Planning and Standards (OAPQS) Control Cost Manual, Sixth Edition and subsequent revisions.

The fifth and final step is to select as BACT the emission limit from application of the most effective of the remaining technologies under consideration for each pollutant of concern. BACT must be no less stringent than the level of control required by any applicable NSPS and NESHAP or State regulatory standards applicable to the emission units included in this permit application.

C.2 BACT DETERMINATION FOR MODIFIED SOURCES

Various sources contained within permit application are being modified to update unit sizing. These changes in unit sizing have no impact on the selection of BACT technology as reflected in R14-0037. For the sources listed below, ROCKWOOL submits that there are no BACT implications.

- CO-AB: Curing Oven Afterburner (Include Update)
- CM03: Natural Gas Boiler 1
- CM04: Natural Gas Boiler 2
- EFP1: Emergency Fire Pump

C.3 BACT DETERMINATION FOR ADDED SOURCES

Vent Emissions from Material Delivery, Handling, Storage, and Transport Operations - Filterable PM, PM_{10}, and $PM_{2.5}$

A BACT analysis is presented below for emissions from material handling vents associated with material handling, storage, and transfer contained within Building 220, identified as IMF17 in the modification application. These activities include loading raw materials into a hopper, transferring materials on conveyors, loading materials into silos, and performing crushing and sizing operations. While these added sources do not trigger a formal BACT reappraisal, the following is a demonstration of why the chosen control technologies are BACT.

BACT Floor

Per 45 CSR 07, the facility shall not emit filterable PM into the open air from any process source operation greater than 20 percent opacity. Emission limits for each source are summarized in Attachment O.

The requirements of 40 CFR Part 60, Subpart OOO apply to certain storage silos, building vents, and conveyor transfer points. In accordance with this regulation, emissions from the building vents and storage bins must not exceed 7 percent opacity, while the conveyor transfer points must not exceed a PM emission rate of 0.014 gr/dscf.

Step 1 – Identify Potential Control Technologies

Control efficiencies for potentially applicable technologies are shown in the table below.

Control Type	Estimated $PM/PM_{10}/PM_{2.5}$ Control Efficiency
Enclosed material handling	80%
Water sprays or wet suppression	Varies
Fabric filter (baghouse or bin vent filter)	95-99+% (As low as 0.001 gr/dscf)
Good housekeeping practices	Varies

- *Wind Screens and/or Enclosures* – The use of screen walls and other structures to shelter material handling operations from wind effects has been shown to provide a reduction in airborne dust from such operations
- *Water Sprays or Wet Suppression* – Fine mists of water applied to dust generating sources, such as bulk material drop points, reduce dust emissions by impacting small particulates with water. The wetted particulate becomes heavier and quickly settles out of the air, reducing airborne dust. Alternatively, material may be thoroughly wetted prior to handling, which suppresses the generation of dust when the material is disturbed.
- *Fabric Filter (Baghouse)* – Local collection hoods and fabric filters, or baghouses, are the industry standard for particulate controls and the most efficient means of removing varying sizes of particulate material. An additional advantage of using local collection hoods and baghouses is that air flows can be adjusted individually to accommodate changes in the dust loading. The best results are obtained when the fabric filter's velocity is controlled for the particular emission characteristics (air-to-cloth ratio) and providing additional capacity to handle the baghouse's cleaning cycle. The primary method of particle leakage is through pores in the filter that are not covered with the filter cake. The velocity of the exhaust through the pores is high, entraining both small and large particles. Once a filter cake forms, only a few of these pores exist.
- *Good Housekeeping Practices* – Good housekeeping practices are used in areas where it is difficult to feasibly implement other control technologies. Good housekeeping practices generally consist of activities such as the application of water or other chemicals to suppress dust from becoming airborne for unpaved roads, utilizing paved roads when possible, posting speed limits for trucks and vehicles while on-site, and sweeping to keep roadways free of dust.

Step 2 – Eliminate Technically Infeasible Options

Water Sprays or Wet Suppression

Water sprays and wet suppression are not suitable for control of the raw material and coal transfer and conveying emissions because the systems for material handling, transfer, and storage are designed for dry materials. Wet materials may clog equipment and create additional wear. Water sprays and wet suppression are technically infeasible and will not be considered further.

Step 3 – Rank Remaining Technically Feasible Control Options

1. Fabric filter and bin vent filter.
2. Fully Enclosed Material Handling Operations.
3. Good housekeeping practices.

Step 4 – Evaluate Remaining Control Technologies

Fabric Filter or Bin Vent Filter

The most efficient and effective control devices for filterable PM/PM_{10}/$PM_{2.5}$ emissions from material handling, storage, and transfer are fabric filters and bin vent filters. Fabric filters or bin vent filters will be used to reduce particulate emissions from the mixing, crushing, and two (2) significant conveyor transfer points.

Fully Enclosed Material Handling Operations

Fully Enclosed material handling operations are effective at blocking wind, which both entrains and carries dust and particulate away from the source. Material Handling operations are conducted indoors in Building 220. The building entry/exit ways will be kept closed during normal operations. Emissions will be released indoors, allowing a majority of the particulate emissions to settle inside. Based upon guidance issued by WVDAQ in the G30-D general permit, 80 percent of emissions generated indoors are estimated as settling out within the fully enclosed building.

Good Housekeeping Practices

Good housekeeping practices will also be applied to material handling operations. Process and storage areas and other surfaced areas will be periodically swept to remove dust.

Step 5 – Compliance with BACT

ROCKWOOL has identified the combination of fully enclosed material handling operations and good housekeeping practices within B220 as BACT for controlling PM/PM_{10}/$PM_{2.5}$ emissions from material delivery operations. For the mixing, crushing, and B220 conveyors 1 and 2, filters are BACT. ROCKWOOL will comply with NSPS Subpart OOO by demonstrating the visible emissions limits are met at the entry/exit points within B220. The control devices, BACT emission

limits, and compliance demonstration methods are summarized in Attachment O for each emission source.