IPR FILE INDEX

Applicant : ROXUL USA, Inc.
Facility : RAN Facility

Plant ID No.: 037-00108
Permit No.: R14-0037

Chronological Order - Add Index Pages As Necessary

Date	To	From	Subject
4/17/18	Jon McClung	ERM	E-mail w/ document outlining ERMs criteria and rationale for background monitor selection.
4/20/18	ERM	Jon McClung	E-mail w/ background monitor selection approval.
9/08/17	Jon McClung	ERM	E-mail w/ Air Dispersion Modeling Protocol
10/26/17	Jon McClung	ERM	E-mail w/ Air Dispersion Modeling Protocol Supplement
11/02/17	Jon McClung	ERM	E-mail w/ revised Air Dispersion Modeling Protocol
11/02/17	ERM	Jon McClung	E-mail w/ approval of Air Dispersion Modeling source inventory.
11/03/17	ERM	Jon McClung	E-mail w/ Air Dispersion Modeling Protocol approval letter.
11/21/17	ROXUL	Sandra Adkins	48-Hour Letter
11/27/17	Joe Kessler	EPA	Acknowledgment of Application Receipt.
11/28/17	Joe Kessler	ERM	E-mail w/ Q/G Summary
12/07/18	DAQ	Jeffrey Adels	Comment Letter
12/14/17	Joe Kessler	ERM	ROXUL Affidavit of Publication (copy via E-mail)
12/18/18	Joe Kessler	ERM	ROXUL Affidavit of Publication (original)
12/21/18	ROXUL	Joe Kessler	Completeness Determination
1/08/18	Jeffrey Adels	Joe Kessler	Response to Comment Letter
1/18/18	Joe Kessler	Andrea Stacy (NPS) Jeremy Ash (FS)	E-mails from National Park Service (NPS) and Forest Service (FS) confirming no AQRV Analysis Required for Class I Areas.
2/05/18	DAQ	ROXUL	Request for notification of any 3rd party request to release CBI.
2/05/18	Joe Kessler	ERM	Copy of ROXUL Brochure provided locally in Jefferson County.
2/22/18	ERM	Joe Kessler	E-mail of Pre-Draft Version of DRAFT Permit
3/02/18	ERM	Joe Kessler	E-mail of Revised Pre-Draft Version of DRAFT Permit
3/02/18	Joe Kessler	Jon McClung	Air Dispersion Modeling Report
3/05/18	Joe Kessler	ERM	E-mail w/ comments on Revised Pre-Draft Permit.
3/05/18	Joe Kessler	ROXUL	E-mail w/ letter amending CBI claims.
3/07/18	Joe Kessler	ERM	E-mail w/ information on binder storage tanks.
3/07/18	Joe Kessler	ERM	E-mail w/ information on N2O Generation.
3/07/18	ERM	Joe Kessler	E-mail of 2nd Revised Pre-Draft Version of DRAFT Permit
3/15/18	Joe Kessler	ROXUL	Class II VISCREEN Analysis
3/26/18	Joe Kessler	ERM	E-mail w/ corrections to typos/rounding errors (3/26) of permit limits and other minor comments (3/23 - see string).

Date	To	From	Subject
3/28/18	Various	Various	Other non-substantive or duplicative E-mail correspondence.
3/28/18	File	Joe Kessler	Draft Permit R14-0037, Preliminary Determination
3/28/18	Various	Sandra Adkins	Public Notice Documents

JRK
3/28/18

AIR QUALITY PERMIT NOTICE

Notice of Intent to Approve

Entire Document
NON-CONFIDENTIAL

On November 21, 2017, ROXUL USA, Inc. applied to the WV Department of Environmental Protection, Division of Air Quality (DAQ) for a permit to construct a mineral wool manufacturing facility located at the "Jefferson Orchards" site in Ranson, Jefferson County, WV at latitude 39.37754 and longitude -77.87844. The anticipated start-up date is October of 2019. A preliminary evaluation has determined that all State and Federal air quality requirements will be met by the proposed facility. The DAQ is providing notice to the public of its preliminary determination to issue the permit as R14-0037.

The following potential emissions will be authorized by this permit action: Particulate Matter less than 2.5 microns, 133.41 tons per year (TPY); Particulate Matter less than 10 microns, 153.19 TPY; (total) Particulate Matter, 250.87 TPY; Sulfur Dioxide, 147.45 TPY; Oxides of Nitrogen, 238.96 TPY; Carbon Monoxide, 71.40 TPY; Volatile Organic Compounds, 471.41 TPY; Sulfuric Acid Mist, 16.37 TPY; Total Hazardous Air Pollutants, 392.59 TPY, Greenhouse Gases (CO_2e), 152,935 TPY.

The West Virginia Department of Environmental Protection and USEPA regulations require that all pollutants that will be emitted "significantly" (as defined within 45CSR14) from a proposed construction of a "major stationary source" be controlled by "best available control technology" (as defined within 45CSR14), that emissions of all regulated air pollutants shall not cause or contribute to violations of either the primary or secondary national ambient air quality standards (NAAQS) nor any Class 1 or Class 2 air quality increments applicable in the area where the source is to be located, or elsewhere; and the pollutant emissions from the proposed source must not adversely impact upon soils, vegetation, and visibility in the vicinity of the proposed plant site. A preliminary evaluation by the WV DAQ of the information submitted by ROXUL USA, Inc. indicates that the proposed facility - which is defined as a major stationary source - will meet all applicable state and federal air quality requirements including those stated above. Based upon this finding, the WV DAQ has made a preliminary determination to approve the application and issue permit R14-0037 for the construction and operation of the facility.

The following are the results of the Class1 and Class 2 ambient air quality increment analysis:

Class 1 Increment Analysis: The Class 1 increment analysis produced the following results: screening and modeling analysis showed that potential impacts in the following Class 1 areas were "insignificant" as defined by 45CSR14: Otter Creek Wilderness Area and the Dolly Sods Wilderness Area in West Virginia and the Shenandoah National Park in Virginia. This finding of "insignificant impacts" precluded a required full multi-source Class I increment analysis.

Class 2 Increment Analysis: The Class 2 increment analysis produced the following results (location of maximum impact): 97% at 8.7 $\mu g/m^3$ of $PM_{2.5}$ on a 24-hour basis; 46% at 1.83 $\mu g/m^3$ of $PM_{2.5}$ on an annual basis; 72% at 21.5 $\mu g/m^3$ of PM_{10} on a 24-hour basis; 24% at 4.1 $\mu g/m^3$ of PM_{10} on an annual basis; and 6% at 1.5 $\mu g/m^3$ of NO_2on an annual basis.

Written comments or requests for a public meeting must be received by the DAQ before 5:00 p.m. on Friday, April 27, 2018. A public meeting may be held if the Director of the DAQ determines that significant public interest has been expressed, in writing, or when the Director deems it appropriate.

The purpose of the DAQ's permitting process is to make a preliminary determination if the proposed construction will meet all State and Federal air quality requirements. The purpose of the public review process is to accept public comments on air quality issues relevant to this determination. Only written comments received at the address noted below within the specified time frame, or comments presented orally at a scheduled public meeting, will be considered prior to final action on the permit. All such comments will become part of the public record.

Joseph R. Kessler, PE
Engineer
WV Department of Environmental Protection
Division of Air Quality
601 57th Street, SE
Charleston, WV 25304
Telephone: 304/926-0499, ext. 1219
FAX: 304/926-0478

Additional information, including copies of the preliminary determination and draft permit, the permit application and all other supporting materials relevant to the permit decision, may be downloaded at:

www.dep.wv.gov/daq/Pages/NSRPermitsforReview.aspx.

Further, hard copies of the above listed documents, including the permit application, the preliminary determination, the draft permit, and supporting materials will be available for review at the DAQ's Charleston office (address given above) between the hours of 8:00 am and 5:00 pm Monday through Friday, holidays excluded. If unable to download the documents, they will also, by request, either be made available at one location in the region in which the source is proposed to be located or be provided within a reasonable time-frame by contacting the above referenced engineer.

Kessler, Joseph R

From: Adkins, Sandra K
Sent: Tuesday, March 20, 2018 3:04 PM
To: Legals
Cc: Kessler, Joseph R
Subject: RE: CORRECTION Publication of Class I Legal Ad for the WV Division of Air Quality

Thank you!

From: Legals [mailto:legals@spiritofjefferson.com]
Sent: Tuesday, March 20, 2018 2:55 PM
To: Adkins, Sandra K <Sandra.K.Adkins@wv.gov>
Subject: Re: CORRECTION Publication of Class I Legal Ad for the WV Division of Air Quality

Sandra,
I received the corrected notice. It will publish Mar. 28.

Sorry for the confusion yesterday. Normally, we would have been able to get it in, as the deadline IS Mondays before publication at 3:00 pm. But when we have people out on vacation, we try to get as much of the paper done as possible before that person leaves so that getting the paper out is less stressful for everyone involved. We normally do not have anyone else to fill in here for people when they are out on vacation, so it makes the week much more difficult, as we are already a very small staff trying to do multiple jobs.

Thank you,
Cara
On Mar 20, 2018, at 2:01 PM, Adkins, Sandra K <Sandra.K.Adkins@wv.gov> wrote:

> Hello,
> Mid-morning on March 19, I sent an email for a legal ad to publish in the Wed, March 21 edition. That afternoon, I was notified that the deadline is Friday prior to publication. The ad below is the one we would like published in Wednesday, March 28, 2018, issue. Please disregard the email that was sent yesterday. Thank you.
> Sandra
> DAQ Permitting
>
> Please publish the information below as a Class I legal advertisement (one time only) in the Wednesday, March 28, 2018, issue of the *Spirit of Jefferson*. Please let me know that this has been received and will be published as requested. Thank you.
> Send the invoice for payment and affidavit of publication to:
> **Pamela Kindrick**
> **WV Department of Environmental Protection**
> **DIVISION OF AIR QUALITY**
> **601- 57th Street**
> **Charleston, WV 25304**

Kessler, Joseph R

From: Adkins, Sandra K
Sent: Tuesday, March 27, 2018 11:35 AM
To: Hancock, Billie S; Glance, Jacob P
Cc: Kessler, Joseph R
Subject: DAQ Public Notice

Please see below the Public Notice for Draft Permit R14-0037 for ROXUL USA, Inc.'s RAN Facility to be located in Jefferson County.

The notice will be published in the *Spirit of Jefferson* on Wednesday, March 28, 2018, and the thirty day public comment period will end on Friday, April 27, 2018.

AIR QUALITY PERMIT NOTICE

Notice of Intent to Approve

On November 21, 2017, ROXUL USA, Inc. applied to the WV Department of Environmental Protection, Division of Air Quality (DAQ) for a permit to construct a mineral wool manufacturing facility located at the "Jefferson Orchards" site in Ranson, Jefferson County, WV at latitude 39.37754 and longitude -77.87844. The anticipated start-up date is October of 2019. A preliminary evaluation has determined that all State and Federal air quality requirements will be met by the proposed facility. The DAQ is providing notice to the public of its preliminary determination to issue the permit as R14-0037.

The following potential emissions will be authorized by this permit action: Particulate Matter less than 2.5 microns, 133.41 tons per year (TPY); Particulate Matter less than 10 microns, 153.19 TPY; (total) Particulate Matter, 250.87 TPY; Sulfur Dioxide, 147.45 TPY; Oxides of Nitrogen, 238.96 TPY; Carbon Monoxide, 71.40 TPY; Volatile Organic Compounds, 471.41 TPY; Sulfuric Acid Mist, 16.37 TPY; Total Hazardous Air Pollutants, 392.59 TPY, Greenhouse Gases (CO_2e), 152,935 TPY.

The West Virginia Department of Environmental Protection and USEPA regulations require that all pollutants that will be emitted "significantly" (as defined within 45CSR14) from a proposed construction of a "major stationary source" be controlled by "best available control technology" (as defined within 45CSR14), that emissions of all regulated air pollutants shall not cause or contribute to violations of either the primary or secondary national ambient air quality standards (NAAQS) nor any Class 1 or Class 2 air quality increments applicable in the area where the source is to be located, or elsewhere; and the pollutant emissions from the proposed source must not adversely impact upon soils, vegetation, and visibility in the vicinity of the proposed plant site. A preliminary evaluation by the WV DAQ of the information submitted by ROXUL USA, Inc. indicates that the proposed facility - which is defined as a major stationary source - will meet all applicable state and federal air quality requirements including those stated above. Based upon this finding, the WV DAQ has made a preliminary determination to approve the application and issue permit R14-0037 for the construction and operation of the facility.

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Class 1 Increment Analysis: The Class 1 increment analysis produced the following results: screening and modeling analysis showed that potential impacts in the following Class 1 areas were "insignificant" as defined by 45CSR14: Otter Creek Wilderness Area and the Dolly Sods Wilderness Area in West Virginia and the Shenandoah National Park in Virginia. This finding of "insignificant impacts" precluded a required full multi-source Class I increment analysis.

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Written comments or requests for a public meeting must be received by the DAQ before 5:00 p.m. on Friday, April 27, 2018. A public meeting may be held if the Director of the DAQ determines that significant public interest has been expressed, in writing, or when the Director deems it appropriate.

The purpose of the DAQ's permitting process is to make a preliminary determination if the proposed construction will meet all State and Federal air quality requirements. The purpose of the public review process is to accept public comments on air quality issues relevant to this determination. Only written comments received at the address noted below within the specified time frame, or comments presented orally at a scheduled public meeting, will be considered prior to final action on the permit. All such comments will become part of the public record.

Joseph R. Kessler, PE
Engineer
WV Department of Environmental Protection
Division of Air Quality
601 57th Street, SE
Charleston, WV 25304
Telephone: 304/926-0499, ext. 1219
FAX: 304/926-0478

Additional information, including copies of the preliminary determination and draft permit, the permit application and all other supporting materials relevant to the permit decision, may be downloaded at:

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Further, hard copies of the above listed documents, including the permit application, the preliminary determination, the draft permit, and supporting materials will be available for review at the DAQ's Charleston office (address given above) between the hours of 8:00 am and 5:00 pm Monday through Friday, holidays excluded. If unable to download the documents, they will also, by request, either be made available at one location in the region in which the source is proposed to be located or be provided within a reasonable time-frame by contacting the above referenced engineer.

Kessler, Joseph R

From:	Adkins, Sandra K
Sent:	Tuesday, March 27, 2018 11:36 AM
To:	vyas.himanshu@epa.gov; duke.gerallyn@epa.gov; ken.cammarato@roxul.com; mette.drejstel@rockwool.com; grant.morgan@erm.com
Cc:	Durham, William F; McKeone, Beverly D; McCumbers, Carrie; Hammonds, Stephanie E; Kessler, Joseph R; Taylor, Danielle R; Rice, Jennifer L; Kindrick, Pamela K; jash@fs.fed.us; andrea_stacy@nps.gov; Tephabock, Brian S; Scanlan, Christopher P; Kreger, Joseph A
Subject:	WV Draft Permit R14-0037 for ROXUL USA, Inc.; RAN Facility
Attachments:	R14-0037.pdf; R14-0037_preliminary determination.pdf; Attachment B - Modeling Report.pdf; notice.pdf

Please find attached the Draft Permit R14-0037, Preliminary Determination, Attachment B – Modeling Report, and Public Notice for ROXUL USA, Inc.'s RAN Facility to be located in Jefferson County.

The notice will be published in the *Spirit of Jefferson* on Wednesday, March 28, 2018, and the thirty day comment period will end on Friday, April 27, 2018.

Should you have any questions or comments, please contact the permit writer, Joe Kessler, at 304 926-0499 x1219.

Kessler, Joseph R

From:	Kessler, Joseph R
Sent:	Tuesday, March 27, 2018 11:42 AM
To:	Kessler, Joseph R
Subject:	WV Air Permit Public Notice
Attachments:	notice.pdf

On November 21, 2017, ROXUL USA, Inc. applied to the WV Department of Environmental Protection, Division of Air Quality (DAQ) for a permit to construct a mineral wool manufacturing facility located at the "Jefferson Orchards" site in Ranson, Jefferson County, WV. Pursuant to WV Legislative Rule 45CSR14, Section 17.5 (see below), you are being provided with the public notice (attached) pertaining to the DAQ's preliminary determination to issue the permit as R14-0037.

§45-14-17.5
The Secretary shall send a copy of the advertisement to the applicant, to the Administrator, and to officials and agencies having cognizance over the location where the proposed construction would occur as follows: any other State or local air pollution control agencies, the chief executives of the city and county where the source would be located; any comprehensive regional land use planning agency, any State and Federal Land Managers whose lands may be affected by emissions from the source or modification.

Please forward this e-mail, if needed, to someone more appropriate in your organization (mayor, county clerk, head of air permitting, etc.) if you believe it is appropriate.

If you have any questions or comments concerning this matter, please feel free to contact me.

Thank You,

Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x1219
Fax: (304) 926-0478
Joseph.r.kessler@wv.gov

west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone 304/926-0475

Austin Caperton, Cabinet Secretary
dep.wv.gov

Pursuant to §45-14-17.2, the Division of Air Quality presents the

PRELIMINARY DETERMINATION/FACT SHEET

for the

CONSTRUCTION

of

ROXUL USA, Inc.'s
RAN Facility

proposed to be located in

Ranson, Jefferson County, WV.

Entire Document
NON-CONFIDENTIAL

Permit Number: R14-0037
Facility Identification Number: 037-00108

Date: March 8, 2018

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BACKGROUND INFORMATION

Application No.:	R14-0037
Plant ID No.:	037-00108
Applicant:	ROXUL USA, Inc.
Facility Name:	RAN Facility
Location:	Ranson, Jefferson County
SIC/NAICS Code:	3296/327993
Application Type:	Major Source Construction
Received Date:	November 21, 2017
Engineer Assigned:	Joseph R. Kessler, PE
Fee Amount:	$14,500
Date Received:	November 28, 2017
Complete Date:	December 21, 2017
Due Date:	June 19, 2018
Applicant Ad Dates:	November 22, 2017
Newspaper:	*Spirit of Jefferson*
UTM's:	Easting: 252.06 km Northing: 4,362.62 km Zone: 18
Latitude/Longitude:	39.37754/-77.87844
Description:	Construction of a new mineral wool manufacturing facility defined as a major stationary source and subject to Prevention of Significant Deterioration (PSD) permitting requirements.

On November 21, 2017, ROXUL USA, Inc. (ROXUL), a subsidiary of the Rockwool Group, submitted a permit application to construct a new mineral wool manufacturing facility at the "Jefferson Orchards" site in Ranson, Jefferson County, WV. The proposed facility is, pursuant to 45CSR14, Section 2.43, defined as a "major stationary source" and is, therefore, required to undergo PSD review according to the requirements of 45CSR14. Based on DAQ procedure, the permit application will also be concurrently reviewed under the WV minor source program administered under 45CSR13. The proposed annual potential-to-emit (PTE) of the facility in tons per year (TPY) is given in the following table:

Table 1: Facility-Wide Annual PTE

Pollutant	PTE (TPY)	Pollutant	PTE (TPY)
CO	71.40	VOCs	471.41
NO_x	238.96	H_2SO_4	16.37
$PM_{2.5}$(1)	133.41	Lead	2.00e-04
PM_{10}(1)	153.19	CO_{2e}	152,934.82
PM(1)	250.87	Total HAPs	392.59
SO_2	147.45		

(1) Including condensables.

The following document will outline the DAQ's preliminary determination that the construction of ROXUL's RAN Facility will meet the emission limitations and conditions set forth in the DRAFT permit and will comply with all currently applicable state and federal air quality rules and standards.

PUBLIC REVIEW PROCEDURES

Public review procedures for a new major construction application dual-reviewed under 45CSR13 and 45CSR14 require action items at the time of application submission and at the time a preliminary determination/draft permit is prepared by the DAQ. The following details compliance with the applicable rules and accepted procedures for public notification with respect to permit application R14-0037.

Submission of Confidential Business Information

ROXUL claimed various information submitted in the permit application as Confidential Business Information (CBI). To comply with the requirements of submitting CBI, ROXUL submitted a redacted copy (and subsequently revised such as needed) of the application that does not reveal any of the data claimed CBI. This redacted version of the permit application is the version made available to the public for review (pages with redacted information are appropriately labeled and the information redacted is indicated as a whited out area or, if in tabular form, is noted as "claimed CBI"). Additionally, ROXUL submitted a CBI cover sheet that provides information concerning the submission of CBI including contact information and justification for claims of confidentiality (Attachment Q of the permit application [pp. 428]).

Actions Taken at Application Submission

Pursuant to §45-13-8.3 and §45-14-17.1, ROXUL placed a Class I legal advertisement in the following newspaper on the specified date notifying the public of the submission of a permit application:

- *Spirit of Jefferson* (November 22, 2017).

The DAQ sent a notice of the application submission and a link to the electronic version of the redacted permit application to the following parties:

- The U.S. Environmental Protection Agency (USEPA) Region 3 [§45-14-13.1] - (November 27, 2017);

- The National Park Service [§45-14-13.2] - (November 29, 2017); and

- The US Forest Service [§45-14-13.2] - (November 29, 2017).

The redacted permit application was also made available for review on DAQ's website (electronic version) and at the DAQ Headquarters in Charleston (hard copy).

Actions Taken at Completion of Preliminary Determination

Pursuant to §45-13-8.4 and §45-14-17.4, upon completion (and approval) of the preliminary determination and draft permit, a Class 1 legal advertisement will be placed in the following newspaper stating the DAQ's preliminary determination regarding R14-0037:

- *Spirit of Jefferson.*

Pursuant to §45-13-8.7 and §45-14-13.3, a copy of the preliminary determination, draft permit, and public notice shall be forwarded to USEPA Region 3, the National Park Service (NPS) and the US Forest Service (USFS). A non-confidential copy of the application, complete file, preliminary determination and draft permit shall be available for public review during the public comment period at the DAQ Headquarters in Charleston and on DAQ's website (if unable to download the documents, they will also, by request, either be made available at one location in the region in which the source is proposed to be located or be provided within a reasonable time-frame by contacting the DAQ). Additionally, pursuant to §45-14-17.5, a copy of the public notice will be sent to the mayor of Ranson, WV, the County Clerk of Jefferson County, WV, the Virginia Department of Environmental Quality (VDEQ), and the Maryland Department of the Environment (MDE). All other requests by interested parties for information relating to permit application R14-0037 shall be provided upon request.

Actions Taken at Completion of Final Determination

Pursuant to §45-14-17.7, and 17.8 upon reaching a final determination concerning R14-0037, the DAQ shall prepare a "Final Determination" document make such determination available for review at DAQ Headquarters in Charleston and on DAQ's website (and available to any party upon request).

DESCRIPTION OF PROPOSED FACILITY

Facility Overview

Roxul has proposed to construct and operate a new mineral wool insulation manufacturing facility at the "Jefferson Orchards" site in Ranson, Jefferson County, WV (approximately 5.30 miles southeast of Martinsburg, WV). The proposed facility will consist of a 460,000 ft^2 manufacturing plant situated on an estimated 130 acres. The plant will produce stone wool insulation for building insulation, customized solutions for industrial applications, acoustic ceilings and other applications.

An overview of the processes with the potential to produce air emissions associated with the proposed facility are as follows:

- One Mineral Wool Line including;
    - Raw Material Handling Sources (both raw materials and energy materials);
    - Coal Milling;
    - Melting Furnace Portable Crusher;
    - Melting Furnace;
    - Cooling Towers;
    - Wool Spinning;
    - Binder and De-Dust Oil Application and Storage; and
    - Dry Ice Cleaning (CO_2 emissions only);
    - Fleece Application;
    - Curing and Cooling;
    - Cutting Section;
    - Stacking, Packing and Unit Load; and
    - Recycling Plant.
- One Rockfon Line (ceiling tiles) including cutting and edging operations, paint application, and drying ovens;
- Miscellaneous operations and activities including boilers, heaters, a fire pump engine, and fuel storage; and
- Paved haulroads and mobile work areas.

Detailed Process Description

ROXUL provided a detailed process description in Section 2.0 of the permit application (pps. 8-25). The following detailed process description is taken from Section 2.0 with some summarizing and clarifying as needed by the writer.

Mineral Wool Line

The Mineral Wool Line will produce mineral wool insulation for residential, commercial, and industrial uses and also for off-line production of "Rockfon" ceiling tiles. Various types of insulating products can be produced with different densities, binder content, or dimensions to meet the requirements for various market sectors. Mineral wool (or "stone wool" as it is also referred to) is a natural product made partly from igneous rocks. Rock may be supplemented with recycled mineral wool and slag from the steel industry. The following types of mineral raw materials are typically used in stone wool production:

- Igneous rocks such as basalt/diabase, amphibolite and anorthosite;
- Slags such as blast furnace slag and converter slag;
- Dolomite and/or limestone; and
- Mineral additives, such as olivine sand and high alumina content materials such as bauxite, kaoline clay and aludross (by-product of the smelting process in the creation of aluminum from bauxite).

The mineral wool fibers are made from the stone raw materials (as listed above), binder, and de-dusting oil melted at very high temperatures (>2,700 °F/1,480 °C). The various raw materials used in the melting furnace are mixed in the correct ratio to achieve the required chemistry of the fibers. The manufacturing process consists of the following steps: material handling/charging, melting, spinning, curing, cooling, cutting, and packing. The following will be a more detailed discussion of these processes.

Mineral Wool Line: Raw Material Handling

Raw materials used in the manufacturing process will be delivered in bulk by truck and unloaded and transferred with a front-end loader into a building (B210) with three-sided concrete enclosures covered under a roof (a second similar building may be built in the future and designated B211). The middle of the building where the trucks unload is, however, uncovered. Raw materials may also be delivered to a separate 5,382 ft^2 outdoor stockpile (RMS) within a three-sided enclosure (no roof). From the outdoor storage pile, the material will be transferred to the charging building (B220) or B210/B211 with a front end loader.

From Building B210 or from the RMS, a front-end loader will feed the raw materials into a covered loading hopper (B215). The loading hopper feeds material onto a series of enclosed conveyors (transfer points IMF11 and IMF12 - controlled by a fabric filters IMF11-FF and IMF12-FF, respectively) to the charging building (B220), where all subsequent pre-melting raw material handling activities occur. Emissions from the fully enclosed charging building escape through two non-mechanical, uncontrolled roof vents (IMF17 and IMF18) on the building. The only substantive emissions sources in the charging building are the crusher and screen noted below.

A fraction of oversized raw material is directed, if required, to an indoor screen and crusher. This screen and crusher are each controlled by a fabric filter and vented inside the charging building. Rejected materials are sent to the appropriate partially enclosed reject bins (RM_REJ and S_REJ) that are located outside of the charging building. Ready materials are then distributed to individual raw material bins inside the building. From here, they are measured and dosed onto a belt scale conveyor to create a batch of charge material. The batch is conveyed into a bucket and then loaded into a mixer to create a homogenous charge. The mixer is kept closed and equipped with an add-on filter that vents inside of B220 during mixing.

Belt conveyors then transport the mixed charge to day bins in the furnace building (B300). Transfer points on conveyors are equipped with local de-dusting units that vent indoor or outdoor depending on the location. Transfer points with outdoor vents include IMF14, IMF15, IMF16. Each of these transfer points is controlled with a fabric filter (IMF14-FF, IMF15-FF, and IMF16-FF, respectively). Additionally, there is a vacuum system in Building 220 that is used to manually remove waste material from the floor and vents outside of the building (IMF21) through a fabric filter (IMF21-FF) .

Mineral Wool Line: Coal/Coke Material Handling

Coal (and occasionally petroleum coke - "pet coke"), along with natural gas, is used to provide energy to the Melting Furnace (IMF01). Coal or pet coke, in milled form and ready to use, is delivered to the site by truck and loaded by means of pneumatic transport from the powder transport truck into one of the three (3) outdoor storage silos (IMF03A through IMF03C) - each equipped with bin vent filters (IMF03A-FF through IMF03C-FF, respectively). The coal is transferred from the storage silos to the furnace building (B300) where it is stored in an indoor coal feed tank (IMF25) that is controlled with fabric filter (IMF25-FF).

For substitution of coal or pet coke, secondary combustible materials may sometime be used as an energy source. These include but are not limited to anodes and coke fines. Secondary combustible materials will be delivered to the site by truck and loaded into one of the coal storage silos or into the Filter Fines Day Silo/Secondary Energy Materials Silo (IMF07A, IMF07B - each silo can be used for either material) in the furnace building that are each controlled with a fabric filter (IMF07A-FF and IMF07B-FF, respectively).

Mineral Wool Line: Coal Milling

ROXUL will also have the option of bringing in unmilled coal or pet coke and sizing the material on-site. The coal/pet coke for on-site milling will be delivered in lump size by truck and unloaded at the partially enclosed (three-sided and roofed with a closeable bay door) coal bunker (B230). From the coal bunker the coal is loaded by a front-end loader into the partially enclosed (three-sided and covered) loading hopper (B231). This hopper feeds material onto a series of enclosed conveyors (transfer points IMF13 and IMF04 controlled by fabric filters IMF13-FF and IMF04-FF, respectively) that direct the material to a day bin inside the coal milling building (B235). The material transfer point within the fully enclosed B235 is controlled by a fabric filter and vented inside the building. There is also an uncontrolled transfer point inside B235 from a conveyer to the indoor mill feeding bin. The building B235 vents through a non-mechanical, uncontrolled roof vent on the building.

The milling will be done by a combined vertical coal mill and fluidized bed dryer equipped with a 6.00 mmBtu/hr natural gas-fired direct heating unit (IMF05). The combined exhaust from the dryer heater and the mill will be controlled by a baghouse and exhausted from a stack. Additionally, although not required to be used, dust generated from inside the milling building may be evacuated and sent to the Coal Milling De-Dusting Baghouse (IMF06/IMF06-BH). After milling, coal is pneumatically transported into the three (3) outdoor storage silos that are also used for delivered ready-to-use milled coal (IMF03A through IMF03C).

Mineral Wool Line: Melting Furnace Portable Crusher

Any diverted melt or melt from tapping of the Melting Furnace (large pieces of solid material produced by shutting the furnace down) will be crushed in a portable crusher and reused in the melting process. Prior to crushing, the recycled material will be stored in an approximately 20,000 ft^2 outdoor storage area. ROXUL has stated that this tapped material prior to crushing is of such a physical nature so as to limit any significant generation of fugitive matter from wind erosion and pile activity. From this storage area, the material will be loaded into the portable crusher by an end loader. The portable crusher operation will take place in a dedicated outside area (B170). The uncontrolled 150 tons per hour (TPH) crusher will be brought onsite periodically during the year and will not operate continuously. ROXUL is proposing to limit operation of the crusher to 540 hours per year. Crushed material will be stored in an approximately 19,375 ft^2 three-sided outdoor storage area.

Mineral Wool Line: Melting Operation

In the melting operation, raw materials are combined in a "cupola" - referred to here as the Melting Furnace (IMF01) - to produce the mineral wool strands used in the manufacturing process. During start-up, a 5.10 mmBtu/hr natural gas-fired Preheat Burner (IMF24) is used to warm the Melting Furnace baghouses to prevent condensation. Hot exhaust from the burner will indirectly heat the Melting Furnace baghouses before exhausting through the preheat burner stack. The indirect heat transfer will be done by a thermal oil system including an expansion tank which is used both for preheating transfer of energy and also to extract surplus heat for heat recovery. The Preheat Burner will operate for approximately two hours prior to the Melting Furnace startup. Once to temperature, the coal/pet coke and raw materials will then be added to the furnace to begin the melting process.

The melt process in the Melting Furnace is an oxidizing process, which operates with an excess of oxygen. The furnace has different burners utilizing various fuels (coal, natural gas, and oxygen injection). The burners are comparable to oxy-fuel burners.

The melting process is open to ambient building air with unrestricted air flow (i.e., there is no cover on the furnace). A "quench hood" is situated above the melter that is connected to an exhaust riser. The opening at the top of the melter allows for ambient air to be pulled into the riser, which facilitates an adequate temperature for a de-NO_x reaction to occur (typically 1,400-2,000 °F or 760-1,093 °C). As aqueous ammonia will be injected for a de-NOx reaction to occur, the Melting

Furnace has an "integrated" Selective Non-Catalytic Reduction (SNCR) technology system. Binder contained in the recycled wool can also contribute in the de-NO_x reaction, but is not relied upon for the control of NO_x.

Hot flue gas is used to preheat incoming combustion air to the Melting Furnace via heat exchangers situated at the outlet of the furnace. Flue gas is then directed to a baghouse to collect raw material fines. A second baghouse (IMF01-BH) in series is used for control of emissions of filterable particulate matter and is equipped with sorbent injection to control sulfur dioxide (SO_2), sulfuric acid (H_2SO_4) mist, hydrogen chloride (HCl), and hydrogen fluoride (HF) emissions. Carryover of raw materials fines that are collected in the first baghouse will be pneumatically conveyed to a receiving silo and day silo (Filter Fines Receiving Silo - IMF10, Filter Fines Day Silo - IMF07A) prior to reuse in the Melting Furnace. The silos vent to bin vent filters (IMF10-FF and IMF07A-FF) exhausting to the atmosphere.

As stated, de-sulfurization is applied for the control of sulfur oxides and acid gases in IMF01-BH. Sorbent material (e.g., hydrated lime as calcium hydroxide or similar) is delivered to the site by truck and loaded into an outdoor Sorbent Storage Silo (IMF08) equipped with a bin vent filter (IMF08-FF). Sorbent is transported in a closed system and injected into the flue gas prior to IMF01-BH as a filter media. Spent sorbent is stored in the Spent Sorbent Silo (IMF09) equipped with a bin vent filter (IMF09-FF) until it is emptied into a vacuum truck for off-site disposal.

During Melting Furnace operation, temperatures in the Melting Furnace reach approximately 3,000 °F (1,650 °C) and the resultant melt flows out of the furnace into Gutter Channels that are used to direct melt from the furnace into the Spinning Chamber (SPN). An exhaust is located above the Gutter Channels (GUT-EX) to remove heat from the area so as to lower the temperature in the working environment. This high temperature exhaust will be directed to the Wet Electrostatic Precipitator (WESP - Emission Point HE01).

Once the system is operating at a steady state, waste wool and filter fines from the process are recycled into the Melting Furnace along with stone raw materials. Tapping is an emptying of the furnace, where melt flows directly out of the furnace and into a collection area. The tapped melt can be crushed in the portable crusher and reused in the melting process. Tapping occurs when the line shuts down or as a result of an upset.

Mineral Wool Line: Cooling Towers

The Melting Furnace is cooled with a water jacket (water flow around the furnace in chambers designed to remove excess heat from the furnace). This water is then sent to the 1,321 gallon/min (gpm) Melting Furnace Cooling Tower (IMF02) where a series of heat exchangers will remove heat from the water. The Gutter Channels, which as stated above, are channels that direct melt to the Spinning Chamber, will be water cooled via a 308 gpm recirculating cooling tower (Gutter Cooling

Tower - HE02). Both cooling towers shall be wet-type and will utilize high-efficiency drift eliminators (0.001%) to reduce the escape of water vapor (with entrained particulate matter). Heat recovered from the cooling water systems will be used for building and process heat. Surplus heat will be rejected from the cooling water systems. To that end, a thermal oil system used for heat transfer will be used and require a 2,642 gallon Thermal Oil Tank - IMF (TK-TO3) and a 1,321 gallon Thermal Oil Expansion Tank - IMF (TK-TO4).

Mineral Wool Line: Wool Spinning

The melt flows out of the lower part of the furnace and is led to the Spinning Chamber (SPN) via the Gutter Channels. The Spinning Chamber is equipped with quick-rotating wheels onto which the melt is applied. The fibers are drawn from the wheels of the spinning machine by centrifugation combined with a powerful air stream that is blown into the Spinning Chamber. At the same time, a binding agent (to provide structural rigidity) and cooling water is added to the flow of fibers. Also, the material is sprayed with de-dusting oil to give it water-repellent properties and to reduce dust emissions in the factory from the finished products. Binder and water are dosed as small droplets through nozzles on the spinning machine. Fibers not recovered in the spinning process are directed to the Recycle Plant for re-use in the furnace. The binder-coated fibers are collected on a perforated surface (filter net). The fibers settle on the surface as a primary wool web, and air is sucked through the perforation by means of negative pressure in the chamber in a vertical direction. Exhaust from the Spinning Chamber will conditioned (e.g. with quenching or water spraying) prior to being sent to the WESP for control (Emission Point HE01).

Mineral Wool Line: Binder and De-Dust Oil Application and Storage

Binders will be mixed onsite, either as a batch or by in-line mixing. The binder raw materials (resin and other binder components) are delivered to the site via tank truck and unloaded into a series of 15,850 gallon storage tanks (resin tanks: TK-RS1 through TK-RS7) or delivered in drums/totes. The binder storage area consists of a series of tanks in a tank farm which is covered with a sheet roof but has no walls. The materials may be stored in temperature-controlled tanks equipped with heating and cooling as required. From the storage tanks, the components are either mixed as a batch in a mixing tank, or mixed in-line. Binder mixed in the 2,642 gallon Binder Mix Tank (TK-BM) is pumped to the 4,227 gallon Binder Circulating Tank (TK-BC) and from here to the 793 gallon Binder Day Tank (TK-BD) in the Furnace Building.

A separate 15,850 gallon De-dust Oil Storage Tank (TK-DO) is used for the de-dusting oil due to fire requirements. De-dusting oil is delivered in bulk by truck or in drums or in an intermediate bulk container (IBC) and unloaded into this storage tank. From TK-DO, the oil is pumped into a De-dust Oil Day Storage Tank (TK-DOD) in the furnace building and from there dosed into the spinning and wool collection process. The standard binder is a urea-modified phenolic resin which is cured during the mineral wool curing and cooling process. ROXUL proposes to use varying binder formulations as technology advances to produce formaldehyde-free resins.

Mineral Wool Line: Dry Ice Cleaning

For mineral wool products where product quality requirements necessitate additional cleaning of the perforated filter net, dry ice will be applied for cleaning. Dry ice pellets will be used for cleaning via blasting them onto the perforated filter net. A pressurized storage tank will feed liquid CO_2 to a pelletizer unit which will form dry ice pellets (solid CO_2). The system (DI) continuously produces dry ice pellets which are fed to a blasting gun that directs the pellets (165.3 lb/hr) to the perforated filter net. Emissions from the production of dry ice pellets and the cleaning activities consist only of fugitive CO_2.

Mineral Wool Line: Fleece Application

Fleece application stations will be added to the line prior to the Curing Oven for use in specialty products. Rolls of fleece (fiberglass or similar facing) will be situated at two unrolling stations, above and below the mineral wool conveyor. Each upper and lower fleece layer will be unrolled as a continuous sheet and directed via rollers through an open dip "bath" of binder. Each dip bath will coat one side of the upper and lower fleece with binder. The coated fleece will be directed towards the top and underside of the uncured mineral wool via rollers and placed onto the surface of the uncured wool just prior to entry into the Curing Oven (CO), where binder in the wool and on the fleece will be cured. Binder will be fed to the dip baths via enclosed piping from the Binder Day Tank or from the approximately 264 gal Binder Storage Containers (TK-BS1 through TK-BS3). The binder coating may be the same binder that is applied in the Spinning Chamber, or it can be a special binder.

Emissions from Fleece Application will consist of fugitive VOC and organic HAP emissions resulting from surface evaporation of binder in the dip tank and binder-coated fleece just prior to the Curing Oven (CM12 and CM13). The majority of emissions from the binder applied to the fleece will be controlled by the Curing Oven afterburner as the fleece is cured onto the wet mineral wool in the Curing Oven.

Mineral Wool Line: Curing and Cooling

The wool web is conveyed to a "pendulum" which, by swinging the wool back and forth, arranges multiple layers of wool onto the wool lane. For some products the edges will be cut along the wool lane by means of a mechanical saw before the curing oven. The removed edges, which are uncured wool (wet wool), are sent to the Recycle Plant via conveyors. The wool lane is then conveyed into the Curing Oven (CO), where the remaining water in the product is evaporated and the binder is cured by means of hot air supplied from two natural gas-fired circulation burners (via direct heating). A 6.83 mmBtu/hr natural gas-fired Afterburner (CO-AB) controls CO, VOC, and organic HAP emissions emitted from the Curing Process. Exhaust from the Afterburner is directed to the WESP (Emission Point HE01) for further control.

Additionally, the Curing Oven is equipped with hoods at the inlet and outlet (CO-HD) to control the working environment in the event that hot air escapes the curing oven due to system pressure changes. Vapors from these hoods are also directed to the WESP (Emission Point HE01) for control.

After leaving the Curing Oven, the wool web is conveyed through a Cooling Section (CS) where ambient air (from the production hall) is sucked through the cured wool web to cool it prior to cutting. Emissions from the Cooling Section consist of particulate matter, VOC, organic HAPs (formaldehyde, methanol, phenol), and small amounts of NO_x and CO. Vapors from the Cooling Section are directed to the WESP (Emission Point HE01) for control.

Mineral Wool Line: Cutting Section

After the cooling zone, the cured wool web is labeled with product features and cut to size by a water jet and/or mechanical cutting. Edges may be trimmed prior to labeling and transported to the Recycle plant via the line granulator. Labels can be branded to the product in three different ways:

- Branding wheels (P_MARK) fired by natural gas combustion (combined maximum aggregated burner capacity is 0.4 mmBtu/hr);
- Laser marking; or
- Inkjet labeling.

Emissions from the natural gas combustion used for the Branding Wheels vent in the production building and consist only of combustion exhaust. Emissions from inkjet labeling consists of VOC emissions from evaporation of organics in the ink and cleaner applied. The ink and cleaner are HAP-free. These emissions also occur indoor and are fugitive in nature. Dust from the mechanical saws is removed pneumatically and directed to the De-dusting Baghouse (CE01). The collected dust/filter material is transported via closed conveyors to the Recycle Plant. There are no air emissions associated with the use of laser marking or waterjet cutting.

Mineral Wool Line: Stacking, Packing and Unit Load

After cutting the products are stacked, packaged in polyethylene film, palletized (as needed), and transported to one of the storage areas for finished goods. A paper surface may be applied to products either before final cutting or after they are cut to size. The paper applied is a pre-coated polyethylene (PE) paper which is warmed in electrically heated drums so that the paper adheres to the wool product. Dispatch of finished goods in to trucks takes place from the unit load area. Vacuum cleaning of the packing warehouse area (CE02) is controlled by the Vacuum Cleaning Baghouse (CE02-BH).

Mineral Wool Line: Recycling Plant

The Recycle Plant is used to recover materials (e.g., waste wool and de-dusting fines such as fibers and dust) from the mineral wool manufacturing line that would otherwise be sent to a landfill for disposal. The Recycling Plant can also receive mineral wool products returned from ROXUL customers, such as products damaged in shipping, wool waste products from construction sites or directly from customers with the purpose to recover the material for new products. The Recycle Plant process includes material handling by end-loaders and conveyors, milling, and batching. All material handling in the recycling process is done inside a closed building that utilizes a fast roller gate controlled by the movement of the end loader. The building is equipped with roof exhaust vents (CM08 through CM11) equipped with particulate filters (CM08-FF through CM11-FF) to control the particulate emissions and to remove ammonia odor and the end-loader exhaust gases for industrial hygiene purposes. Additionally, the recyclable materials mill hopper is connected to the De-dusting Baghouse (CE01-BH) - which is also used to control emissions from the wool line cutting area.

Rockfon Line

The Rockfon Line will produce ceiling tiles using the mineral wool slabs produced on the Mineral Wool Line and take place at a separate area of the plant site in Building 700. The process will include cutting, sanding, glue application, hot pressing, curing, paint application, drying, and packaging.

The mineral wool slabs will first be split by a saw and go through a sanding machine to ensure proper dimension. Particulate matter emissions from the cutting and sanding operations will be captured and directed to the Rockfon De-Dusting Baghouse (RFNE8-BH). Next, the mineral wool slabs will be directed through a glue cabinet for application under Infrared Light (RFNE1) of an adhesive and a fleece layer. The slabs will then be compressed under a hot press (RFNE2). Emissions from RFNE1 and RFNE2 are uncontrolled and are vented outside the building. Additional formatting and cutting then occurs with particulate matter emissions again being controlled by Rockfon De-Dusting Baghouse.

The raw ceiling tiles then undergo several rounds of paint application and edging to form the desired product. Paint is dried in five (5) different natural gas-fired ovens. All paints used in the Rockfon Line will be water-based. Specifications are a for maximum of 0.67 lb VOC/gal for any individual paint. The Spray Paint Cabin (RFNE5), and emissions from the 2.05 and 4.78 mmBtu/hr Drying Ovens will be controlled by fabric filters (RFNE5-FF, RFNE4-FF and RFNE6-FF, respectively). Emissions from the 2.73 mmBtu/hr High Ovens A and B (RFN3 and RFN9) are uncontrolled. After cooling in the Cooling Zone (RFNE7), the board tiles are then stacked, wrapped, and palletized for shipment.

An electrically heated thermal oil system used for heat transfer in the Rockfon process will be connected to a 212 gallon Thermal Expansion Tank (TK-TO1) to compensate for the changing volume of thermal oil in the system and a 159 gallon Thermal Oil Drain Tank (TK-TO2) to facilitate system oil changes.

Miscellaneous Operations and Activities

Building heat for the melting and Rockfom manufacturing areas will be supplied by three (3) 5.1 mmBtu/hr natural gas-fired boilers: Natural Gas Boiler 1 and 2 (CM03 and CM04) and Rockfon Building Heater (RFN10). ROXUL plans to install two emergency fire pumps that will be used to pump water in the event of a fire. One pump will be diesel driven (in case of power failure) and one pump is electrically powered. The diesel engine (EFP1) shall have a maximum rating of 147

kW_m/197 horsepower (hp). Additional storage tanks will be used for Diesel Fuel (TK-DF - 2,642 gallons) and Used Oil (TK-UO - Used Oil Tank).

The proposed ROXUL facility will also include a proposed Oxygen Plant (not built initially but at a later date) for dosing to the Melting Furnaces to ensure oxygen enrichment. The oxygen plant will emit primarily nitrogen and argon and is not a source of air pollutants.

SITE INSPECTION

On February 15, 2018, the writer conducted an inspection of the proposed location of the ROXUL's RAN Facility. The proposed site is located at the "Jefferson Orchards" site in Ranson, Jefferson County, WV approximately 5.30 miles southeast of Martinsburg, WV. The writer was accompanied on the inspection by Mr. Grant Morgan of ERM (consultant), and Ms. Mette Drejstel and Mr. Ken Cammarato of ROXUL. Observations from the inspection include:

- The proposed location of the facility is at the old "Jefferson Orchards" site just southeast of Kearneysville, WV: an incorporated community located at the intersection of State Route (SR) 9 and SR 480. The proposed site, however, is located within the incorporated city limits of Ranson, WV (the center of which is located approximately 5.63 miles to the south-southeast);

- The topography of the proposed location is gentle rolling hills with a mix of scattered communities, farms, highways and more concentrated urban areas with a radius of seven (7) miles. The proposed site is bounded (1) immediately to the south by SR 9 and further south by a small unincorporated community, (2) to the east by fields associated with the Jefferson Orchards site and subject to further development, (3) to the north by a privately owned area of fields, and (4) to the west by several residential properties, a private hunting/fishing club, and further west by County Route (CR) 48/3 (Stubbs Road). North Jefferson Elementary School is located approximately 0.40 miles to the south;

- The proposed site sits in a slight topographical bowl with a railroad grade and a tree line to the south which would be expected to somewhat mitigate the visibility of the facility from the south along SR 9;

- At the time of the inspection, a small trailer serving as a field office had been put in place and general landscaping work had begun. No construction of any permanent foundation work or similar activity was seen; and

- The occupied residences located nearest to the proposed site are immediately to the east of the facility along Granny Smith Lane.

Directions: [Latitude/Longitude: 39.37754/-77.87844] From the Interstate 81 - SR45/SR9 intersection, travel on SR45/SR9 east for approximately 6.6 miles and take the Kearneysville/Leetown exit on the right. At the base of the exit ramp, turn right onto Leetown Road (CR 1) and travel for about 0.4 miles and turn left onto Border Road (CR 1/2) and go for 0.8 miles and turn left onto Northport Avenue. Travel on Northport Avenue up and over SR 9 bridge until reaching the proposed facility access road.

AIR EMISSIONS AND CALCULATION METHODOLOGIES

ROXUL included as Appendix A in the permit application (pps. 63-86) detailed air emissions calculations for the proposed RAN Facility. The following will summarize the calculation methodologies used by ROXUL to calculate the PTE of the proposed facility. See Appendix A in the permit application for the complete PTE calculations.

Material Handling

Emissions of particulate matter may occur from the unloading, transporting, conveying, screening, crushing, and storing of raw, recycled, and energy materials used in the mineral wool production process. Additionally, particulate matter emissions may occur as a result of the cutting, shaping, and transporting of both the mineral wool and the Rockfon products. Where emission sources (silos, enclosed conveyer transfer points, crushing, etc.) are controlled by fabric filters/baghouses, the filterable particulate matter emission estimate for the controlled source was based on the maximum outlet concentration of the filter. For uncontrolled emission sources, or where controlled through the use of enclosures, emissions were calculated using the appropriate section of AP-42 (AP-42 is a database of emission factors maintained by USEPA). Controlled emissions were then calculated using a reasonable control efficiency based on the type of enclosure or other mitigating factor. See the following table for the source of various material handling emission factors used by ROXUL:

Table 2: Material Handling PM Emission Factor Sources

Emission Source	Emission Factor Source	Notes
End-loader/Dump Truck Drops	AP-42, Section 13.2.4 (11/06)	Emission factor calculation includes material moisture content and average wind speed.
Conveyer Transfer Points		
Melt Furnace Portable Crusher	AP-42, Table 11.19.2-2 (8/04)	Based on Tertiary Crushing Factors
Open Storage	WV G-40B General Permit Guidance	G-40B Guidance based on emission factor given in Air Pollution Engineering Manual © 1992 pp. 136 & References.
Paved Haulroads & Mobile Work Areas	AP-42 Section 13.2.1 (1/11)	Based on average truck weights, surface material silt content, and number of precipitation days. A control percentage of 75% was used for vacuum sweeping.
Sources Controlled by Fabric Filters	Maximum Outlet Loading Concentration[(1)]	Calculated with maximum outward airflow.

(1) As based on vendor information or vendor guarantees

Where sources of emissions occurred inside a building with exhaust vents controlled by particulate matter filters, the emission estimate for the building was based on the worst-case outlet particulate mater concentration of the filter. Where there was only uncontrolled general exhaust fans on a building, the emissions estimated from the building were the aggregated emissions of the individual emission units in the building.

If based on AP-42 emission factors, all hourly emissions were based on the worst-case hourly throughput (either as limited by the bottlenecked process or by the capacity of the unit) and, unless otherwise noted, annual emissions were based on 8,760 hours a year of operation. Hourly emissions from the fabric filters/baghouses were based on the maximum expected airflow through the units and, unless otherwise noted, annual emissions were based on 8,760 hours a year of operation. Where appropriate, ROXUL adjusted the emission rates of PM_{10} and $PM_{2.5}$ as based on appropriate particle size distribution.

Coal Milling & Drying

The process of milling unsized coal ("lump" coal) for use in the Melting Furnace will include material handling emission sources (covered above) and air emissions from the combined vertical coal mill and fluidized bed dryer that is equipped with a 6.00 mmBtu/hr natural gas-fired direct heating unit. The combustion exhaust of the heating unit is used to directly dry the coal in the fluidized bed dryer. The combined exhaust from the dryer heater and the mill will be controlled by a baghouse (IMF05-BH) and exhausted from a stack (IMF05). This operation has the potential to generate the products of combustion from the heating unit and VOCs and particulate matter from the fluidized dryer. Emission factors for the natural gas-fired heating unit combustion exhaust were taken from manufacturer's data (NO_x), AP-42, Section 1.4., and 40 CFR 98, Table A-1 (CO_2e). ROXUL has claimed the source of the VOC and particulate matter emission factors for the coal mill fluidized bed dryer as CBI. The hourly emissions are based on the maximum amount of coal that can de delivered to the facility in a day (as averaged over a 24 hour day) and annual emissions were based on the maximum daily throughput and 365 days of operation per year.

Melting Operation

Emissions from the Melting Furnace (IMF01), which includes both the products of combustion and various VOC and PM Hazardous Air Pollutants (VOC-HAPs and PM-HAPs), as controlled by the inherent SNCR and Oxy-fuel burners (NO_x), Fines Collection Filter and a Baghouse (PM and with Sorbent Injection for SO_2/organic acids control) was based primarily from, as stated in the permit application, "stack testing from [a] similar facility, scaled as appropriate to RAN process." ROXUL has claimed the source of the emission factors for filterable PM, HF, HCl, and GHGs and as CBI. Hourly emissions from the Melting Furnace were based on the maximum capacity of the Melting Furnace and annual emissions were based on 8,760 hours a year of operation.

Wool Spinning

Emissions from the Spinning Chamber, which includes particulate matter, VOCs, and VOC-HAPs, as controlled by the WESP, was based primarily from, as stated in the permit application, "stack testing from [a] similar facility, scaled as appropriate to RAN process." VOCs are emitted from the use of the binder and de-dusting oils applied in the wool spinning chamber. The emissions of some HAPs (phenol, formaldehyde, and methanol) from the spinning chamber are combined with those emitted during curing (but not cooling) operations and the basis for these emissions has been claimed as CBI by Roxul. Emissions from the spinning chamber are combined with the gutter exhaust, and emissions from the curing and cooling operations before being sent for control by the WESP and emitted from emission point HE01. Hourly emissions from the Spinning Chamber were based on the maximum capacity of the Melting Furnace and annual emissions were based on 8,760 hours a year of operation.

Curing and Cooling

Emissions from the Curing Oven, Curing Oven Hoods, Gutter Exhaust, and the Cooling Section, which includes the products of combustion, particulate matter, VOCs, and VOC-HAPs, as controlled by the afterburner (CO and organics) and the WESP (particulate matter), were based primarily from, as stated in the permit application, "stack testing from [a] similar facility, scaled as appropriate to RAN process." VOCs are emitted from the curing and evaporation of the binder and de-dusting oils applied in the wool spinning chamber. Emissions from the curing and cooling operations are first sent to the afterburner and then combined with the gutter exhaust, and emissions from the spinning chamber before being sent for control by the WESP and emitted from emission point HE01. Hourly emissions from the Curing and Cooling process were based on the maximum capacity of the Melting Furnace and annual emissions were based on 8,760 hours a year of operation.

Fleece Application

Uncontrolled emissions of VOCs and VOC-HAPs were based on the maximum limited VOC content of the binder (0.016 kg-VOC/kg-binder as limited under 40 CFR §63.3370(a)(2)(i)) used in the application of fleece. Hourly emissions were based on a maximum of 185 kg/hr of binder used and annual emissions were based on 8,760 hours a year of operation. While it is expected that most of the VOCs emitted from the application of fleece will occur during the curing process and be controlled by the afterburner, to be conservative, ROXUL did not apply any control percentage to the emissions from fleece application.

Dry Ice Cleaning

Emissions of CO_2 - defined as a GHG - occur during the production and use of dry ice (frozen CO_2 pellets) as it sublimates into the atmosphere. The emissions were calculated using a mass balance approach that assumes all dry ice produced is emitted into the atmosphere as CO_2. This calculation assumes a dry ice cleaning rate of 75 kg/hr (~165 lb/hr) plus an additional loss rate of 2.2 (this factor is based on vendor information). Annual emissions were based on the dry ice cleaning operations operating 8,760 hours per year (although the actual operations of dry ice cleaning are intermittent as the equipment will traverse from one end of the equipment to the other when cleaning and dry ice pellets are used only when in forward movement).

Product Marking

Emissions from inkjet labeling consists of VOC emissions from evaporation of organics in the ink and cleaner applied. The ink and cleaner are HAP-free. These emissions occur indoor and are fugitive in nature. ROXUL assumed in the calculations that the inks and cleaner were 100% VOCs and that all VOCs evaporated in the product marking process. Annual emissions were based on usage of 2,400 gallons of ink (7.58 lb/gallon) and 100 gallons of cleaner (7.51 lb/gallon) per year. The writer calculated the hourly emissions from the product marking operations based on 8,760 hours of operations per year.

Cooling Towers

Particulate matter emissions from the Melting Furnace and Gutter Cooling Towers (IMF02 and HE02, respectively) occur because the wet-type cooling towers provide direct contact between the cooling water and the air passing through the tower. Some of the liquid water may be entrained within the air stream and carried out of the tower as "drift" droplets. Therefore, the particulate constituent (suspended and dissolved solids) of the drift droplets may be classified as particulate matter. ROXUL calculated the potential emissions from the cooling towers based expected worst-case total dissolved solids (TDS - 1,500 ppm) in the cooling water, the maximum amounts of make-up water used in the melting Furnace and Gutter Cooling Towers (1,321 and 308 gpm, respectively), and the estimated maximum drift rate (0.001% based on the use of the high-efficiency drift eliminators) of the plume. Annual emissions from the cooling towers are based on operations of 8,760 hours per year.

Natural Gas Combustion Exhaust Emissions

Various process heaters, ovens, and boilers (IMF24, RFNE3, RFNE4, RFNE6, RFNE9, RFN10, CM03, CM04, and the Afterburner) will combust pipeline-quality natural gas (PNG). Combustion emissions from these units were based on the emission factors provided for natural gas combustion as given in AP-42 Section 1.4., 40 CFR 98, Table A-1 (CO_2e), and, where stated, on vendor data. Maximum hourly emissions were based on the maximum design heat input (MDHI) of the units and a natural gas heat content value of 1,026 Btu/ft^3 was used in the calculations. Annua emissions from these units were based on operation of 8,760 hours per year.

Rockfon Line Glue/Paint Application & Curing

In addition to material handling emissions and the products of combustion from process heating/drying discussed above, emissions from the Rockfon Line are generated from the application of glue and paint. ROXUL based the VOC emissions from the Rockfon Line on the worst-case VOC contents of the paints and glue used on the line and maximum expected usage numbers. All paints used in the Rockfon Line will be water-based and specifications are a for maximum of 0.67 lb VOC/gal for any individual paint (no HAP-containing paints or glue will be used in the Rockfon Line). Additionally, particulate matter generated while in the Drying Ovens (RFNE4 and RFNE6) and the Spray Paint Cabin (RFNE5) will be controlled by fabric filters (RFNE4-FF, RFNE5-FF, and RFNE6-FF) the emissions based on the worst-case outlet loading concentration and maximum air-flow in the same manner of other fabric filters. Annual emissions from the application of glue/paint in the Rockfon Line are based on the worst-case paint/glue annual usage numbers.

There will be a small amount of additional phenol and formaldehyde HAP emissions emanating from the binder used in the mineral wool manufacturing process that will volatilize during the curing and drying process of the Rockfon Line. These emissions were based on "stack testing from [a] similar facility, scaled as appropriate to RAN process."

ROXUL conservatively estimated that all filterable particulate matter generated in the Rockfon Line was mineral fiber, a PM-HAP.

Storage Tanks

ROXUL provided an estimate of the uncontrolled emissions produced from each fixed roof storage tank with the potential to emit substantive amounts of VOCs/HAPs using the TANKS 4.09d program as provided under AP-42, Section 7. The total emissions from each fixed roof storage tank are the combination of the calculated "breathing loss" and "working loss." The breathing loss refers to the loss of vapors as a result of tank vapor space breathing (resulting from temperature and pressure differences) that occurs continuously when the tank is storing liquid. The working loss refers to the loss of vapors as a result of tank filling or emptying operations. Breathing losses are independent of storage tank throughput while working losses are dependent on throughput. The tanks that are temperature controlled were assumed to have no breathing losses. The facility will utilize other small storage vessels that are either filled with container contents prior to delivery to the site and maintained closed or do not have quantifiable emissions. Annual emissions were as calculated by the TANKS program and based on tank-specific data (including the properties of the materials stored) and the specific maximum throughputs of each tank.

Emergency Fire Pump Engine

Potential emissions from the 197 hp diesel-fired Emergency Generator (EFP1) were based on the appropriate limits as given under 40 CFR 60, Subpart IIII (filterable particulate matter, CO, NO_x, VOCs), emission factors obtained from AP-42, Section 3.4 (condensable particulate matter, total HAPs), mass balance equations (SO_2), and 40 CFR 98, Table A-1 (CO_2e). Ultra-Low Sulfur Diesel with a maximum sulfur content of 0.0015% was used in the calculation of SO_2. Hourly emissions were based on the rated horsepower of the unit and annual emissions were based on 500 hours per year of non-emergency operation.

Emissions Summary

Based on the above estimation methodology as submitted in Appendix A of the permit application, the facility-wide PTE of the proposed RAN Facility is given in Attachment A to this preliminary determination.

REGULATORY APPLICABILITY

The proposed RAN Facility is subject to substantive requirements in the following state and federal air quality rules and regulations:

Table 3: Applicable State and Federal Air Quality Rules

State Air Quality Rules	
Emissions Standards	
45CSR2	To Prevent and Control Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers
45CSR6	To Prevent and Control Particulate Air Pollution from Combustion of Refuse
45CSR7	To Prevent and Control Particulate Air Pollution from Manufacturing Process Operations
45CSR10	To Prevent and Control Air Pollution from the Emission of Sulfur Oxides
Permitting Programs and Administrative Rules	
45CSR13	Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation
45CSR14	Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration
45CSR30	Requirements for Operating Permits
Federal Air Quality Rules	
New Source Performance Standards (NSPS) - 40 CFR 60	
Subpart OOO	Standards of Performance for Nonmetallic Mineral Processing Plants
Subpart IIII	Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
Maximum Achievable Control Technology (MACT) - 40 CFR 63	
Subpart DDD	National Emission Standards for Hazardous Air Pollutants for Mineral Wool Production
Subpart JJJJ	National Emission Standard for Hazardous Air Pollutants: Paper and Other Web Coating
Subpart ZZZZ	National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines
Subpart DDDDD	National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters

Each applicable rule (and any rule with questionable non-applicability) and ROXUL's proposed compliance therewith will be summarized below. ROXUL submitted a detailed regulatory applicability discussion as Section 4.0 (Federal Requirements) and 5.0 (State Requirements) in the permit application (pps. 28-49).

WV State Air Quality Rules

45CSR2: To Prevent and Control Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers

Pursuant to the definition of "fuel burning unit" under 45CSR2 ("producing heat or power by *indirect heat transfer*"), 45CSR2 will apply to the proposed PreHeat Burner (IMF24), Natural Gas Boilers 1 and 2 (CM03 and CM04), and the Rockfon Building Heater (RFN10) and these units are, therefore, subject to the applicable requirements therein. However, pursuant to the exemption given under §45-2-11, as the MDHI of each of the units is less than 10 mmBtu/hr, the units are not subject to sections 4, 5, 6, 8 and 9 of 45CSR2. The only remaining substantive requirement is under Section 3.1 - Visible Emissions Standards.

45CSR2 Opacity Standard - Section 3.1

Pursuant to 45CSR2, Section 3.1, each of the above specified units are subject to an opacity limit of 10%. Proper maintenance and operation of the units (and the use of PNG as fuel) should keep the opacity of the units well below 10% during normal operations.

45CSR5: To Prevent and Control Air Pollution from Coal Preparation Plants, Coal Handling Operations, and Coal Refuse Disposal Operations (Non-Applicable)

The coal handling and milling operations at the proposed facility are, pursuant to §45-5-2.4 and §45-5-2.14, not subject to the requirements under 45CSR5 as the plant is a manufacturing facility subject to the requirements under 45CSR7. Additionally, it is noted that, pursuant to §45-5-2.4, the coal handling and milling operations would not be defined as a "coal preparation plant" as the design capacity of the operations is less than 200 tons per day.

45CSR6: To Prevent and Control Particulate Air Pollution from Combustion of Refuse

ROXUL has proposed the use of an afterburner for control of vapors captured from the curing ovens (see above). The afterburner meets the definition of an "incinerator" under 45CSR6 and is, therefore, subject to the requirements therein. The substantive requirements applicable to the afterburner are discussed below.

45CSR6 Emission Standards for Incinerators - Section 4.1

Pursuant to §45-6-4.1, PM emissions from incinerators are limited to a value determined by the following formula:

Emissions (lb/hr) = F x Incinerator Capacity (tons/hr)

Where, the factor, F, is as indicated in Table I below:

Table I: Factor, F, for Determining Maximum Allowable Particulate Emissions

Incinerator Capacity	Factor F
A. Less than 15,000 lbs/hr	5.43
B. 15,000 lbs/hr or greater	2.72

ROXUL calculated the maximum capacity of the afterburner to be 24.4 tons/hour. Using this value in the above equation produces a PM emission limit of 66.37 lbs/hr. ROXUL estimated that up to a worst-case of 3.31 lbs/hour of particulate matter emissions could be from the afterburner (with an aggregate total of 21.21 lbs/hr emitted from the WESP). This is far below the 45CSR6 limit.

45CSR6 Opacity Limits for - Section 4.3, 4.4

Pursuant to §45-6-4.3, and subject to the exemptions under 4.4, the afterburner will have a 20% limit on opacity during operation. Proper design and operation of the afterburner should prevent any substantive opacity from the unit.

45CSR7: To Prevent and Control Particulate Air Pollution from Manufacturing Process Operations

45CSR7 has requirements to prevent and control particulate matter air pollution from manufacturing processes and associated operations. Pursuant to §45-7-2.20, a "manufacturing process" means "any action, operation or treatment, embracing chemical, industrial or manufacturing efforts . . . that may emit smoke, particulate matter or gaseous matter." 45CSR7 has three substantive requirements potentially applicable to the particulate matter-emitting operations at the RAN Facility. These are the opacity requirements under Section 3, the mass emission standards under Section 4, and the fugitive emission standards under Section 5. Each of these sections will be discussed below.

45CSR7 Opacity Standards - Section 3

§45-7-3.1 sets an opacity limit of 20% on all "process source operations." Pursuant to §45-6-2.38, a "source operation" means the last operation in a manufacturing process preceding the emission of air contaminants [in] which [the] operation results in the separation of air contaminants from the process materials or in the conversion of the process materials into air contaminants and is not an air pollution abatement operation." This language would define all particulate matter emitting sources as "source operations" under 45CSR7 and, therefore, these sources would be subject to the opacity limit [after control]. Based on the ROXUL's proposed use of BACT-level particulate matter controls [such as baghouses, fabric filters, enclosures, etc.], these measures should, if maintained and operated correctly, allow the particulate matter emitting sources to operate in compliance with the 20% opacity limit.

45CSR7 Weight Emission Standards - Section 4

§45-7-4.1 requires that each manufacturing process source operation or duplicate source operation meet a maximum allowable "stack" particulate matter limit based on the weight of material processed through the source operation. As the limit is defined as a "stack" limit (under Table 45-7A), the only applicable emission units (defined as a type 'a' sources) are those that are non-fugitive in nature. The particulate matter limits given under 45CSR7 only address filterable particulate matter.

Due to the large process weight-rates used in the production of mineral wool and the BACT-level particulate matter controls on particulate matter-emitting units, it is reasonable to assume that the Table 45-7A limits will be easily met. ROXUL, however, to be conservative and to address any duplicate-source issues, divided the facility into four sections for 45CSR7 compliance demonstration: Mineral Wool Line, Rockfon Line, Coal Milling, and Material Handling. They then used the process weight rate (PWR) of each line to determine what the aggregate Table 45-7A particulate matter limit would be. This analysis showed that the aggregate particulate matter emissions from each section was in compliance with the calculated emission limit.

This method is very conservative as 45CSR7 allows the use of the PWR on an emissions-unit basis to calculate the particulate matter limit for that specific emissions unit. As most processes are serial in nature, the aggregate limit (or a value near to it) would apply in most cases on an individual emission-unit basis and not on the aggregate emissions of a group of emission units. Therefore, using the line PWR to determine an aggregate emission limit is considered a reasonable (and very conservative) methodology to determine §45-7-4.1 compliance with a large number of particulate matter sources.

§45-7-4.2 requires that mineral acids shall not be released from manufacturing process source operation or duplicate source operation in excess of the quantity given in Table 45-7B. While it was appropriate to conservatively classify all the particulate matter generating source operations as type 'a' above, the generation of mineral acids only occurs in the Melting Furnace through the combustion of coal/pet coke and the melting of slag and other mineral feedstocks. For this reason, the Melting Furnace is appropriately defined as a type 'd' source (*"type 'd' means any manufacturing process source operation in which materials of any origin undergo a chemical change, and this chemical change results in the emission of particulate matter to the atmosphere"*). The unit has potential emissions of sulfuric acid and hydrochloric acid, both which are regulated under Table 45-7B. The limit for type 'd' sources is: H_2SO_4 - 70 mg/m^3, HCl - 420 mg/m^3. The proposed emission rates of H_2SO_4 and HCl from the Melting Furnace are 50 and 3.9 mg/m^3, respectively. The proposed emission rates are in compliance with the Table 45-7B limits.

<u>45CSR7 Fugitive Emissions - Section 5</u>

Pursuant to §45-7-5.1 and 5.2, each manufacturing process or storage structure generating fugitive particulate matter must include a system to minimize the emissions of fugitive particulate matter. The use of various BACT-level controls (where reasonable) on material transfer points, the use of a vacuum sweeper truck on the haulroads, and the management of on-storage pile activity is considered a reasonable system of minimizing the emissions of fugitive particulate matter at the proposed facility.

45CSR10: To Prevent and Control Air Pollution from the Emission of Sulfur Oxides

45CSR10 has requirements limiting SO_2 emissions from "fuel burning units," limiting in-stack SO_2 concentrations of "manufacturing processes," and limiting hydrogen sulfide (H_2S) concentrations in process gas streams. The proposed PreHeat Burner (IMF24), Natural Gas Boilers 1 and 2 (CM03 and CM04), and the Rockfon Building Heater (RFN10) are each defined as fuel burning units ("producing heat or power by *indirect heat transfer*"). However, pursuant to the exemption given under §45-10-10.1, as the MDHI of each of these units is less than 10 mmBtu/hr, these units are not subject to the limitations on fuel burning units under 45CSR10. The proposed ROXUL facility does not combust any process gas streams that potentially contain H_2S.

However, the Melting Furnace stack, after control by the sorbent injection system, will be subject to the limitation on in-stack SO_2 concentrations. Pursuant to §45-10-4.1, the Melting Furnace stack (IMF01) shall not exceed "an in-stack sulfur dioxide concentration [of] 2,000 parts per million by volume." Based on information submitted by ROXUL (IMF01: 33.63 lb-SO_2/hr, 21,413.73 acfm, 301.73 °F), the writer calculated a maximum in-stack SO_2 concentration of 227.48 ppm_v, or approximately 11% of the §45-10-4.1 limit.

45CSR13: Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation

The proposed construction of the RAN Facility has the potential to emit a regulated pollutant in excess of six (6) lbs/hour and ten (10) TPY (see Attachment A) and, therefore, pursuant to §45-13-2.24, the proposed facility is defined as a "stationary source" under 45CSR13. Pursuant to §45-13-5.1, "[n]o person shall cause, suffer, allow or permit the construction . . . and operation of any stationary source to be commenced without . . . obtaining a permit to construct." Therefore, ROXUL is required to obtain a permit under 45CSR13 for the construction and operation of the proposed facility. It is noted that the proposed facility is also defined as a "major stationary source" under 45CSR14. Consistent with DAQ Policy, permitting actions reviewed under 45CR14 are concurrently reviewed under 45CSR13 and, where there is a additional or overlapping requirements, the DAQ will generally apply the stricter requirement.

As required under §45-13-8.3 ("Notice Level A"), ROXUL placed a Class I legal advertisement in a "newspaper of *general circulation* in the area where the source is . . . located." The legal ad RAN on November 22, 2017 in the *Spirit of Jefferson*. Verification that the legal ad ran was provided on December 18, 2017.

45CSR14: Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration

45CSR14 sets the requirements for the new construction of a "major stationary source" (as defined under §45-14-2.43) of air pollution, on a pollutant-by-pollutant basis, in areas that are in attainment with the National Ambient Air Quality Standards (NAAQS). A proposed facility is defined as a "major stationary source" if, pursuant to §45-14-2.43, any regulated pollutant has a potential-to-emit in excess of 250 TPY (if a proposed source is listed as one of the source categories under §45-14-2.43, then the major stationary threshold is defined at 100 TPY). Additionally, pursuant to §45-14-8.2, Best Available Control Technology (BACT) applies to each pollutant proposed to be emitted in "significant" (as defined under §45-14-2.74) amounts.

The proposed RAN Facility will be constructed in Jefferson County, WV, which is classified as in attainment with all NAAQS. The construction of the ROXUL facility is defined as a construction of a "major stationary source" under 45CSR14 based on the PTE of VOCs exceeding 250 TPY (the facility type is a "non-listed" source) and PSD review is additionally required for the pollutants of NO_x, $PM_{2.5}$, PM_{10}, filterable particulate matter, SO_2, VOCs, GHGs, and H_2SO_4 (see Table 4). The substantive requirements of a PSD review includes a BACT analysis, an air dispersion modeling analysis, a review of potential impacts on Federal Class 1 areas, and an additional impacts analysis. Each of these will be discussed in detail under the section PSD REVIEW REQUIREMENTS below.

Table 4: Pollutants Subject to PSD

Pollutant	Potential-To-Emit (TPY)	Significance Level (TPY)	PSD (Y/N)
CO	71	100	N
NO_x	239	40	Y
$PM_{2.5}$	133	10	Y
PM_{10}	153	15	Y
Filterable PM	129	25	Y
SO_2	147	40	Y
VOCs	471	40	Y
GHGs	152,935	75,000	Y
Lead	0.0002	0.6	N
Sulfuric Acid Mist	16.37	7	Y
Flourides	0.00	3	N
Vinyl Chroloride	0.00	1	N
Total Reduced Sulfur	0.00	10	N
Reduced Sulfur Compounds	0.00	10	N

45CSR30: Requirements for Operating Permits

45CSR30 provides for the establishment of a comprehensive air quality permitting system consistent with the requirements of Title V of the Clean Air Act. The proposed RAN Facility will meet the definition of a "major source under §112 of the Clean Air Act" as outlined under §45-30-

2.26 and clarified (fugitive policy) under 45CSR30b. The proposed facility-wide PTE (see Attachment A) of a regulated pollutant does exceed 100 TPY. Therefore, as a result of this permit, the source is a major source subject to 45CSR30. The Title V (45CSR30) application will be due within twelve (12) months after the commencement date of any operation authorized by this permit.

Federal Air Quality Rules

40 CFR 60, Subpart Dc: Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units - (Non-Applicable)

40 CFR 60, Subpart Dc is the federal New Source Performance Standard (NSPS) for industrial/commercial/institutional steam generating units for which (1) construction, modification, or reconstruction is commenced after June 19, 1984, (2) that have a MDHI between 10 and 100 mmBtu/hr, and (3) meet the definition of a "steam generating unit." Pursuant, to §60.41(c), "Steam generating unit" under Subpart Dc means "a device that combusts any fuel and produces steam or heats water or heats any heat transfer medium. . . This term does not include process heaters as defined in this subpart." A "process heater" is defined as "a device that is primarily used to heat a material to initiate or promote a chemical reaction in which the material participates as a reactant or catalyst."

The proposed PreHeat Burner (IMF24), Natural Gas Boilers 1 and 2 (CM03 and CM04), and the Rockfon Building Heater (RFN10) are each defined as a "steam generating unit" but each also has an MDHI of less than 10 mmBtu/hr which would exempt the units from Subpart Dc. The remaining combustion units either do not use a heat transfer medium or are properly defined as a process heater and, therefore, no units at the proposed facility will be subject to Subpart Dc.

40 CFR 60, Subpart Kb: Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984) - (Non-Applicable)

40 CFR 60, Subpart Kb is the federal NSPS for storage tanks which contain Volatile Organic Liquids (VOLs) and commenced construction after July 23, 1984. The Subpart applies to storage vessels used to store volatile organic liquids with a capacity greater than or equal to 75 m^3 (19,813 gallons). However, storage tanks with a capacity greater than or equal to 151 m^3 (39,890 gallons) storing a liquid with a maximum true vapor pressure less than 3.5 kilopascals (kPa) or with a capacity greater than or equal to 75 m^3 but less than 151 m^3 storing a liquid with a maximum true vapor pressure less than 15.0 kPa are exempt from Subpart Kb. All tanks that store VOLs at the proposed facility will have capacities less than 75 m^3 (19,813 gallons) and are, therefore, not subject to Subpart Kb.

40 CFR 60, Subpart Y: Standards Of Performance For Coal Preparation And Processing Plants - (Non-Applicable)

40 CFR 60, Subpart Y is the federal NSPS for coal preparation and processing plants that, pursuant to §60.250(a), process more than 200 tons of coal per day. Pursuant to §60.251, "Coal

preparation and processing plant" means "any machinery used to reduce the size of coal or to separate coal from refuse, and the equipment used to convey coal to or remove coal and refuse from the machinery. This includes, but is not limited to, breakers, crushers, screens, and conveyor belts." While the proposed RAN facility, by virtue of the coal handling and sizing equipment, would include a "coal preparation and processing plant," the maximum capacity of the proposed coal milling operation will be below the applicability threshold of 200 tons/day and, therefore, is not subject to NSPS Subpart Y.

40 CFR 60, Subpart OOO: Standards of Performance for Nonmetallic Mineral Processing Plants

Subpart OOO is the federal NSPS relating to the performance of non-metallic mineral processing plants. The proposed RAN Facility contains equipment that is applicable to Subpart OOO. The following discusses the substantive applicable requirements of Subpart OOO relating to the RAN Facility.

<u>Subpart OOO Applicability - Section §60.670</u>

Pursuant to §60.670, affected facilities under Subpart OOO include "each crusher, grinding mill, screening operation, bucket elevator, belt conveyor, bagging operation, storage bin, enclosed truck or railcar loading station" located at a "fixed or portable nonmetallic mineral processing plant[s]." Pursuant to §60.671, "Non-metallic processing plant" is defined as "any combination of equipment that is used to crush or grind any nonmetallic mineral..." The definition of "non-metallic mineral" includes limestone, dolomite, and other minerals which may be contained in stone raw materials that will be sieved, crushed (if necessary), and conveyed at the proposed RAN Facility. Therefore, Subpart OOO will be applicable to various equipment/operations at the facility (see Table 4-1 (pp. 33) in the permit application for a list of affected sources and applicable Subpart OOO standards.

However, the recycling operations (do not involve non-metallic minerals handling) and the melting furnace portable crusher (less than 150 tons per hour capacity) are not subject to Subpart OOO. Additionally, raw material handling in the furnace building is not considered non-metallic mineral processing plant as it is part of the mineral wool production operations. Table 4-1 in the permit application (pp. 33) provides a summary of Subpart OOO in tabular form.

<u>Subpart OOO Standard for Particulate Matter - Section §60.672</u>

Section §60.672 sets the following particulate matter standards for affected facilities under Subpart OOO:

Table 5: Subpart OOO Emission Standards

Reference	Affected Facility	Stack Emissions	
		Mass (gr/dscf)(1)	Opacity (%)
Table 2	Affected Facilities with Capture Systems	0.014	n/a
Table 3	Affected Facilities (non-crushers) without Capture Systems	n/a	7

Reference	Affected Facility	Stack Emissions	
		Mass (gr/dscf)[1]	Opacity (%)
Table 3	Crushers without Capture System	n/a	12
§60.672(d)	Truck Dumping	n/a	n/a
§60.672(e)	Affected Facilities inside a Building	Must meet Table 2 or Table 3 limits or building openings/vents must meet:	
	Building Openings	n/a	7
	Building Vents	Table 2 Limits	n/a
§60.672(f)	Enclosed Storage Bins w/ Baghouse	n/a	7

(1) Mass emission standard represents filterable emissions only (compliance test requires use of Method 5 or Method 17).

ROXUL has proposed fabric filters (0.002 gr/dscf) for material transfer points (IMF11-12 and IMF14-16) to minimize any potential fugitive emissions and comply with the requirements of Subpart OOO for "Affected Facilities with Capture Systems." While the charging building (B220 - IMF17 and IMF18) openings (not vents as they have no mechanical flow) are uncontrolled and subject to the 7% opacity requirement as shown above, the screen and crusher are each controlled by a fabric filter (0.002 gr/dscf) and vented inside the charging building. This should mitigate any opacity issues from the non-mechanical building openings.

Subpart OOO Test Method and Procedures - Section §60.675

Section §60.675 outlines the test methods and procedures to determine initial compliance with the standards noted above including the use of Method 9 to determine compliance with the opacity limits. ROXUL will be required to follow these requirements to determine initial compliance with the emission standards.

Subpart OOO Reporting and Record-keeping - Section §60.676

Section §60.51a outlines the reporting and record-keeping requirements required to be followed to be in compliance with Subpart OOO. ROXUL will be required to follow these requirements.

40 CFR 60, Subpart VVV: Standards Of Performance For Polymeric Coating Of Supporting Substrates Facilities - (Non-Applicable)

40 CFR 60, Subpart VVV is the NSPS for the web coating process that applies elastomers, polymers, or prepolymers to a supporting web other than paper, plastic film, metallic foil, or metal coil. Based on an analysis provided by ROXUL, Subpart VVV is not applicable to any of the coating operations at the proposed facility primarily due to the low-VOC content of the binders that would otherwise trigger Subpart VVV applicability. See Section 4.1.7 of the permit application (pp. 30) for a detailed review of the potential applicability of Subpart VVV.

40 CFR 60, Subpart IIII: Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

Subpart IIII of 40 CFR 60 is the NSPS for stationary compression ignition internal combustion engines (diesel fired engines). Section §60.4200 states that "provisions of [Subpart IIII] are applicable to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE)." Specifically, §60.4200(a)(2) states that Subpart IIII applies to "[o]wners and operators of stationary CI ICE that commence construction after July 11, 2005, where the stationary CI ICE are:

(i) Manufactured after April 1, 2006, and are not fire pump engines, or

(ii) Manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006.

ROXUL has proposed the use of a 197 hp certified fire pump engine (with a displacement of less than 30 liters per cylinder). Pursuant to §60.4205(c), "owners and operators of fire pump engines with a displacement of less than 30 liters per cylinder must comply with the emission standards in table 4 to this subpart, for all pollutants." Table 4 of Subpart IIII gives the following limits for ROXUL's proposed fire pump engine:

Table 6: Subpart IIII Table 4 Standards (175≤HP<300)

Emission Standards - g/kW-hr (g/hp-hr)		
NMHC + NO_x	**CO**	**PM**
4.0 (3.0)	3.5 (2.6)	0.20 (0.15)

Pursuant to §60.4211(c), ROXUL will purchase an engine certified to comply with the standards given above. Additionally, ROXUL will:

- Operate and maintain the engine according to the manufacturer's emission related written instructions, change only those emission-related settings as permitted by the manufacturer, and comply with 40 CFR parts 89, 94 and/or 1068, as they apply [§60.4211(a)];

- Install a non-resettable hour meter and limit operation to 100 hours per year of recommended maintenance checks and readiness testing, 50 of those hours may be used for non-emergency operation [§60.4209(a), §60.4211(f)];

- Purchase diesel fuel meeting a sulfur content of 15 ppm and a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent pursuant to 40 CFR §80.510(b) for non-road diesel fuel [§60.4207(b)]; and

- Record-keeping of conducted maintenance and operating hours, including reason for operation, and any other applicable notification8, reporting, and record-keeping requirements of §60.4214.

40 CFR 63, Subpart DDD: National Emission Standards for Hazardous Air Pollutants for Mineral Wool Production

Subpart DDD of 45 CFR 63 applies to owners or operators of mineral wool production facilities that are located at major sources of HAP emissions. Beginning in November 2011, the EPA proposed a series of revisions to the Mineral Wool MACT as required by the residual risk and technology review per the CAA. The final revisions were promulgated in the Federal Register and made effective on July 29, 2015.

The proposed ROXUL facility will be subject to the requirements for new affected facilities under the Mineral Wool MACT (the proposed RAN Facility is defined as a major source of HAPS - See Attachment A to this preliminary determination). Although ROXUL's proposed Melting Furnace design can be differentiated from that of a traditional cupola, it does, at its basic premise, meet the current NESHAP Subpart DDD definition of a cupola ("a large, water-cooled metal vessel to which a mixture of fuel, rock and/or slag, and additives is charged and heated to a molten state for later processing"). The revised standard includes emissions limits for carbonyl sulfide (COS) for open-top and closed-top cupolas (which replaces the CO limit under the previous rule), hydrogen fluoride (HF) and hydrochloric acid (HCl) limits for cupolas with and without slag, and combined collection (spinning) and curing oven emission limits for formaldehyde, methanol, and phenol.

Pursuant to §63.1178(a), the emission limits are given under Table 2 of Subpart DDD. The final revised emission limitations for new affected sources and the subcategories applicable to ROXUL are given below.

Table 7: Subpart DDD Table 2 Emission Limits

Affected Facility	Emission Unit (Emission Point)	Limitation	Citation
Cupolas[1]	Melting Furnace (IMF01)	0.10 lb PM/ton melt	Table 2, Item 2
Open-top Cupola[2]		3.2 lb COS/ton of melt	Table 2, Item 8
Cupola using Slag[3]		0.015 lb HF/ton of melt 0.012 lb HCl/ton of melt	Table 2, Item 10
Combined Vertical[4] Collection/Curing	Gutter Exhaust, Spinning Chamber, Curing Oven, Cooling Section (HE01)	2.4 lb formaldehyde/ton of melt 0.71 lb phenol/ton of melt 0.92 lb methanol/ton of melt	Table 2, Item 24

(1) The NESHAP Subpart DDD limit for PM is for filterable PM only.
(2) The Melting Furnace design is open-top, because there is an opening at the top of the melter and air flow is unrestricted.
(3) The Melting Furnace uses slag as a feed material.
(4) NESHAP Subpart DDD does not define the various collection designs. As described by the preamble to the proposed rule, Roxul operates a vertical collection process [76 FR 72770, November 25, 2011].

The requirements of Subpart DDD include emission and operating limitations (as summarized above) and monitoring requirements for cupolas [§63.1178, §63.1181, §63.1182] and combined collection/curing operations [§63.1179, §63.1183], performance testing [§63.1188], notifications [§63.1191], recordkeeping [§63.1192], reporting [§63.1193], and General Provisions (NESHAP Subpart A).

The revised Mineral Wool MACT also defines operating requirements during startup and shutdowns [§63.1197]. These requirements prohibit the shutdown of equipment that are utilized for compliance during times when emissions are being, or are otherwise required to be, routed to such items of equipment. In addition for cupolas, per §63.1197(e), you must maintain records during startup and shutdown that either (1) emissions were controlled using air pollution control devices operated at the parameters established by the most recent performance test that showed compliance with the standard; or (2) only clean fuels were used and the cupola was operated with 3% oxygen over the fuel demand for oxygen.

In addition, pursuant to §63.1187, ROXUL will be required to prepare an Operation, Maintenance, and Monitoring (OMM) Plan, which specifies how ROXUL will operate and maintain equipment used to demonstrate compliance with the Mineral Wool MACT.

Performance testing must be completed as specified in §63.1188 to demonstrate compliance with the emission limits in the revised Mineral Wool MACT. In addition to the performance testing reports, ROXUL must submit notification of startup of the Mineral Wool Line and a Notification of Compliance Status (NOCS) report per §63.9(h) and §63.1193 for the Mineral Wool Line Melting Furnace and Combined Collection/Curing Operations (Spinning Chamber and Curing Oven, both part of HE01), which certifies compliance with the rule.

40 CFR 63, Subpart JJJJ: National Emission Standards for Hazardous Air Pollutants: Paper and Other Web Coating

40 CFR 63, Subpart JJJJ is a federal MACT that establishes emission standards for web coating lines and specifies compliance procedures for a facility with web coating lines that is a major source of HAPs. The proposed ROXUL facility will be a major source of HAPs (see Attachment A). Based on a detailed applicability determination made by ROXUL (See Section 4.2.4. of the permit application - pp 38), only the application of fleece binder material (defined as the regulated coating in question) on the mineral wool line is subject to Subpart JJJJ.

ROXUL will be subject to the requirements for new affected facilities under the standard, which include organic HAP (OHAP) emission limitations for web coating lines. For new affected sources, pursuant to §63.3320(b), Subpart JJJJ provides four (4) options to limit OHAP emissions to:

- No more than 2 percent of the OHAP applied for each month;

- No more than 1.6 percent of the mass of coating materials applied for each month;
- No more than 8 percent of the coating solids applied for each month; or
- Outlet organic HAP concentration of 20 $ppm_v d$ by compound and 100% capture efficiency if an oxidizer is used to control organic emissions.

ROXUL has chosen to comply with the emission standards by using "as-applied" compliant coatings pursuant to the procedures given under §63.3370(a)(2). This will limit the as-applied binder to a VOC content (VOCs are allowed for use as a surrogate for OHAP per §63.3370(c)(1) and (2)) of 0.016 lb-VOC/lb-binder. ROXUL's proposed binder will meet this requirement.

Additionally, once constructed, ROXUL will be required to submit a notification for the startup of the Fleece Application line. Roxul will also be required to submit a Notification of Compliance Status (NOCS) report for the Fleece Application (CM12, CM13) line in accordance with §63.3400.

40 CFR 63, Subpart OOOO: National Emission Standard for Hazardous Air Pollutants: Printing, Coating, and Dyeing of Fabrics and Other Textiles - (Non-Applicable)

40 CFR 63, Subpart OOOO is a federal MACT that establishes standards for hazardous air pollutants for fabric and other textiles printing, coating and dyeing operations. The only potential applicability to Subpart OOOO is to the application of fleece binder material on the mineral wool line. However, pursuant to §63.4281(d)(1), Subpart OOOO does not apply to "[a]ny web coating operation that is part of the affected source of subpart JJJJ." Therefore, the Subpart OOOO does not apply as this operation is an affected facility under 40 CFR 63, Subpart JJJJ.

40 CFR 63, Subpart ZZZZ: National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

40 CFR 63, Subpart ZZZZ is a federal MACT that establishes national emission limitations and operating limitations for HAPs emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. As the RAN Facility is defined as a major source of HAPs (see Attachment A), the facility is subject to applicable requirements of Subpart ZZZZ. Pursuant to §63.6590(c):

> An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part.

§63.6590(c)(7) specifies that "[a] new or reconstructed compression ignition (CI) stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions" is defined as a RICE that shows compliance with the requirements of Subpart ZZZZ by "meeting the requirements of . . . 40 CFR part 60 subpart JJJJ, for spark ignition engines." Pursuant to §63.6590(a)(2)(ii), a "stationary RICE with a site rating of equal to or less than 500 brake HP located at a major source of HAP emissions is new if you commenced construction of the stationary

RICE on or after June 12, 2006." The fire pump engine proposed for the RAN Facility will be defined as a new stationary RICE and, therefore, will show compliance with Subpart ZZZZ by meeting the requirements of 40 CFR 60, Subpart IIII. Compliance with Subpart IIII is discussed above.

40 CFR 63, Subpart DDDDD: National Emission Standards for Hazardous Air Pollutants for Hazardous Air Pollutants Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters

40 CFR 63, Subpart DDDDD is a federal MACT rule that establishes national emission limitations and work practice standards for HAPs emitted from industrial, commercial, and institutional boilers and process heaters located at major sources of HAPs. The proposed ROXUL facility will be a major source of HAPs (see Attachment A).

Pursuant to §63.7485, Subpart DDDD applies to "an industrial, commercial, or institutional boiler or process heater as defined in §63.7575 that is located at, or is part of, a major source of HAPs." As noted, the RAN Facility is defined as a major source of HAPs. Based on the definition of "boiler" and "process heater," the proposed PreHeat Burner (IMF24), Natural Gas Boilers 1 and 2 (CM03 and CM04), and the Rockfon Building Heater (RFN10) are subject to Subpart DDDDD as new affected sources and are required to be in compliance with Boiler MACT upon startup. None of the units are, however, pursuant to §63.7500(e), subject to any emission standards: "Boilers and process heaters in the units designed to burn gas 1 fuels subcategory [includes natural gas] are not subject to the emission limits in Tables 1 and 2 or 11 through 13 to this subpart, or the operating limits in Table 4 to this subpart." However, the units are subject to the applicable testing, analysis, initial compliance, notification, reporting, and record-keeping requirements §63.7500-§63.7560.

PSD REVIEW REQUIREMENTS

In 1977, Congress passed the Clean Air Act Amendments (CAAA), which included the Prevention of Significant Deterioration (PSD) program. This program was designed to allow industrial development in areas that were in attainment with the NAAQS without resulting in a non-attainment designation for the area. The program, as implied in the name, permits the deterioration of the ambient air in an area (usually a county) as long as it is within defined limits (defined as "increments"). The program, however, does not allow for a significant (as defined by the rule) deterioration of the ambient air. The program prevents significant deterioration by allowing concentration levels to increase in an area within defined limits - called pollutant increments - as long as the pollutants never increase enough to exceed the NAAQS. Projected concentration levels are calculated using complex computer simulations that use meteorological data to predict impacts from the source's potential emission rates (see below). The concentration levels are then, in turn, compared to the NAAQS and increments to verify that the ambient air around the source does not significantly deteriorate (violate the increments) or violate the NAAQS. The PSD program also requires application of best available control technology (BACT) to new or modified sources, protection of Class 1 areas, and analysis of impacts on soils, vegetation, and visibility.

WV implements the PSD program as a SIP-approved state through 45CSR14. As a SIP-approved state, WV is the sole issuing authority for PSD permits. EPA has reviewed WV Legislative Rule 45CSR14 and concluded that it incorporates all the necessary requirements to successfully meet the goals of the PSD program as discussed above. EPA retains, however, an oversight role in WV's administration of the PSD program.

As stated above, the construction of the RAN Facility is defined as construction of a "major stationary source" under 45CSR14 and PSD review is required for the pollutants of NO_x, $PM_{2.5}$, PM_{10}, PM, SO_2, VOCs, H_2SO_4, and GHGs. The substantive requirements of a PSD review include a BACT analysis, an air dispersion modeling analysis, and an additional impacts analysis - each of which will be discussed below.

BACT Analysis - 45CSR14 Section 8.2

Pursuant to 45CSR14, Section 8.2, ROXUL is required to apply BACT to each emission source that emits a PSD pollutant (NO_x, $PM_{2.5}$, PM_{10}, (filterable) PM, SO_2, VOCs, H_2SO_4, and GHGs) with a PTE in excess of the amount that is defined as "significant" for that pollutant. BACT is defined under §45-14-2.12 as:

> ". . .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."

Pursuant to USEPA and DAQ policy, the permit applicant determines an appropriate BACT emission limit by using a "top-down" analysis. The key steps in performing a "top-down" BACT analysis are the following: 1) Identification of all applicable control technologies; 2) Elimination of technically infeasible options; 3) ranking remaining control technologies by control effectiveness; 4) Evaluation of most effective controls and documentation of results; and 5) the selection of BACT. Also included in the BACT selection process is, where appropriate, the review of BACT determinations at similar facilities using the RACT/BACT/LAER Clearinghouse (RBLC). The RBLC is a database of RACT, BACT, and LAER determinations maintained by EPA and periodically updated by the individual permitting authorities. ROXUL included a BACT analysis in their permit application under Appendix D (pp. 477) generally using the top-down approach as described above. For a detailed review of ROXUL's BACT, see Appendix D of Permit Application R14-0037. The BACT determination is summarized below.

ROXUL's BACT Submission

ROXUL broke up their BACT determination into the following broad emission units/lines:

- Material Delivery, Handling, Storage, and Transfer Operations;
- Melting Furnace;
- Gutter Exhaust, Spinning Chamber, Curing Oven Hoods, Curing Oven, and Cooling Section;
- Fleece Application;
- Rockfon Line Operations;
- Coal Milling;
- Other Facility-Wide Activities; and
- Greenhouse Gas Analysis.

For each unit/line, ROXUL generally performed, on a pollutant-by-pollutant basis, a top-down analysis for either the emissions unit or further broke the line into more specific emission units/lines. Data from the RBLC was reviewed where appropriate. The following summarizes the ROXUL's BACT selections (technology selection only, for tables/requirements containing BACT emission limits, see applicable permit section as cited in the below table):

Table 8: ROXUL BACT Summary

Emission Unit/Line	Pollutant	Technology	Draft Permit Citation
Material Delivery, Handling, Storage, and Transfer Operations			
Fugitive Emissions	$PM_{2.5}$, PM_{10}, (filterable) PM	Enclosures, Good Housekeeping Practices, Subpart OOO Compliance(1)	Table 4.1.2(d)
Vent/Stack Emissions	$PM_{2.5}$, PM_{10}, (filterable) PM	Baghouses/Fabric Filters, Subpart OOO Compliance(1)	Table 4.1.2(c)
Portable Crusher	$PM_{2.5}$, PM_{10}, (filterable) PM	Hours of Operation Limit	Table 4.1.2(a) Table 4.1.2(e)
Melting Furnace			
Melting Furnace	NO_x	Integrated SNCR, Oxy-Fired Burners	Table 4.1.4(a)
	$PM_{2.5}$, PM_{10}, (filterable) PM	Baghouse	
	SO_2, H_2SO_4	Sorbent Injection	
	VOCs	Good Combustion Practices(2)	
	GHGs	Energy Efficiency(3)	

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Emission Unit/Line	Pollutant	Technology	Draft Permit Citation
Gutter Exhaust, Spinning Chamber, Curing Oven Hoods, Curing Oven, and Cooling Section			
Gutter Exhaust, Spinning Chamber, Curing Oven Hoods, Curing Oven, Cooling Section	NO_x	LNB, Good Combustion Practices	Table 4.1.5(a)
	$PM_{2.5}$, PM_{10}, (filterable) PM	Wet Electrostatic Precipitator (WESP)	
	SO_2	Use of Natural Gas	
	VOCs	Afterburner/ Good Combustion Practices(4)	
	GHGs	Use of Natural Gas, Good Combustion Practices	
Fleece Application			
Fleece Application	VOCs	Low-VOC Coatings, Good Work Practices	4.1.6(a) and (b)
Rockfon Line Operations			
Use of Glue/Coatings	VOCs	Low-VOC Coatings, Good Work Practices	4.1.7(a) and (b)
IR Zone, Hot Press, and Curing	$PM_{2.5}$, PM_{10}, (filterable) PM	Low-Emitting Process(5)	Table 4.1.7(d)
De-Dusting Baghouse	$PM_{2.5}$, PM_{10}, (filterable) PM	Fabric Filter	
Drying Oven 1, Drying Ovens 2 & 3, High Oven A, High Oven B	NO_x	Good Combustion Practices	
	$PM_{2.5}$, PM_{10}, (filterable) PM	Particulate Filters(6), Use of Natural Gas, Good Combustion Practices	
	SO_2	Use of Natural Gas	
	VOCs	Good Combustion Practices	
	GHGs	Use of Natural Gas, Good Combustion Practices	
Cooling Zone	$PM_{2.5}$, PM_{10}, (filterable) PM	Low-Emitting Process(5)	
Spray Paint Cabin	VOCs	Particulate Filter	

Emission Unit/Line	Pollutant	Technology	Draft Permit Citation
Coal Milling			
Coal Milling & Drying	NO_x	LNB, Dryer Temperature Control	Table 4.1.3(d)
	$PM_{2.5}$, PM_{10}, (filterable) PM	Baghouse	
	SO_2	Use of Natural Gas	
	VOCs	Good Combustion Practices	
	GHGs	Use of Natural Gas, Good Combustion Practices	
Other Facility-Wide Activities			
Other Small Natural Gas Fired Combustion Devices	NO_x	Good Combustion Practices	Table 4.1.8(b), Table 4.1.11(c)(1)
	$PM_{2.5}$, PM_{10}, (filterable) PM	Use of Natural Gas, Good Combustion Practices	
	SO_2	Use of Natural Gas	
	VOCs	Good Combustion Practices	
	GHGs	Use of Natural Gas, Good Combustion Practices	
Emergency Fire Pump Engine	NO_x	Subpart IIII Certification, Annual Hrs (100) of Op Limit	Table 4.1.10(b)
	$PM_{2.5}$, PM_{10}, (filterable) PM		
	SO_2	ULSD Fuel, Annual Hrs (100) of Op Limit	
	VOCs	Subpart IIII Certification, Annual Hrs (100) of Op Limit	
	GHGs	Annual Hrs (100) of Op Limit	
Product Marking Ink Usage	VOCs	Good Work Practices	4.1.11(c)(3)
Cooling Towers	$PM_{2.5}$, PM_{10}, (filterable) PM	High Efficiency Drift Eliminator	Table 4.1.11(b)(2)
Dry Ice Production	GHGs	Production Efficiency	Table 4.1.11(a)

(1) ROXUL concluded that add-on controls were not warranted or appropriate for certain emission units/processes and BACT for these units will be compliance with PPH limits and Subpart OOO limits where applicable.

(2) Specific to the Melting Furnace, Good Combustion Practices includes maintaining a proper oxidizing atmosphere to control VOC emissions through the use of Good Combustion Practices. For all other applications Good Combustion Practices shall mean activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.

(3) Energy Efficiency measures listed in Table D-9-2 (pp. 554-555) of the permit application.

(4) The Afterburner only represents the BACT Technology for the Curing Ovens, all other sources listed under this section will utilize Good Combustion Practices as BACT.

(5) The emission unit/line is of such a nature that it emits only a small amount of pollutants and, therefore, add-on controls or work practice requirements are not warranted.

(6) Filters on Drying Oven 1 and Drying Oven 2 & 3 only.

DAQ Conclusion on BACT Analysis

The DAQ has concluded that ROXUL reasonably conducted a BACT analysis using, where appropriate, the top-down analysis and eliminated technologies for valid reasons. The DAQ further concludes that the selected BACT emission rates given in the draft permit are achievable, are consistent where appropriate with recent applicable BACT determinations, and are accepted as BACT. Further, the DAQ accepts the selected technologies as BACT.

Modeling Analysis - 45CSR14 Section 9 and Section 10

§45-14-9 and §45-14-10 contain requirements relating to a proposed major source's impact on air quality (Section 9) and the requirements for the air dispersion modeling used to determine the potential impact (Section 10). Specifically, §45-14-9.1 requires subject sources to demonstrate that "allowable emission increases from the proposed source or modification, in conjunction with all other applicable emission increases or reductions (including secondary emissions), would not cause or contribute to" (1) a NAAQS violation or (2) an exceedance of a maximum allowable increase over the baseline concentration in any area (exceed the increment).

Pursuant to the above, ROXUL was required to do an air dispersion modeling analysis to determine the potential impacts on Class II areas only. Class I area modeling was not performed (as explained below). The pollutants required to be modeled were NO_x, $PM_{2.5}$, PM_{10}, and SO_2. Greenhouse gases are not modeled as part of the PSD application review process and VOC emissions (as a precursor to tropospheric ozone formation) were addressed through a qualitative analysis by the applicant in the modeling protocol. The results of the modeling analyses are summarized below. More detailed descriptions of these modeling analyses and quantitative results are contained in reports attached to this evaluation as Attachment B. The reports were prepared by Mr. Jon McClung of DAQ's Planning Section.

Class I Modeling

As part of the Clean Air Act Amendments (CAA) of 1977, Congress designated a list of national parks, memorial parks, wilderness areas, and recreational areas as federal Class I air quality areas. Federal Class I areas are defined as national parks over 6,000 acres, and wilderness areas and memorial parks over 5,000 acres. As part of this designation, the CAA gives the Federal Land Managers (FLM's) an affirmative responsibility to protect the natural and cultural resources of Class I areas from the adverse impacts of air pollution. The impacts on a Class I area from an emissions source are determined through complex computer models that take into account the source's emissions, stack parameters, meteorological conditions, and terrain.

If an FLM demonstrates that emissions from a proposed source will cause or contribute to adverse impacts on the air quality related values (AQRV's) of a Class I area, and the permitting authority concurs, the permit will not be issued. The AQRVs typically reviewed, in the case of evaluating adverse impacts, are visibility (both regional and direct plume impact) and acid deposition (including both nitrogen and sulfur).

Additionally, the Class I Increments may not be exceeded. Class I Increments are limits to how much the air quality may deteriorate from a reference point (called the baseline). There are Class I Increments for NO_2, $PM_{2.5}$, PM_{10}, and SO_2.

There are generally four Class I areas that may have to be considered when conducting PSD reviews in West Virginia. These are, in West Virginia, the Otter Creek Wilderness Area and the Dolly Sods Wilderness Area; both of which are managed by the US Forest Service. The Shenandoah National Park, managed by the National Park Service (NPS), and the James River Face Wilderness Area, managed by the US Forest Service (USFS), are in Virginia. The RAN Facility is approximately 153 kilometers (km) from the Otter Creek Wilderness Area, 131 km from the Dolly Sods Wilderness Area, 60 km from the Shenandoah National park, and 220 km from the James River Face Wilderness Area.

The Federal Land Managers responsible for evaluating affects on AQRVs for federally protected Class I areas were, through standard procedure, provided with information concerning the proposed facility upon the submission of the permit application. On January 18, 2018, the NPS and the USFS notified the DAQ that an AQRV analysis was not required for the proposed RAN Facility.

However, ROXUL 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. The maximum modeled concentrations at the 50 km receptors were 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 showed exceeding the Class I SILs (PM_{10}, $PM_{2.5}$, and SO_2), ROXUL used a refined analysis with the CALPUFF model to evaluate the project impact within the park proper. This analysis, the results of which are given in Table 4-4 of ROXUL's Air Quality Modeling Report (pp. 38), show that CALPUFF modeled concentrations are less than Class I SILs.

<u>Class II Modeling</u>

A Class II Modeling analysis can require up to three runs to determine compliance with Rule 14. First, the proposed source is modeled by itself, on a pollutant by pollutant basis, to determine if it produces a "significant impact;" an ambient concentration published by US EPA. If the dispersion model determines that the proposed source produces significant impacts, then the demonstration proceeds to the second stage. If the model finds that the proposed source produces "insignificant impacts", no further modeling is needed. The modeling, the results of which are given in Table 4 of Attachment B, indicated that NO_2, $PM_{2.5}$ and PM_{10} were "significant," thereby requiring the applicant to proceed to the next stage of the modeling process for that pollutant.

The next tier of the modeling analysis is to determine if the proposed facility in combination with the existing sources will produce an ambient impact that is less than the National Ambient Air Quality Standards (NAAQS). As shown in Table 5 of Attachment B, the total concentration of each pollutant is less than the NAAQS for all averaging periods.

This final stage is usually to determine how much of the PSD Increment the proposed construction of the facility consumes, along with all other increment consuming sources. This value may not exceed the PSD Increment. PSD Increments are the maximum concentration increases above a baseline concentration that are allowed in a specific area. As shown in Table 6 of Attachment B, the total concentration is less than the PSD increment for each pollutant and all averaging times.

The applicant therefore passes all the required Air Quality Impact Analysis tests as required for Class II Areas under 45CSR14. Attachment B to this evaluation is a report prepared by Jon McClung on March 2, 2018 (for the complete report with all the attachments, please see the filed document) that discussed in depth the above analysis and presents the results in tabular form.

Additional Impacts Analysis - 45CSR14 Section 12

Section 12 of 45CSR14 requires an applicant to provide "an analysis of the impairment to visibility, soils, and vegetation that would occur as a result of the source or modification and general commercial, residential, industrial, and other growth associated with the source or modification." No quantified thresholds are promulgated for comparison to the additional impacts analysis.

However, ROXUL conducted an analysis of the proposed RAN Facility's modeled impacts against NO_2 and SO_2 screening levels taken from Table 5.3 of the EPA Document "*A Screening Procedure for the Impact of Air Pollution Sources on Plants, Soils, and Animals*." 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. In addition, ROXUL also compared modeled impacts of NO_2, PM_{10}, $PM_{2.5}$, and SO_2 against the Secondary NAAQS, which are designed to protect public welfare; including protection against decreased visibility, damage to animals, crops, vegetation, and buildings. This quantitative analysis, given in Table 4-6 of ROXUL's Air Quality Modeling Report (pp. 40), shows that the maximum modeled impacts do not exceed any of the screening levels or Secondary NAAQS.

Additionally, using EPA's VISCREEN modeling software, ROXUL conducted a visibility analysis at the Antietam National Battlefield and the Harper's Ferry National Historical Park to determine if the impacts from the proposed RAN Facility would cause an adverse impact on visibility at either location. Based on this analysis (the full report is in the file), the impacts would be below the VISCREEN threshold of concern contrast criteria of 0.05 at each location.

Minor Source Baseline Date - Section 2.42.b

On December 21, 2017 the permit application R14-0037 was deemed complete. This action, pursuant to 45CSR14, Section 2.42(b), has triggered the minor source baseline date (MSBD) for the following areas per specific pollutant:

Table 9: Minor Source Baseline Triggering

Pollutant	Berkeley County	Jefferson County
NO_2	Previously	Yes
$PM_{2.5}$	Previously	Yes
PM_{10}	Previously	Yes
SO_2	Yes	Yes

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

This section provides an analysis for those regulated pollutants that may be emitted from the proposed RAN Facility and that are not classified as "criteria pollutants." Criteria pollutants are defined as Carbon Monoxide (CO), Lead (Pb), Oxides of Nitrogen (NO_x), Ozone, Particulate Matter (PM_{10} and $PM_{2.5}$), and Sulfur Dioxide (SO_2). These pollutants have National Ambient Air Quality Standards (NAAQS) set for each that are designed to protect the public health and welfare. Other pollutants of concern, although designated as non-criteria and without national concentration standards, are regulated through various federal programs designed to limit their emissions and public exposure. These programs include federal source-specific Hazardous Air Pollutants (HAPs) limits promulgated under 40 CFR 61 (NESHAPS) and 40 CFR 63 (MACT). Any potential applicability to these programs were discussed above under REGULATORY APPLICABILITY.

HAPS

The majority of non-criteria regulated pollutants fall under the definition of HAPs which, with some revision since, were 188 compounds identified under Section 112(b) of the Clean Air Act (CAA) as pollutants or groups of pollutants that EPA knows or suspects may cause cancer or other serious human health effects. The following table lists the carcinogenic risk (as based on analysis provided in the Integrated Risk Information System (IRIS)) of each HAP identified by ROXUL as being emitted in substantive amounts:

Table 10: Potential HAPs - Carcinogenic Risk

HAPs	Type	Known/Suspected Carcinogen	Classification
Acetaldehyde	VOC	Yes	B2 - Probable Human Carcinogen
Acrolein	VOC	No	Inadequate Data

HAPs	Type	Known/Suspected Carcinogen	Classification
Formaldehyde	VOC	Yes	B1 - Probable Human Carcinogen
Methanol	VOC	No	No Assessment Available
Biphenyl	VOC	Yes	Suggestive Evidence of Carcinogenic Potential
1,3-Butadiene	VOC	Yes	B2 - Probable Human Carcinogen
Naphthalene	VOC	Yes	C - Possible Human Carcinogen
n-Hexane	VOC	No	Inadequate Data
Benzene	VOC	Yes	Category A - Known Human Carcinogen
Toluene	VOC	No	Inadequate Data
Ethylbenzene	VOC	No	Category D - Not Classifiable
Xylenes	VOC	No	Inadequate Data
2,2,4-Trimethylpentane	VOC	No	Inadequate Data

All HAPs have other non-carcinogenic chronic and acute effects. These adverse health affects may be associated with a wide range of ambient concentrations and exposure times and are influenced by source-specific characteristics such as emission rates and local meteorological conditions. Health impacts are also dependent on multiple factors that affect variability in humans such as genetics, age, health status (e.g., the presence of pre-existing disease) and lifestyle. As stated previously, *there are no federal or state ambient air quality standards for these specific chemicals.* For a complete discussion of the known health effects of each compound refer to the IRIS database located at www.epa.gov/iris.

Sulfuric Acid Mist (H_2SO_4)

The compound of H_2SO_4 is regulated under 45CSR14 with a significance level that can trigger BACT for each source that contributes H_2SO_4 emissions. As discussed above, the potential H_2SO_4 emissions from the facility triggered a BACT analysis for the compound. H_2SO_4 is not represented in the IRIS database and is not listed as a HAP. Concerning the carcinogenity of sulfuric acid, the Agency for Toxic Substances and Disease Registry (ATSDR) states that "[t]he ability of sulfuric acid to cause cancer in laboratory animals has not been studied. The International Agency for Research on Cancer (IARC) has determined that occupational exposure to strong inorganic acid mists containing sulfuric acid is carcinogenic to humans. IARC has not classified pure sulfuric acid for its carcinogenic effects."

MONITORING, COMPLIANCE DEMONSTRATIONS, REPORTING, AND RECORDING OF OPERATIONS

Monitoring and Compliance Demonstrations

The primary purpose of emissions monitoring is to determine continuous compliance with emission limits and operating restrictions in the permit over a determined averaging period. Emissions monitoring may include any or all of the following:

- Real-time continuous emissions monitoring to sample and record pollutant emissions (CEMS, COMS);
- Parametric monitoring of variables pre-determined to be proportional (at a known ratio) to emissions (recording of material throughput, fuel usage, production, etc.);
- Real-time tracking of materials and pollutant percentages used in processes where evaporation emissions are expected;
- Monitoring of control device performance indicators (pressure drops, catalyst injection rates, oxidizer temperatures, etc.) to guarantee efficacy of pollution control equipment; and
- Visual stack observations to monitor opacity.

It is the permittee's responsibility to record, certify, and report the monitoring results so as to verify compliance with the emission limits. Where emissions are based on the maximum rated short and long-term capacity of units, generally no continuous emissions or parametric monitoring is required as compliance with the emission limits is based on the specific limited capacity of the units.

For the proposed RAN Facility, a mix of the above methods are used to give a reasonable assurance that continuous compliance with emission limits is being maintained. Specifically, some examples include the required use of CEMS (for CO, NO_x and SO_2) on the Melting Furnace, hours of operation monitoring on the portable crusher and the emergency fire pump, actual VOC/HAPs material balance tracking on all ink, coating, glue, and cleaner usage, and control device monitoring on the Melting Furnace Baghouse, the WESP, and the Curing Oven Afterburner. Visible emissions monitoring, in addition to that required under 40 CFR 60, Subpart OOO, will be required monthly on the larger particulate matter sources.

Refer to Section 4.2 of the draft permit for all the unit-specific monitoring, compliance demonstration, reporting, and record-keeping requirements (MRR).

Record-Keeping

ROXUL will be required to follow the standard record-keeping boilerplate language as given under Section 4.4 of the draft permit. This will require ROXUL to maintain records of all data monitored in the permit and keep the information for a minimum of five years. All collected data will be available to the Director upon request. ROXUL will also be required to follow all the record-keeping requirements as applicable under the variously applicable state and federal rules.

Reporting

Beyond the requirement to follow all reporting requirements as applicable under the variously applicable state and federal rules, ROXUL will be required to submit the following substantive reports:

- The results of the stack test within sixty (60) days of completion of the test. The test report shall provide the information necessary to document the objectives of the test and to determine whether proper procedures were used to accomplish these objectives [*3.3.1(d)*];

- When necessary, any deviation of the allowable visible emission requirement for any emission source discovered during observation using 40CFR Part 60, Appendix A, Method 9 must be reported in writing to the Director of the DAQ as soon as practicable, but within ten (10) calendar days, of the occurrence and shall include, at a minimum, the following information: the results of the visible determination of opacity of emissions, the cause or suspected cause of the violation(s), and any corrective measures taken or planned [*4.2.13(g)*];

- A report detailing all required monitoring on or before September 15 for the reporting period January 1 to June 30 and March 15 for the reporting period July 1 to December 31. All instances of deviation from permit requirements must be clearly identified in such reports [*4.5.1(a)*]; and

- On or before March 15, a certification of compliance with all requirements of the draft permit for the previous calendar year ending on December 31 [*4.5.1(b)*].

General requirements relating to the process of reporting are given under 3.5 of the draft permit.

PERFORMANCE TESTING OF OPERATIONS

Performance testing is required to verify, where reasonable and appropriate, the emissions or emission factors used to determine emission units' potential-to-emit and to show initial or periodic compliance with permitted emission limits. Performance testing must be conducted in accordance with accepted test methods and according to a protocol approved by the Director prior to testing (as outlined under 3.3 of the draft permit). The following table details the initial (within 60 days after achieving the maximum permitted production rate of the emission unit in question, but not later than 180 days after initial startup of the unit) performance testing required of specific emission units:

Table 12: Initial Performance Testing Requirements

Emission Unit(s)	Emission Point	Pollutants	Limit
Melting Furnace	IMF01	All Pollutants under Table 4.1.4(a) with the exception of Mineral Fiber, Total HAPs, and CO_2e.	PPH(2)
Gutter Exhaust, Spinning Chamber, Curing Oven Hoods, Curing Oven, and Cooling Section	HE01	All Pollutants under Table 4.1.5(a) with the exception of SO_2, Mineral Fiber, Total HAPs, and CO_2e.	PPH(2)
Rockfon Line	RFNE8	$PM_{2.5}$(1), PM_{10}(1), PM(1)	PPH gr/dscf (PM only)
De-Dusting Baghouse (CE01-BH)	CE01	$PM_{2.5}$(1), PM_{10}(1), PM(1)	PPH gr/dscf
Recycle Building Vent 1	CM10	$PM_{2.5}$(1), PM_{10}(1), PM(1)	PPH gr/dscf

(1) Filterable Only.
(2) Required performance testing to show compliance with the MACT standards (in lb/ton-melt) may be converted and used for compliance with the PPH limits.

Periodic testing will then be required as based on the schedule given in Table 4.3.3. of the draft permit. Refer to Section 4.3 of the draft permit for all performance testing requirements.

RECOMMENDATION TO DIRECTOR

The WVDAQ has preliminarily determined that the proposed construction of ROXUL USA, Inc.'s RAN Facility in Ranson, Jefferson County will meet the emission limitations and conditions set forth in the DRAFT permit and will comply with all current applicable state and federal air quality rules and standards including 45CSR14, the WV Legislative Rule implementing the Prevention of Significant Deterioration program. A final decision regarding the DRAFT permit will be made after consideration of all public comments. It is the recommendation of the undersigned, upon review and approval of this document and the DRAFT permit, that the WVDAQ, pursuant to §45-14-17, go to public notice on permit application R14-0037.

Joseph R. Kessler, PE
Engineer

3/27/18
Date

ttachment A: Facility-Wide PTE

ROXUL USA, Inc.: RAN Facility

it Number R14-0037: Facility ID 037-00108

	PM_{10} [1]		PM[1]		SO_x		VOCs		HAPs		CO_2e	
TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
32.73	8.22	36.01	9.79	42.88	33.63	147.31	11.66	51.08	3.43	15.04	21,814	95,547
84.20	21.21	92.89	40.43	177.10	0.01	0.05	78.02	341.71	77.07	337.57	8,138	35,644
0.01	2.31e-03	0.01	2.31e-03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0	0
0.02	1.00e-02	0.04	1.00e-02	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0	0
0.03	1.30e-02	0.06	1.30e-02	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0	0
0.03	1.30e-02	0.06	1.30e-02	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0	0
0.03	1.30e-02	0.06	1.30e-02	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0	0
0.04	1.90e-02	0.09	1.90e-02	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0	0
1.06	0.32	1.33	0.30	1.33	3.51e-03	0.02	0.41	1.65	0.01	0.05	703	3,079
0.48	0.22	0.97	0.22	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0	0
0.03	0.01	0.06	0.01	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0	0
0.03	0.01	0.06	0.01	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0	0
0.03	0.01	0.06	0.01	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0	0
0.03	0.01	0.06	0.01	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0	0
0.03	0.01	0.06	0.01	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0	0
0.04	1.90e-02	0.09	1.90e-02	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0	0
0.04	1.90e-02	0.09	1.90e-02	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0	0
0.04	1.90e-02	0.09	1.90e-02	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0	0
0.04	1.90e-02	0.09	1.90e-02	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0	0
0.04	1.90e-02	0.09	1.90e-02	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0	0
0.04	1.90e-02	0.09	1.90e-02	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0	0
0.04	0.02	0.08	0.02	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0	0
0.04	0.02	0.08	0.02	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0	0
0.01	0.01	0.02	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0	0

(1)	PM10 (1)		PM (1)		SO_x		VOCs		HAPs		CO_2e	
TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
0.17	0.04	0.17	0.04	0.17	0.00	0.01	0.03	0.12	~0.00	~0.00	600	2,627
0.03	0.01	0.06	0.01	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0	0
0.06	1.00	0.27	2.19	0.59	0.00	0.00	0.00	0.00	0.00	0.00	0	0
2.00e-02	4.81e-01	1.30e-01	1.04e+00	2.80e-01	0.00	0.00	0.00	0.00	0.00	0.00	0	0
3.98e-03	6.00e-03	2.63e-02	1.27e-02	5.55e-02	0.00	0.00	0.00	0.00	0.00	0.00	0	0
5.49e-05	1.34e-03	3.63e-04	2.84e-03	7.67e-04	0.00	0.00	0.00	0.00	0.00	0.00	0	0
5.49e-05	1.34e-03	3.63e-04	2.84e-03	7.67e-04	0.00	0.00	0.00	0.00	0.00	0.00	0	0
2.00e-02	9.00e-03	4.00e-02	9.00e-03	4.00e-02	0.00	0.00	0.00	0.00	0.00	0.00	0	0
7.51e-05	5.51e-05	4.83e-04	1.16e-04	1.02e-03	0.00	0.00	0.00	0.00	0.00	0.00	0	0
7.31e-05	5.51e-05	4.83e-04	1.16e-04	1.02e-03	0.00	0.00	0.00	0.00	0.00	0.00	0	0
7.87e-03	2.05e-02	9.00e-02	2.51e-02	1.10e-01	0.00	0.00	0.00	0.00	0.00	0.00	0	0
0.17	0.04	0.17	0.04	0.17	0.00	0.01	0.03	0.12	~0.00	~0.00	600	2,627
0.17	0.04	0.17	0.04	0.17	0.00	0.01	0.03	0.12	~0.00	~0.00	600	2,627
0.12	0.06	0.24	0.06	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0	0
0.12	0.06	0.24	0.06	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0	0
1.45	0.66	2.90	0.66	2.90	0.00	0.00	0.00	0.00	0.00	0.00	0	0
1.45	0.66	2.90	0.66	2.90	0.00	0.00	0.00	0.00	0.00	0.00	0	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.53	28.58	6.53	28.58	0	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00					0	0
3.38	0.77	3.38	1.54	6.76	0.00	0.00	0.00	0.00	0.77	3.38	0	0
0.97	0.22	0.97	0.44	1.93	0.00	0.00	0.00	0.00	0.22	0.97	0	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	364	1,594
0.01	2.96e-03	0.01	2.96e-03	0.01	2.34e-03	1.06e-04	2.14e-03	9.39e-03	~0.00	~0.00	47	205
0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.16	9.49	0.00	0.00	0	0
0.06	0.02	0.08	0.02	0.08	0.00	0.00	0.02	0.06	0.02	0.10	0	0

	PM_{10} (1)		PM(1)		SO_x		VOCs		HAPs		CO_2e	
TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
0.06	0.02	0.08	0.02	0.08	0.00	0.00	0.02	0.06	0.02	0.10	0	0
0.38	0.12	0.51	0.12	0.51	0.01	0.01	0.01	0.06	0.10	0.43	320	1,400
0.27	0.08	0.36	0.08	0.36	0.01	0.01	0.01	0.05	0.08	0.34	240	1,050
2.90	0.88	3.86	0.88	3.86	0.00	0.00	0.08	0.34	0.52	2.27	0	0
0.41	0.13	0.55	0.13	0.55	0.01	0.01	0.03	0.49	0.15	0.66	559	2,450
0.63	0.19	0.84	0.19	0.84	0.00	0.00	0.12	0.48	0.21	0.91	0	0
0.75	0.34	1.49	0.34	1.49	0.00	0.00	0.00	0.00	0.34	1.49	0	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.25	36.14	0.00	0.00	0	0
0.38	0.12	0.51	0.12	0.51	0.01	0.01	0.01	0.06	0.10	0.43	320	1,400
0.17	0.04	0.17	0.04	0.17	0.00	0.01	0.03	0.12	~0.00	~0.00	600	2,627
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.19	0.03	0.12	0	0
0.02	0.08	0.02	0.08	0.02	2.14e-03	5.36e-04	0.19	0.05	~0.00	~0.00	1,120	56
0.10		0.43		2.18	0.00	0.00	0.00	0.00	0.00	0.00	0	0
133.39	*36.35*	*153.21*	*59.87*	*250.90*	*33.70*	*147.46*	*107.68*	*470.96*	*89.59*	*392.44*	*36,023*	*152,933*

ıring Oven Hoods, Curing Oven, Cooling Section, and the Afterburner.

rounding differences.
e of HAPs.

Attachment B: Air Dispersion Modeling Report

ROXUL USA, Inc.: RAN Facility

Permit Number R14-0037: Facility ID 037-00108

MEMO

To: Joe Kessler
From: Jon McClung JDM
CC: Laura Crowder, Bev McKeone, Ed Andrews, Steve Pursley, Lee Yuchniuk
Date: March 2, 2018
Re: Air Quality Impact Analysis Review - Roxul USA, Inc.
PSD Application R14-0037 - Facility ID# 037-00108

I have completed my review and replication of the air quality impact analysis submitted by Roxul USA Inc. (Roxul) in support of the PSD permit application (R14-0037) for the proposed construction of a new mineral wool production facility to be located in Ranson, West Virginia, within Jefferson County. Review and replication of components of the modeling analysis were also performed by Ed Andrews, Joe Kessler, Steve Pursley, and Lee Yuchniuk. The protocol for the modeling analysis was submitted by Roxul on September 8, 2017, revised on November 2, 2017, and approved by West Virginia Division of Air Quality (DAQ) on November 3, 2017. The PSD permit application was received in November 2017 (dated November 20, 2017). A modeling report was submitted on December 21, 2017. This dispersion modeling analysis is required pursuant to §45-14-9 (Requirements Relating to the Source's Impact on Air Quality).

As part of the review process, an applicant for a PSD permit performs the air quality impact analysis and submits the results to the DAQ. The DAQ then reviews and replicates the modeling runs to confirm the modeling inputs, procedures, and results. This memo contains a synopsis of the modeling analysis. For a complete technical description of the modeling analysis, please consult the protocol and modeling analysis report submitted by the applicant.

This review is for the Class II area surrounding the proposed project site. Class I areas within 300 km of the project site are: Dolly Sods Wilderness (WV), Otter Creek Wilderness (WV), James River Face Wilderness (Virginia), and Shenandoah National Park (Virginia). The Federal Land Managers (FLMs) responsible for evaluating potential affects on Air Quality Related Values (AQRVs) for federally protected Class I areas were consulted. Based on the emissions from the proposed project and the distances to the Class I areas the National Park Service and U.S. Forest Service have stated a Class I analysis relating to Shenandoah National Park for this project is not required. Attachment A contains the communications by the Federal Land Managers.

Roxul proposes to construct a mineral wool insulation manufacturing facility (Project) to produce building insulation, customized solutions for industrial applications, acoustic ceilings, and other applications. The emission sources associated with the Project are:

- One Mineral Wool Line including:
  - Raw Material Handling Sources (e.g. material unloading, storage silos, conveyor transfer points, portable crusher)

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- One Melting Furnace, Spinning Chamber, Curing Oven, and Cooling Zone,
- Dust control baghouses, and
- Storage tanks

- Coal Milling operations;

- One Rockfon Line including paint application, drying ovens, and dust control baghouse.

Attachment B contains flow diagrams with emission points for the Mineral Wool Line, Rockfon line, and coal milling.

Jefferson County, WV is in attainment or unclassifiable/attainment status for all criteria pollutants. Pollutants emitted in excess of the significant emission rate are subject to PSD review in unclassifiable/attainment areas. The criteria pollutants that exceed the SER associated with the proposed project are in Table 1 (highlighted in bold).

Table 1. Project Emission Rates

Pollutant	Project Emissions (tons/yr)	PSD Significant Emission Rate (tons/yr)
NO_x	**238.96**	40
CO	71.40	100
VOC	**471.41**	40
SO_2	**147.45**	40
PM_{10}	**153.19**	15
$PM_{2.5}$	**133.41**	Primary $PM_{2.5}$: 10 NO_x: 40 SO_2: 40
O_3	**NO_x: 238.96** **VOC: 471.41**	NO_x: 40 VOC: 40

Dispersion modeling was conducted for NO_x, SO_2, PM_{10}, and $PM_{2.5}$. Secondary formation of $PM_{2.5}$ as a result of NO_x and SO_2 emissions was addressed by Roxul and is discussed below. Also, formation of ozone from NO_x and VOC emissions was addressed by the applicant and is discussed below. Attachment C contains modeled Project source parameters and emission rates.

Table 2 presents a summary of the air quality standards that were addressed for SO_2, NO_2, PM_{10}, and $PM_{2.5}$. The pollutants, averaging times, increments, significant impact levels (SILs) and

National Ambient Air Quality Standards (NAAQS) are listed. The SILs for 1-hour SO_2 and 1-hour NO_2 represent the values the Division of Air Quality has implemented as described in the memorandum included in Attachment D.

Table 2. Ambient Air Quality Standards, SILs, and PSD Increments (All concentrations in µg/m3)

Pollutant	Averaging Period	SIL	PSD Increments	NAAQS
SO_2	1-Hour	7.8	-	196
	3-Hour	25	512	1300
	24-Hour	5	91	365
	Annual	1	20	80
NO_2	1-Hour	7.5	-	188
	Annual	1	25	100
PM_{10}	24-Hour	5	30	150
	Annual	1	17	-
$PM_{2.5}$	24-Hour	1.2	9	35
	Annual	0.2	4	12

An air quality impact analysis, as a part of the PSD review process, is a two tiered process. First, a proposed facility is modeled by itself, on a pollutant-by-pollutant and averaging-time basis, to determine if ambient air concentrations predicted by the model exceed the significant impact level (SIL). If ambient impacts are below the SIL then the proposed source is deemed to not have a significant impact and no further modeling is needed. If ambient impacts exceed the SIL then the modeling analysis proceeds to the second tier of cumulative modeling. The cumulative modeling analysis consists of modeling the proposed facility with existing off-site sources and adding representative background concentrations and comparing the results to PSD increments (increment consuming and expanding sources only, no background concentration) and NAAQS. In order to receive a PSD permit, the proposed source must not cause or contribute to an exceedance of the NAAQS or PSD increments. In cases where the PSD increments or NAAQS are predicted to be exceeded in the cumulative analysis, the proposed source would not be considered to cause or contribute to the exceedance if the project-only impacts are less than the SIL.

On January 22, 2013, the U.S. Court of Appeals for the District of Columbia Circuit vacated two provisions in EPA's PSD regulations containing SILs for $PM_{2.5}$. The court granted the EPA's request to remand and vacate the SIL provisions in Sections 51.166(k)(2) and 52.21(k)(2) of the regulations so that EPA could address corrections. EPA's position remains that the court decision does not preclude the use of SILs for $PM_{2.5}$ but special care should be taken in applying the SILs for $PM_{2.5}$. This special care involves ensuring that the difference between the NAAQS and the representative measured background concentration is greater than the SIL. If this difference is greater than the SIL, then it is appropriate to use the SIL as a screening tool to inform the decision as to whether to require a cumulative air quality impact analysis. As shown in Table 3, for both the 24-hr and annual averaging time for $PM_{2.5}$, this difference is greater than the SIL and it is appropriate to use the SIL as a screening tool. Included in Attachment E are the WV $PM_{2.5}$ Design Values, Final and Certified.

Table 3. $PM_{2.5}$ NAAQS, Monitor Design Values, and Significant Impact Levels (All concentrations in µg/m³)

$PM_{2.5}$ Averaging Period	NAAQS	Martinsburg Monitor Design Value (54-003-0003)	Difference between NAAQS and Monitored Design Value	Significant Impact Level (SIL)
		2014-2016		
24-hr	35	27	8	1.2
Annual	12	9.9	2.1	0.2

Modeling Basis

The modeling system used conforms to 40 CFR 51 Appendix W, applicable guidance, and the approved protocol and is summarized below:

- Roxul used the latest version of the regulatory dispersion model and supporting programs: AERMOD (version 16216r), AERMET (version 16216), AERMINUTE (version 15272), AERMAP (version 11103), AERSURFACE (version 13016), and BPIPPRM (version 04274). The AERMOD modeling system (AERMOD, AERMET, AERMAP) is the regulatory default modeling system for near-field (<50km) regulatory dispersion modeling.
- AERMET was used to process five years of surface meteorological data from the EMV Regional Airport (ICAO code: KMRB; WBAN Station ID 13734). Upper air data from Dulles Airport, MD (WBAN Station ID 93743) were used.
- AERSURFACE was used to develop appropriate surface characteristic (albedo, Bowen ratio, surface roughness) inputs to AERMET.
- A nested receptor grid was developed and AERMAP was used to determine terrain heights and hill height scales for use by AERMOD and to determine maximum modeled concentrations.
- Background NO_2 monitoring data for the cumulative analysis for the 1-hr and

annual NO_2 standards are from a monitor in Washington County, PA (ID #42-125-0005).

- Background 24-hour and annual $PM_{2.5}$ monitoring data were obtained from the Clarksburg, WV monitor (54-033-0003).
- Background concentrations for the 24-hour PM_{10} standard are from a monitor in Washington County, PA (ID #42-125-0005).
- The Plume Volume Molar Ratio Method (PVMRM) option in AERMOD was used to characterize NO_2 from modeled concentrations of NO_x.
- The surface friction velocity adjustment (ADJ_U*) option was utilized in AERMET.

Ozone Analysis and Secondary Formation of $PM_{2.5}$

In December 2016, EPA released a draft guidance memorandum[1] (MERP Memorandum) that describes how modeled emission rates of precursors (MERPs) could be calculated as part of a Tier 1 ozone and secondary $PM_{2.5}$ formation analysis to assess a project's emissions of precursor pollutants. The MERPs may be used to describe an emission rate of a precursor that is expected to result in ambient ozone (O_3) or fine particulate matter ($PM_{2.5}$) that would be less than a specific air quality concentration threshold for O_3 or $PM_{2.5}$ that a permitting authority chooses to use to determine whether an impact causes or contributes to a violation of the NAAQS for O_3 or $PM_{2.5}$. Based on this guidance, Roxul has calculated a MERP for ozone and quantified the potential secondary formation of $PM_{2.5}$.

The MERP Memorandum defines a MERP as:

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

For ozone, EPA has proposed a Significant Impact Level (SIL) of 1 ppb and this value can be used to represent the critical air quality threshold. Using EPA Source 8 located in Southern Pennsylvania, approximately 75 km northeast of the project, from the MERP Memo results in a NO_X MERP of 301 tpy and a VOC MERP of 3125 tpy. Roxul's potential emissions from the Project are 238.96 tpy NO_X and 471.41 tpy VOC, both below the respective MERP for each precursor. The precursors can be cumulatively evaluated showing the Project cumulative MERP consumption. A cumulative MERP consumption less than 100% indicates that a project would not cause an ozone concentration exceeding the SIL.

The cumulative consumption for the Roxul Project can be calculated as:

(Roxul NO_X emissions (238.96 tpy)/ NO_X MERP (301 tpy) + (Roxul VOC emissions

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[1]Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program (12/02/16)

(471.4 tpy) / VOC MERP (3125 tpy)) * 100 = 94%.

Where project sources emit both primary $PM_{2.5}$ and precursors of secondary $PM_{2.5}$, EPA guidance indicates that applicants need to combine primary and secondary impacts to determine total $PM_{2.5}$ impacts as part of the PSD compliance demonstration. The Roxul Project proposed sources will emit both primary $PM_{2.5}$ and precursors of secondary $PM_{2.5}$. The primary $PM_{2.5}$ impacts have been evaluated by Roxul through dispersion modeling using AERMOD. The secondary formation of $PM_{2.5}$ from the precursor emissions of NO_X and SO_2 have been evaluated by Roxul using the relationships between emissions and impacts provided by EPA using photochemical modeling in the MERP Memorandum. The total secondary $PM_{2.5}$ (24-hr) impact from the project is 0.064 $\mu g/m^3$. The total secondary $PM_{2.5}$ (annual) impact from the project is 0.0034 $\mu g/m^3$. These concentrations represent a very small fraction of the SIL values - approximately 5.4% of the 24-hour SIL and 1.7% of the annual SIL. Based on this analysis, Roxul's impacts from secondarily formed $PM_{2.5}$ are considered insignificant and further analyis is not required.

Modeling Operating Scenarios

Roxul uses mineral wool production technology processes that have 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 - higher loads generate higher emission rates. The flow rate of gases through the furnace is maintained at constant airflow and temperature regardless of the load. Roxul modeled maximum emissions at maximum load with constant, consistent, stack parameters to determine maximum ambient concentrations. Transient operations for the Roxul production processes, such as startup and shutdown, occur infrequently and for short periods of time and are not separately modeled.

The Emergency Fire Water Pump assumes 100 hours of operation per year for testing and readiness purposes and is an intermittent emissions scenario source. EPA guidance provides for the exclusion of intermittent emissions scenario sources from 1-hr NO_2 modeling since the brief periods of emissions from these units would be unlikely to significantly contribute to NAAQS exceedances considering the probabilistic form of the 1-hr NO_2 standard.

For the 24-hr $PM_{10}/PM_{2.5}$ analyses, the Emergency Fire Water Pump was modeled assuming maximum potential emission rates for (½) one-half hour per day.

SIL Analysis Results (Tier I)

The results of the Significant Impact Analysis for the Roxul Project sources are included in Table 4. All pollutant modeled concentrations except for 3-hr, 24-hr, Annual SO_2 exceed their respective SIL and a cumulative analysis is required for these pollutants. No further modeling analysis is necessary for 3-hr, 24-hr, or Annual SO_2.

Table 4. SIL Analysis Results

Pollutant	Avg. Period	Maximum Modeled Conc. (µg/m³)	Significant Impact Level (SIL) (µg/m³)
NO_2	1-hour	31.63	7.5
	Annual	1.5	1
$PM_{2.5}$ (NAAQS)	24-hour	8.44	1.2
	Annual	1.58	0.2
$PM_{2.5}$ (PSDI)*	24-hour	9.75	1.2
	Annual	1.77	0.2
PM_{10}	24-hour	23.82	5
	Annual	4.04	1
SO_2	1-hour	26.79	7.8
	3-hour	17.52	25
	24-hour	4.57	5
	Annual	0.53	1

*PSDI: PSD Increment

Cumulative Analysis Results (Tier II)

The cumulative analysis includes the modeled impacts from the Roxul Project sources, off-site existing sources, and representative background concentrations. For off-site existing sources, the impacts represent maximum hourly potential emissions, as determined from applicable permits. The background concentration data is as summarized above with detailed information in the applicant's modeling report.

The cumulative analysis evaluated impacts at all receptors above the SIL in the SIL analysis. The SIL analysis is based on the highest-first-high concentration. The cumulative analysis is based on the form of the 1-hr NO_2 standard, which is the 98th percentile of the yearly distribution of 1-hour daily maximum concentrations, which is equivalent to the 8th highest rank of daily maximum concentrations. Table 5 shows the maximum total concentrations for all the receptors modeled in the cumulative analysis. For all modeled exceedances of the 1-hour SO_2 NAAQS, Roxul does not cause or contribute to the modeled exceedances.

Table 5. NAAQS Analysis Results - Maximum Total Concentrations

Pollutant	Averaging Period	Modeled Concentration (μg/m³)	Background Concentration (μg/m³)	Total Concentration (μg/m³)	NAAQS (μg/m³)
NO_2	1-hour	93.95	33.20	127	188
	Annual	2.5	9.40	12	100
$PM_{2.5}$	24-hour	8.53	14.3	23	35
	Annual	1.79	5.7	7	12
PM_{10}	24-hour	31.77	24	56	150
SO_2	1-hour	204.66	39.5	244	196

Table 6 shows the maximum total Class II Increment concentrations, which include maximum modeled concentrations from increment consuming sources and. An increment analysis was not performed for 1-hr NO_2 since an increment level has not been established.

Table 6. Class II Increment Analysis Results

Pollutant	Averaging Period	Modeled Concentration (μg/m³)	PSD Increment (μg/m³)
NO_2	Annual	1.5	25
$PM_{2.5}$	24-hour	8.7	9
	Annual	1.83	4
PM_{10}	24-hour	21.5	30
	Annual	4.1	17

<u>**Summary**</u>

The air quality impact analysis prepared and submitted by Roxul to the DAQ has been reviewed and replicated and conforms to 40 CFR 51 Appendix W, applicable guidance, and the modeling protocol. The cumulative modeling analysis demonstrates that no modeled exceedances of the Class II Increments are predicted. Roxul does not cause or contribute to the modeled exceedances of the 1-hour SO_2 NAAQS.

West Virginia Department of Environmental Protection

Austin Caperton

Cabinet Secretary

Permit to Construct

R14-0037

This permit is issued in accordance with the West Virginia Air Pollution Control Act (West Virginia Code §§ 22-5-1 et seq.), 45 C.S.R. 13 — Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation, and 45 C.S.R. 14 - Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration. The permittee identified at the facility listed below is authorized to construct the stationary sources of air pollutants identified herein in accordance with all terms and conditions of this permit.

Issued to:

ROXUL USA, Inc.

RAN Facility

037-00108

DRAFT

William F. Durham

Director, Division of Air Quality

Issued: ***DRAFT***

Facility Location:	Ranson, Jefferson County, West Virginia
Mailing Address:	71 Edmond Road, Suite 6 Kearneysville, WV 25430
Facility Description:	Mineral Wool Manufacturing Facility
SIC/NAICS Code:	3296/327993
UTM Coordinates:	Easting: 252.06 km Northing: 4,362.62 km Zone: 18
Latitude/Longitude:	39.37754, -77.87844
Permit Type:	Major Source Construction
Desc. of Change:	Construction of a new mineral wool manufacturing facility defined as a major stationary source and subject to Prevention of Significant Deterioration (PSD) permitting requirements.

Any person whose interest may be affected, including, but not necessarily limited to, the applicant and any person who participated in the public comment process, by a permit issued, modified or denied by the Secretary may appeal such action of the Secretary to the Air Quality Board pursuant to article one [§§ 22B-1-1 et seq.], Chapter 22B of the Code of West Virginia. West Virginia Code §22-5-14.

As a result of this permit, the source is a major source subject to 45CSR30. The Title V (45CSR30) application will be due within twelve (12) months after the commencement date of any operation authorized by this permit.

Table of Contents

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity(1)	Control Device(2)
Raw Material Handling					
IMF11	IMF11	Conveyor Transfer Point	2018	1,800 scfm (1,137 Nm^3/hr)	IMF11-FF
B215	B215	Raw Material Loading Hopper	2018	716 ton/day (650 tonne/day)	PE
IMF12	IMF12	Conveyor Transfer Point	2018	1,800 scfm (1,137 Nm^3/hr)	IMF12-FF
IMF14	IMF14	Conveyor Transfer Point	2018	1,800 scfm (1,137 Nm^3/hr)	IMF14-FF
IMF15	IMF15	Conveyor Transfer Point	2018	1,800 scfm (1,137 Nm^3/hr)	IMF15-FF
IMF16	IMF16	Conveyor Transfer Point	2018	1,800 scfm (1,137 Nm^3/hr)	IMF16-FF
IMF21	IMF21	Charging Building Vacuum Cleaning Filter	2018	316 scfm (500 Nm^3/hr)	IMF21-FF
RM_REJ	RM_REJ	Raw Material Reject Bin	2018	TBD	PE
S_REJ	S_REJ	Sieve Reject Bin	2018	TBD	PE
B170	B170	Melting Furnace Portable Crusher & Storage	2018	<150 TPH (<136 tonne/hr)	None
B210	B210	Raw Material Storage - Loading	2018	716 ton/day (650 tonne/day)	PE
IMF25	IMF25	Coal Feed Tank	2018	758 scfm (1,200 Nm^3/hr)	IMF25-FF
RMS	RMS	Raw Material Open Storage & Delivery	2018	5,382 ft^2 ($500m^2$)	PE
IMF17	IMF17	Charging Building Vent 1	2018	n/a	None
IMF18	IMF18	Charging Building Vent 2	2018	n/a	None
Coal Milling					
IMF03A	IMF03A	Coal Storage Silo A	2018	758 scfm (1,200 Nm^3/hr)	IMF03A-FF
IMF03B	IMF03B	Coal Storage Silo B	2018	758 scfm (1,200 Nm^3/hr)	IMF03B-FF
IMF03C	IMF03C	Coal Storage Silo C	2018	758 scfm (1,200 Nm^3/hr)	IMF03C-FF

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity(1)	Control Device(2)
IMF04	IMF04	Conveyor Transfer Point	2018	1,800 scfm (1,137 Nm^3/hr)	IMF04-FF
IMF05	IMF05	Coal Milling Burner & Baghouse	2018	2,873 scfm (4,547 Nm^3/hr)	IMF05-BH
IMF06	IMF06	Coal Milling De-Dusting Baghouse	2018	6,317 scfm (10,000 Nm^3/hr)	IMF06-BH
IMF13	IMF13	Conveyor Transfer Point	2018	1,800 scfm (1,137 Nm^3/hr)	IMF13-FF
B235	B235	Coal Milling Building	2018	93 ton/day (84 tonne/day)	None
B230	B230	Coal Unloading	2018	93 ton/day (84 tonne/day)	PE
B231	B231	Coal Unloading Hopper	2018	93 ton/day (84 tonne/day)	PE
Mineral Wool Line					
IMF01	IMF01	Melting Furnace	2018	21,414 scfm (33,900 Nm^3/hr)	IMF01-BH De-NO_x De-SO_x
IMF02	IMF02	Furnace Cooling Tower	2018	1,321 gpm (300 m^3/hr)	Drift Eliminator
IMF07A	IMF07A	Filter Fines Day Silo	2018	1,250 scfm (790 Nm^3/hr)	IMF07A-FF
IMF07B	IMF07B	Secondary Energy Materials Silo	2018	1,250 scfm (790 Nm^3/hr)	IMF07B-FF
IMF08	IMF08	Sorbent Silo	2018	758 scfm (1,200 Nm^3/hr)	IMF08-FF
IMF09	IMF09	Spent Sorbent Silo	2018	758 scfm (1,200 Nm^3/hr)	IMF09-FF
IMF10	IMF10	Filter Fines Receiving Silo	2018	758 scfm (1,200 Nm^3/hr)	IMF10-FF
IMF24	IMF24	Preheat Burner	2018	5.1 mmBtu/hr (1,500 kW)	None
CO	HE01	Curing Oven	2018	18,950 scfm (30,000 Nm^3/hr)	WESP (HE01) CO-AB
CO-HD	HE01	Curing Oven Hoods	2018	25,267 scfm (40,000 Nm^3/hr)	WESP (HE01)

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity(1)	Control Device(2)
GUT-EX	HE01	Gutter Exhaust	2018	15,792 scfm (25,000 Nm^3/hr)	WESP (HE01)
SPN	HE01	Spinning Chamber	2018	258,986 scfm (410,000 Nm^3/hr)	WESP (HE01)
CS	HE01	Cooling Section	2018	50,534 scfm (80,000 Nm^3/hr)	WESP (HE01)
HE02	HE02	Gutter Cooling Tower	2018	308 gpm (70 m^3/hr)	Drift Eliminator
CM12	CM12	Fleece Application Vent 1	2018	408 lb/hr (185 kg/hr)	None
CM13	CM13	Fleece Application Vent 2	2018		None
CE01	CE01	De-dusting Baghouse	2018	44,217 scfm (70,000 Nm^3/hr)	CE01-BH
CE02	CE02	Vacuum Cleaning Baghouse	2018	12,633 scfm (20,000 Nm^3/hr)	CE02-BH
DI	DI	Dry Ice Cleaning	2018	165.3 lbs/hour (75 kg/hr)	None
P_MARK	P_MARK	Product Marking	2018	0.40 mmBtu/hr (88 kW)	None
Recycling					
CM08	CM08	Recycle Plant Building Vent 3	2018	1,579 scfm (2,500 Nm^3/hr)	CM08-FF
CM09	CM09	Recycle Plant Building Vent 4	2018	1,579 scfm (2,500 Nm^3/hr)	CM09-FF
CM10	CM10	Recycle Plant Building Vent 1	2018	18,950 scfm (30,000 Nm^3/hr)	CM10-FF
CM11	CM11	Recycle Plant Building Vent 2	2018	18,950 scfm (30,000 Nm^3/hr)	CM11-FF
Rockfon Line					
RFNE1	RFNE1	IR Zone	2018	1,895 scfm (3,000 Nm^3/hr)	None
RFNE2	RFNE2	Hot Press	2018	1,895 scfm (3,000 Nm^3/hr)	None
RFNE3	RFNE3	High Oven A	2018	2.73 mmBtu/hr, 5,053 scfm (800 kW, 8,000 Nm^3/hr)	None

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity(1)	Control Device(2)
RFNE4	RFNE4	Drying Oven 1	2018	2.05 mmBtu/hr, 3.158 scfm (600 kW, 5,000 Nm^3/hr)	RFNE4-FF
RFNE5	RFNE5	Spraying Cabin	2018	6,317 scfm (10,000 Nm^3/hr)	RFNE5-FF
RFNE6	RFNE6	Drying Oven 2 & 3	2018	4.78 mmBtu/hr, 7,580 scfm (1,400 kW, 12,000 Nm^3/hr)	RFNE6-FF
RFNE7	RFNE7	Cooling Zone	2018	15,792 scfm (25,000 Nm^3/hr)	None
RFNE8	RFNE8	Rockfon De-dusting Baghouse	2018	74,419 scfm (117,812 Nm^3/hr)	RFNE8-BH
RFNE9	RFNE9	High Oven B	2018	2.73 mmBtu/hr, 5,053 scfm (800 kW, 8,000 Nm^3/hr)	None
Miscellaneous Emission Units					
CM03	CM03	Natural Gas Boiler 1	2018	5.1 mmBtu/hr (1,500 kW)	None
CM04	CM04	Natural Gas Boiler 2	2018	5.1 mmBtu/hr (1,500 kW)	None
EFP1	EFP1	Emergency Fire Pump Engine	2018	197 hp (147 kw)	None
RFN10	RFN10	Rockfon Building Heater	2018	5.1 mmBtu/hr (1,500 kW)	None
Storage Tanks					
TK-DF	TK-DF	Diesel Fuel Tank	2018	2,642 gallons (10 m^3)	None
TK-UO	TK-UO	Used Oil Tank	2018	581 gallons (2.2 m^3)	None
TK-TO1	TK-TO1	Thermal Oil Expansion Tank - Rockfon	2018	212 gallons (0.8 m^3)	None
TK-TO2	TK-TO2	Thermal Oil Drain Tank - Rockfon	2018	159 gallons (0.6 m^3)	None
TK-TO3	TK-TO3	Thermal Oil Tank - IMF	2018	2,642 gallons (10 m^3)	None

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity(1)	Control Device(2)
TK-TO4	TK-TO4	Thermal Oil Expansion Tank - IMF	2018	1,321 gallons ($5\ m^3$)	None
TK-DO	TK-DO	De-dust Oil Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS1	TK-RS1	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS2	TK-RS2	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS3	TK-RS3	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS4	TK-RS4	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS5	TK-RS5	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS6	TK-RS6	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS7	TK-RS7	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-CA	TK-CA	Coupling Agent Storage Tank	2018	264 gallons ($1\ m^3$)	None
TK-AD	TK-AD	Additive Storage Tank	2018	53 gallons ($0.2\ m^3$)	None
TK-BM	TK-BM	Binder Mix Tank	2018	2,642 gallons ($10m^3$)	None
TK-BC	TK-BC	Binder Circulation Tank	2018	4,227 gallons ($16\ m^3$)	None
TK-BD	TK-BD	Binder Day Tank	2018	793 gallons ($3\ m^3$)	None
TK-BS1	TK-BS1	Binder Storage Container	2018	264 gallons ($1\ m^3$)	None
TK-BS2	TK-BS2	Binder Storage Container	2018	264 gallons ($1\ m^3$)	None
TK0-BS3	TK-BS3	Binder Storage Container	2018	264 gallons ($1\ m^3$)	None
TK-DOD	TK-DOD	De-dust Oil Day Tank	2018	264 gallons ($1\ m^3$)	None

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity(1)	Control Device(2)
TK-PD	TK-PD	Paint Dilution Storage Tank	2018	793 gallons ($3\ m^3$)	None
TK-PDD	TK-PDD	Paint Dilution Day Tank	2018	397 gallons ($1.5\ m^3$)	None

(1) Where air flow rates are listed, it represents the maximum design capacity of the mechanical flow - if applicable - through the listed particulate matter control device or uncontrolled vent .

(2) AB = Afterburner; BH = Baghouse; FF = Fabric Filter; PE = Partial Enclosure; WESP = Wet Electrostatic Precipitator.

2.0. General Conditions

2.1. Definitions

2.1.1. All references to the "West Virginia Air Pollution Control Act" or the "Air Pollution Control Act" mean those provisions contained in W.Va. Code §§ 22-5-1 to 22-5-18.

2.1.2. The "Clean Air Act" means those provisions contained in 42 U.S.C. §§ 7401 to 7671q, and regulations promulgated thereunder.

2.1.3. "Secretary" means the Secretary of the Department of Environmental Protection or such other person to whom the Secretary has delegated authority or duties pursuant to W.Va. Code §§ 22-1-6 or 22-1-8 (45 CSR § 30-2.12.). The Director of the Division of Air Quality is the Secretary's designated representative for the purposes of this permit.

2.2. Acronyms

CAAA	Clean Air Act Amendments
CBI	Confidential Business Information
CEM	Continuous Emission Monitor
CES	Certified Emission Statement
C.F.R. *or* **CFR**	Code of Federal Regulations
CO	Carbon Monoxide
C.S.R. *or* **CSR**	Codes of State Rules
DAQ	Division of Air Quality
DEP	Department of Environmental Protection
dscm	Dry Standard Cubic Meter
FOIA	Freedom of Information Act
HAP	Hazardous Air Pollutant
HON	Hazardous Organic NESHAP
HP	Horsepower
lbs/hr	Pounds per Hour
LDAR	Leak Detection and Repair
M	Thousand
MACT	Maximum Achievable Control Technology
MDHI	Maximum Design Heat Input
MM	Million
MMBtu/hr *or* **mmbtu/hr**	Million British Thermal Units per Hour
MMCF/hr *or* **mmcf/hr**	Million Cubic Feet per Hour
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NESHAPS	National Emissions Standards for Hazardous Air Pollutants
NO_x	Nitrogen Oxides
NSPS	New Source Performance Standards
PM	Particulate Matter
$PM_{2.5}$	Particulate Matter less than 2.5μm in diameter
PM_{10}	Particulate Matter less than 10μm in diameter
Ppb	Pounds per Batch
pph	Pounds per Hour
ppm	Parts per Million
Ppmv or ppmv	Parts per million by volume
PSD	Prevention of Significant Deterioration
psi	Pounds per Square Inch
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
TAP	Toxic Air Pollutant
TPY	Tons per Year
TRS	Total Reduced Sulfur
TSP	Total Suspended Particulate
USEPA	United States Environmental Protection Agency
UTM	Universal Transverse Mercator
VEE	Visual Emissions Evaluation
VOC	Volatile Organic Compounds
VOL	Volatile Organic Liquids

2.3. Authority

This permit is issued in accordance with West Virginia Air Pollution Control Law W.Va. Code §§22-5-1 et seq. and the following Legislative Rules promulgated thereunder:

2.3.1. 45CSR13 – *Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation; and*

2.3.2. *45CSR14 – Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration.*

2.4. Term and Renewal

2.4.1. This permit shall remain valid, continuous and in effect unless it is revised, suspended, revoked or otherwise changed under an applicable provision of 45CSR13 or any applicable legislative rule.

2.5. Duty to Comply

2.5.1. The permitted facility shall be constructed and operated in accordance with the plans and specifications filed in Permit Applications R14-0037 and any modifications, administrative updates, or amendments thereto. The Secretary may suspend or revoke a permit if the plans and specifications upon which the approval was based are not adhered to;
[45CSR§§13-5.11 and 13-10.3]

2.5.2. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the West Virginia Code and the Clean Air Act and is grounds for enforcement action by the Secretary or USEPA;

2.5.3. Violations of any of the conditions contained in this permit, or incorporated herein by reference, may subject the permittee to civil and/or criminal penalties for each violation and further action or remedies as provided by West Virginia Code 22-5-6 and 22-5-7;

2.5.4. Approval of this permit does not relieve the permittee herein of the responsibility to apply for and obtain all other permits, licenses and/or approvals from other agencies; i.e., local, state and federal, which may have jurisdiction over the construction and/or operation of the source(s) and/or facility herein permitted.

2.6. Duty to Provide Information

The permittee shall furnish to the Secretary within a reasonable time any information the Secretary may request in writing to determine whether cause exists for administratively updating, modifying, revoking or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Secretary copies of records to be kept by the permittee. For information claimed to be confidential, the permittee shall furnish such records to the Secretary along with a claim of confidentiality in accordance with 45CSR31. If confidential information is to be sent to USEPA, the permittee shall directly provide such information to USEPA along with a claim of confidentiality in accordance with 40 C.F.R. Part 2.

2.7. Duty to Supplement and Correct Information

Upon becoming aware of a failure to submit any relevant facts or a submittal of incorrect information in any permit application, the permittee shall promptly submit to the Secretary such supplemental facts or corrected information.

2.8. Administrative Update

The permittee may request an administrative update to this permit as defined in and according to the procedures specified in 45CSR13.
[45CSR§13-4]

2.9. Permit Modification

The permittee may request a minor modification to this permit as defined in and according to the procedures specified in 45CSR13.
[45CSR§13-5.4.]

2.10. Major Permit Modification

The permittee may request a major modification as defined in and according to the procedures specified in 45CSR14 or 45CSR19, as appropriate.
[45CSR§13-5.1]

2.11. Inspection and Entry

The permittee shall allow any authorized representative of the Secretary, upon the presentation of credentials and other documents as may be required by law, to perform the following:

a. At all reasonable times (including all times in which the facility is in operation) enter upon the permittee's premises where a source is located or emissions related activity is conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times (including all times in which the facility is in operation) any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit;

d. Sample or monitor at reasonable times substances or parameters to determine compliance with the permit or applicable requirements or ascertain the amounts and types of air pollutants discharged.

2.12. Emergency

2.12.1. An "emergency" means any situation arising from sudden and reasonable unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission

limitation under the permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

2.12.2. Effect of any emergency. An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if the conditions of Section 2.12.3 are met.

2.12.3. The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:

a. An emergency occurred and that the permittee can identify the cause(s) of the emergency;

b. The permitted facility was at the time being properly operated;

c. During the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in the permit; and,

d. The permittee submitted notice of the emergency to the Secretary within one (1) working day of the time when emission limitations were exceeded due to the emergency and made a request for variance, and as applicable rules provide. This notice must contain a detailed description of the emergency, any steps taken to mitigate emission, and corrective actions taken.

2.12.4. In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency has the burden of proof.

2.12.5. The provisions of this section are in addition to any emergency or upset provision contained in any applicable requirement.

2.13. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it should have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. However, nothing in this paragraph shall be construed as precluding consideration of a need to halt or reduce activity as a mitigating factor in determining penalties for noncompliance if the health, safety, or environmental impacts of halting or reducing operations would be more serious than the impacts of continued operations.

2.14. Suspension of Activities

In the event the permittee should deem it necessary to suspend, for a period in excess of sixty (60) consecutive calendar days, the operations authorized by this permit, the permittee shall notify the Secretary, in writing, within two (2) calendar weeks of the passing of the sixtieth (60) day of the suspension period.

2.15. Property Rights

This permit does not convey any property rights of any sort or any exclusive privilege.

2.16. Severability

The provisions of this permit are severable and should any provision(s) be declared by a court of competent jurisdiction to be invalid or unenforceable, all other provisions shall remain in full force and effect.

2.17. Transferability

This permit is transferable in accordance with the requirements outlined in Section 10.1 of 45CSR13.
[45CSR§13-10.1]

2.18. Notification Requirements

The permittee shall notify the Secretary, in writing, no later than thirty (30) calendar days after the actual startup of the operations authorized under this permit.

2.19. Credible Evidence

Nothing in this permit shall alter or affect the ability of any person to establish compliance with, or a violation of, any applicable requirement through the use of credible evidence to the extent authorized by law. Nothing in this permit shall be construed to waive any defense otherwise available to the permittee including, but not limited to, any challenge to the credible evidence rule in the context of any future proceeding.

3.0. Facility-Wide Requirements

3.1. Limitations and Standards

3.1.1. **Open burning.** The open burning of refuse by any person, firm, corporation, association or public agency is prohibited except as noted in 45CSR§6-3.1.
[45CSR§6-3.1.]

3.1.2. **Open burning exemptions.** The exemptions listed in 45CSR§6-3.1 are subject to the following stipulation: Upon notification by the Secretary, no person shall cause, suffer, allow or permit any form of open burning during existing or predicted periods of atmospheric stagnation. Notification shall be made by such means as the Secretary may deem necessary and feasible.
[45CSR§6-3.2.]

3.1.3. **Asbestos.** The permittee is responsible for thoroughly inspecting the facility, or part of the facility, prior to commencement of demolition or renovation for the presence of asbestos and complying with 40 C.F.R. § 61.145, 40 C.F.R. § 61.148, and 40 C.F.R. § 61.150. The permittee, owner, or operator must notify the Secretary at least ten (10) working days prior to the commencement of any asbestos removal on the forms prescribed by the Secretary if the permittee is subject to the notification requirements of 40 C.F.R. § 61.145(b)(3)(i). The USEPA, the Division of Waste Management and the Bureau for Public Health - Environmental Health require a copy of this notice to be sent to them.
[40CFR§61.145(b) and 45CSR§34]

3.1.4. **Odor.** No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public.
[45CSR§4-3.1 State-Enforceable only.]

3.1.5. **Permanent shutdown.** A source which has not operated at least 500 hours in one 12-month period within the previous five (5) year time period may be considered permanently shutdown, unless such source can provide to the Secretary, with reasonable specificity, information to the contrary. All permits may be modified or revoked and/or reapplication or application for new permits may be required for any source determined to be permanently shutdown.
[45CSR§13-10.5.]

3.1.6. **Standby plan for reducing emissions.** When requested by the Secretary, the permittee shall prepare standby plans for reducing the emissions of air pollutants in accordance with the objectives set forth in Tables I, II, and III of 45 C.S.R. 11.
[45CSR§11-5.2.]

3.2. Monitoring Requirements

3.2.1. **Emission Limit Averaging Time.** Unless otherwise specified, compliance with all annual limits shall be based on a rolling twelve month total. A rolling twelve month total shall be the sum of the measured parameter of the previous twelve calendar months. Unless otherwise specified, compliance with all hourly emission limits shall be based on the applicable NAAQS averaging times or, where applicable, as given in any approved performance test method. However, nothing under 3.2.1. requires that continuous performance testing take place for the entire averaging period time frame (e.g., performance testing to show compliance with a PM_{10} emission limit is not necessarily required for 24 consecutive hours). The required length of time of a performance test will be determined by th appropriate test method and compliance procedures as approved under a protocol submitted pursuant to 3.3.1(c).

3.3. Testing Requirements

3.3.1. **Stack testing.** As per provisions set forth in this permit or as otherwise required by the Secretary, in accordance with the West Virginia Code, underlying regulations, permits and orders, the permittee shall conduct test(s) to determine compliance with the emission limitations set forth in this permit and/or established or set forth in underlying documents. The Secretary, or his duly authorized representative, may at his option witness or conduct such test(s). Should the Secretary exercise his option to conduct such test(s), the operator shall provide all necessary sampling connections and sampling ports to be located in such manner as the Secretary may require, power for test equipment and the required safety equipment, such as scaffolding, railings and ladders, to comply with generally accepted good safety practices. Such tests shall be conducted in accordance with the methods and procedures set forth in this permit or as otherwise approved or specified by the Secretary in accordance with the following:

a. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with 40 C.F.R. Parts 60, 61, and 63 in accordance with the Secretary's delegated authority and any established equivalency determination methods which are applicable. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4 or 45CSR§13-5.4 as applicable.

b. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with applicable requirements which do not involve federal delegation. In specifying or approving such alternative testing to the test methods, the Secretary, to the extent possible, shall utilize the same equivalency criteria as would be used in approving such changes under Section 3.3.1.a. of this permit. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4 or -5.4 as applicable.

c. All periodic tests to determine mass emission limits from or air pollutant concentrations in discharge stacks and such other tests as specified in this permit shall be conducted in accordance with an approved test protocol. Unless previously approved, such protocols shall be submitted to the Secretary in writing at least thirty (30) days prior to any testing and shall contain the information set forth by the Secretary. In addition, the permittee shall notify the Secretary at least fifteen (15) days prior to any testing so the Secretary may have the opportunity to observe such tests. This notification shall include the actual date and time during which the test will be conducted and, if appropriate, verification that the tests will fully conform to a referenced protocol previously approved by the Secretary.

d. The permittee shall submit a report of the results of the stack test within sixty (60) days of completion of the test. The test report shall provide the information necessary to document the objectives of the test and to determine whether proper procedures were used to accomplish these objectives. The report shall include the following: the certification described in paragraph 3.5.1.; a statement of compliance status, also signed by a responsible official; and, a summary of conditions which form the basis for the compliance status evaluation. The summary of conditions shall include the following:

1. The permit or rule evaluated, with the citation number and language;
2. The result of the test for each permit or rule condition; and,
3. A statement of compliance or noncompliance with each permit or rule condition.

[WV Code § 22-5-4(a)(14-15) and 45CSR13]

3.4. Recordkeeping Requirements

3.4.1. **Retention of records.** The permittee shall maintain records of all information (including monitoring data, support information, reports and notifications) required by this permit recorded in a form suitable and readily available for expeditious inspection and review. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation. The files shall be maintained for at least five (5) years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. At a minimum, the most recent two (2) years of data shall be maintained on site. The remaining three (3) years of data may be maintained off site, but must remain accessible within a reasonable time. Where appropriate, the permittee may maintain records electronically (on a computer, on computer floppy disks, CDs, DVDs, or magnetic tape disks), on microfilm, or on microfiche.

3.4.2. **Odors.** For the purposes of 45CSR4, the permittee shall maintain a record of all odor complaints received, any investigation performed in response to such a complaint, and any responsive action(s) taken.
[45CSR§4. *State-Enforceable only.*]

3.5. Reporting Requirements

3.5.1. **Responsible official.** Any application form, report, or compliance certification required by this permit to be submitted to the DAQ and/or USEPA shall contain a certification by the responsible official that states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate and complete.

3.5.2. **Confidential information.** A permittee may request confidential treatment for the submission of reporting required by this permit pursuant to the limitations and procedures of W.Va. Code § 22-5-10 and 45CSR31.

3.5.3. **Correspondence.** All notices, requests, demands, submissions and other communications required or permitted to be made to the Secretary of DEP and/or USEPA shall be made in writing and shall be deemed to have been duly given when delivered by hand, or mailed first class or by private carrier with postage prepaid to the address(es), or submitted in electronic format by email as set forth below or to such other person or address as the Secretary of the Department of Environmental Protection may designate:

Table 3.5.3.: Correspondence Addresses

If to the DAQ:	**If to the US EPA:**
Director WVDEP Division of Air Quality 601 57th Street, SE Charleston, WV 25304-2345 **DAQ Compliance and Enforcement[1]:** **DEPAirQualityReports@wv.gov**	Associate Director Office of Air Enforcement and Compliance Assistance - (3AP20) U. S. Environmental Protection Agency Region III 1650 Arch Street Philadelphia, PA 19103-2029

1 For all self-monitoring reports (MACT, GACT, NSPS, etc.), stack tests and protocols, notice of Compliance Status Reports, Initial Notifications, etc.

3.5.4. **Operating Fee.**

3.5.4.1. In accordance with 45CSR30 – Operating Permit Program, the permittee shall submit a Certified Emissions Statement (CES) and pay fees on an annual basis in accordance with the submittal requirements of the Division of Air Quality. A receipt for the appropriate fee shall be maintained on the premises for which the receipt has been issued, and shall be made immediately available for inspection by the Secretary or his/her duly authorized representative.

3.5.4.2. In accordance with 45CSR30 – Operating Permit Program, enclosed with this permit is a Certified Emissions Statement (CES) Invoice, from the date of initial startup through the following June 30. Said invoice and the appropriate fee shall be submitted to this office no later than 30 days prior to the date of initial startup. For any startup date other than July 1, the permittee shall pay a fee or prorated fee in accordance with the Section 4.5 of 45CSR22. A copy of this schedule may be found attached to the Certified Emissions Statement (CES) Invoice.

3.5.5. **Emission inventory.** At such time(s) as the Secretary may designate, the permittee herein shall prepare and submit an emission inventory for the previous year, addressing the emissions from the facility and/or process(es) authorized herein, in accordance with the emission inventory submittal requirements of the Division of Air Quality. After the initial submittal, the Secretary may, based upon the type and quantity of the pollutants emitted, establish a frequency other than on an annual basis.

4.0. Source-Specific Requirements

4.1. Limitations and Standards

4.1.1. Only those emission units/sources as identified in Table 1.0, with the exception of any *de minimis* sources as identified under Table 45-13B of 45CSR13, are authorized at the permitted facility by this permit. In accordance with the information filed in Permit Application R14-0037, the emission units/sources identified under Table 1.0 of this permit shall be installed, maintained, and operated so as to minimize any fugitive escape of pollutants, shall not exceed the listed maximum design capacities, shall use the specified control devices, and comply with any other information provided under Table 1.0.

4.1.2. **Material Handling Operations**
The handling of raw materials used in the production of mineral wool (including but not limited to igneous rocks, slags, dolomite/limestone, and mineral additives), coal milling material handling operations, recycling operations, and all other operations involved in the handling or processing of friable materials with a potential of producing particulate matter emissions, shall be in accordance with the following requirements:

a. The permittee shall not exceed the specified maximum design capacities of the following operations:

Table 4.1.2(a): Maximum Design Capacities

Parameter	Limit	Units
Raw Materials(1)	716(2) (650)	Ton/Day (Tonne/Day)
Lump Coal/Pet Coke	93(3) (84)	Ton/Day (Tonne/Day)
Portable Melt Crushing	<150 (<136)	TPH (Tonne/Hour)

(1) Rock, Slag, and Minerals
(2) As based on the Charging Building (B220) Conveyer Belt.
(3) As based on the Coal Mill Feed Conveyer Belt.

b. The permittee shall not exceed the specified maximum annual throughputs or hours of operation of the following operations:

Table 4.1.2(b): Maximum Annual Throughputs

Parameter	Limit	Units
Portable Melt Crushing	540	Hours of Operation

c. The permittee shall not exceed the maximum emission limits for the specified emission points given in the following tables:

(1) **British Units**

Table 4.1.2(c)(1): Material Handling Operations Stack Emission Limits in British Units

Emission Point ID	Source Description	Filter Outlet (gr/dscf)[(1)]	Pollutant[(2)]	PPH[(3)]	TPY
IMF03A	Coal Storage Silo A	0.001	$PM_{2.5}$	6.60e-03	0.03
		0.002	PM/PM_{10}	0.013	0.06
IMF03B	Coal Storage Silo B	0.001	$PM_{2.5}$	6.60e-03	0.03
		0.002	PM/PM_{10}	0.013	0.06
IMF03C	Coal Storage Silo C	0.001	$PM_{2.5}$	6.60e-03	0.03
		0.002	PM/PM_{10}	0.013	0.06
IMF04	Conveyer TP (B231 to B235)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.019	0.09
IMF06	Coal Milling Building (B235) De-Dusting Baghouse[(4)]	0.002	$PM_{2.5}$	0.110	0.48
		0.004	PM/PM_{10}	0.221	0.97
IMF07A	Filter Fines Day Silo	0.001	$PM_{2.5}$	0.007	0.03
		0.002	PM/PM_{10}	0.014	0.06
IMF07B	Secondary Energy Materials Silo	0.001	$PM_{2.5}$	0.007	0.03
		0.002	PM/PM_{10}	0.014	0.06
IMF08	Sorbent Silo	0.001	$PM_{2.5}$	6.60e-03	0.03
		0.002	PM/PM_{10}	0.013	0.06
IMF09	Spent Sorbent Silo	0.001	$PM_{2.5}$	6.60e-03	0.03
		0.002	PM/PM_{10}	0.013	0.06
IMF10	Filter Fines Receiving Silo	0.001	$PM_{2.5}$	6.60e-03	0.03
		0.002	PM/PM_{10}	0.013	0.06
IMF11	Conveyer TP (B215 to B220)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.020	0.09
IMF12	Conveyer TP (B210 to B220)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.020	0.09
IMF13	Bin-Conveyer TP (B231 to Conveyer)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.020	0.09

Emission Point ID	Source Description	Filter Outlet (gr/dscf)[1]	Pollutant[2]	PPH[3]	TPY
IMF14	Conveyer TP (B220 No. 1)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.020	0.09
IMF15	Conveyer TP (B220 No. 2)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.020	0.09
IMF16	Conveyer TP (B220 to B300)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.020	0.09
IMF17	Charging Building Vent 1	n/a[5]	$PM_{2.5}$	0.010	0.04
			PM/PM_{10}	0.019	0.08
IMF18	Charging Building Vent 2	n/a[5]	$PM_{2.5}$	0.010	0.04
			PM/PM_{10}	0.019	0.08
IMF21	Charging Building Vacuum Cleaning	0.001	$PM_{2.5}$	0.003	0.01
		0.002	PM/PM_{10}	0.006	0.02
IMF25	Coal Feed Tank	0.001	$PM_{2.5}$	0.007	0.03
		0.002	PM/PM_{10}	0.013	0.06
B235	Coal Milling Building	n/a[5]	$PM_{2.5}$	0.005	0.02
			PM/PM_{10}	0.010	0.04
CE01	De-Dusting Baghouse	0.0020	$PM_{10}/PM_{2.5}$	0.772	3.38
		0.0041	PM	1.543	6.76
		n/a	Mineral Fiber	0.772	3.38
CE02	Vacuum Cleaning Baghouse	0.0020	$PM_{10}/PM_{2.5}$	0.220	0.97
		0.0041	PM	0.441	1.93
		n/a	Mineral Fiber	0.220	0.97
CM08	Recycle Building Vent 3	0.002	$PM_{2.5}$	0.028	0.12
		0.004	PM/PM_{10}	0.055	0.24
CM09	Recycle Building Vent 4	0.002	$PM_{2.5}$	0.028	0.12
		0.004	PM/PM_{10}	0.055	0.24

Emission Point ID	Source Description	Filter Outlet (gr/dscf)(1)	Pollutant(2)	PPH(3)	TPY
CM10	Recycle Building Vent 1	0.002	$PM_{2.5}$	0.331	1.45
		0.004	PM/PM_{10}	0.661	2.90
CM11	Recycle Building Vent 2	0.002	$PM_{2.5}$	0.331	1.45
		0.004	PM/PM_{10}	0.661	2.90

(1) gr/dscf= grains/dry standard cubic feet. Where applicable, the filter is the **BACT** technology and the outlet loading is PM/PM_{10} **BACT** limit for the specified emission points. Where a limit is not specified, **BACT** is the PPH limit.
(2) Particulate Matter limits are filterable only. With the exception of CE01 and CE02, PM/PM_{10} limits are the same.
(3) Hourly emission limits are based on a 24-hour average.
(4) This baghouse is optional and not required but if installed will be subject to the given emission limits.
(5) This is an uncontrolled building opening.

(2) <u>**Metric Units**</u>

Table 4.1.2(c)(2): Material Handling Operations Stack Emission Limits in Metric Units

Emission Point ID	Source Description	Filter Outlet (mg/Nm^3)(1)	Pollutant(2)	kg/hr(3)	tonne/yr
IMF03A	Coal Storage Silo 1	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF03B	Coal Storage Silo 2	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF03C	Coal Storage Silo 3	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF04	Conveyer TP (B231 to B235)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF06	Coal Milling Building (B235) De-Dusting Baghouse(4)	5	$PM_{2.5}$	0.050	0.44
		10	PM/PM_{10}	0.100	0.88
IMF07A	Filter Fines Day Silo	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF07B	Secondary Energy Materials Silo	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05

Emission Point ID	Source Description	Filter Outlet (mg/Nm³)(1)	Pollutant(2)	kg/hr(3)	tonne/yr
IMF08	Sorbent Silo	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF09	Spent Sorbent Silo	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF10	Filter Fines Receiving Silo	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF11	Conveyer TP (B215 to B220)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF12	Conveyer TP (B210 to B220)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF13	Bin-Conveyer TP (B231 to Conveyer)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF14	Conveyer TP (B220 No. 1)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF15	Conveyer TP (B220 No. 2)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF16	Conveyer TP (B220 to B300)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF17	Charging Building Vent 1	n/a(5)	$PM_{2.5}$	0.004	0.04
			PM/PM_{10}	0.010	0.08
IMF18	Charging Building Vent 2	n/a(5)	$PM_{2.5}$	0.004	0.04
			PM/PM_{10}	0.010	0.08
IMF21	Charging Building Vacuum Cleaning	2.5	$PM_{2.5}$	0.001	0.01
		5	PM/PM_{10}	0.003	0.02
IMF25	Coal Feed Tank	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
B235	Coal Milling Building	n/a(5)	$PM_{2.5}$	0.005	0.02
			PM/PM_{10}	0.009	0.04

Emission Point ID	Source Description	Filter Outlet (mg/Nm³)[1]	Pollutant[2]	kg/hr[3]	tonne/yr
CE01	De-Dusting Baghouse	5	$PM_{10}/PM_{2.5}$	0.350	3.07
		10	PM	0.700	6.13
		n/a	Mineral Fiber	0.350	3.07
CE02	Vacuum Cleaning Baghouse	5	$PM_{10}/PM_{2.5}$	0.100	0.88
		10	PM	0.200	1.75
		n/a	Mineral Fiber	0.100	0.88
CM08	Recycle Building Vent 3	5	$PM_{2.5}$	0.013	0.11
		10	PM/PM_{10}	0.030	0.22
CM09	Recycle Building Vent 4	5	$PM_{2.5}$	0.013	0.11
		10	PM/PM_{10}	0.030	0.22
CM10	Recycle Building Vent 1	5	$PM_{2.5}$	0.150	1.31
		10	PM/PM_{10}	0.300	2.63
CM11	Recycle Building Vent 2	5	$PM_{2.5}$	0.150	1.31
		10	PM/PM_{10}	0.300	2.63

(1) mg/Nm^3 = milligrams/cubic meter. Where applicable, the filter is the **BACT** technology and the outlet loading is PM/PM_{10} **BACT** limit for the specified emission points. Where a limit is not specified, **BACT** is the kg/hr limit.
(2) Particulate Matter limits are filterable only. With the exception of CE01 and CE02, PM/PM_{10} limits are the same.
(3) Hourly emission limits are based on a 24-hour average.
(4) This baghouse is optional and not required but if installed will be subject to the given emission limits.
(5) This is an uncontrolled building opening.

d. The permittee shall not exceed the maximum emission limits and shall utilize the control methods for the specified fugitive emission sources given in the following tables:

(1) **British Units**

Table 4.1.2(d)(1): Material Handling Operations Fugitive Emission Limits in British Units

Emission Unit ID	Source Description	Control Technology	Pollutant[1]	PPH[2]	TPY
B215	Drop into Raw Material Loading Hopper	3-sided enclosure w/cover	$PM_{2.5}$	9.20e-04	4.03e-03
			PM_{10}	6.85e-03	3.00e-02
			PM	1.37e-02	6.00e-02

Emission Unit ID	Source Description	Control Technology	Pollutant(1)	PPH(2)	TPY
RMS	Drop onto Raw Material Stockpile	3-sided enclosure	$PM_{2.5}$	2.47e-04	1.08e-03
			PM_{10}	1.63e-03	7.14e-03
			PM	4.57e-03	2.00e-02
	Stockpile Erosion		$PM_{2.5}$	1.55e-03	1.00e-02
			PM_{10}	1.00e-02	4.25e-02
			PM	2.07e-02	9.05e-02
RM_REJ	Drop into Raw Material Reject Collection Bin	4-sided rubber drop guard	$PM_{2.5}$	1.84e-05	8.05e-05
			PM_{10}	1.21e-04	5.32e-04
			PM	2.57e-04	1.12e-03
S_REJ	Drop into Sieve Reject Collection Bin	4-sided rubber drop guard	$PM_{2.5}$	1.84e-05	8.05e-05
			PM_{10}	1.21e-04	5.32e-04
			PM	2.57e-04	1.12e-03
B170	Drop from Portable Crusher into Pit Waste Storage Pile	3-sided enclosure	$PM_{2.5}$	1.18e-02	3.18e-03
			PM_{10}	7.41e-02	2.10e-02
			PM	1.48e-01	4.00e-02
	Stockpile Erosion		$PM_{2.5}$	1.00e-02	2.44e-02
			PM_{10}	3.50e-02	1.53e-01
			PM	7.44e-02	3.30e-01
B210	Drop into B210	3-sided enclosure w/cover	$PM_{2.5}$	1.49e-02	4.03e-03
			PM_{10}	1.11e-01	3.00e-02
			PM	2.22e-01	6.00e-02
	Truck or FEL Drop into B210	None	$PM_{2.5}$	7.41e-02	2.00e-02
			PM_{10}	4.07e-01	1.10e-01
			PM	8.15e-01	2.25e-01
B230	Truck Dump to Coal Bunker	3-sided enclosure w/cover	$PM_{2.5}$	2.03e-04	5.49e-05
			PM_{10}	1.34e-03	3.63e-04
			PM	2.84e-03	7.67e-04

Emission Unit ID	Source Description	Control Technology	Pollutant(1)	PPH(2)	TPY
B231	Drop into Coal Unloading Hopper	3-sided enclosure w/cover	$PM_{2.5}$	2.03e-04	5.49e-05
			PM_{10}	1.34e-03	3.63e-04
			PM	2.84e-03	7.67e-04

(1) Particulate Matter limits are filterable only.
(2) Hourly emission limits are based on a 24-hour average and are the **BACT** limits for the listed fugitive emission sources.

(2) **Metric Units**

Table 4.1.2(d)(2): Material Handling Operations Fugitive Emission Limits in Metric Units

Emission Unit ID	Source Description	Control Technology	Pollutant(1)	kg/hr(2)	tonne/yr
B215	Drop into Raw Material Loading Hopper	3-sided enclosure w/cover	$PM_{2.5}$	1.67e-03	3.65e-03
			PM_{10}	1.10e-02	2.41e-02
			PM	5.82e-03	5.10e-02
RMS	Drop onto Raw Material Stockpile	3-sided enclosure	$PM_{2.5}$	1.12e-04	9.81e-04
			PM_{10}	7.40e-04	6.48e-03
			PM	1.56e-03	1.37e-02
	Stockpile Erosion		$PM_{2.5}$	7.03e-04	1.00e-02
			PM_{10}	4.40e-03	4.00e-02
			PM	1.00e-02	8.21e-02
RM_REJ	Drop into Raw Material Reject Collection Bin	4-sided rubber drop guard	$PM_{2.5}$	8.57e-06	7.51e-05
			PM_{10}	5.51e-05	4.83e-04
			PM	1.16e-04	1.02e-03
S_REJ	Drop into Sieve Reject Collection Bin	4-sided rubber drop guard	$PM_{2.5}$	8.34e-06	7.31e-05
			PM_{10}	5.51e-05	4.83e-04
			PM	1.16e-04	1.02e-03
B170	Drop from Portable Crusher into Pit Waste Storage Pile	3-sided enclosure	$PM_{2.5}$	3.29e-04	2.88e-03
			PM_{10}	2.28e-03	2.00e-02
			PM	4.60e-03	4.03e-02
	Stockpile Erosion		$PM_{2.5}$	2.53e-03	2.22e-02
			PM_{10}	2.00e-02	1.40e-01
			PM	3.07e-02	3.00e-01

Emission Unit ID	Source Description	Control Technology	Pollutant(1)	kg/hr(2)	tonne/yr
B210	Drop into B210	3-sided enclosure w/cover	$PM_{2.5}$	4.17e-04	3.65e-03
			PM_{10}	2.75e-03	2.41e-02
			PM	5.82e-03	5.10e-02
	Truck or FEL Drop into B210	None	$PM_{2.5}$	1.67e-03	1.46e-02
			PM_{10}	1.14e-02	1.00e-01
			PM	2.33e-02	2.04e-01
B230	Truck Dump to Coal Bunker	3-sided roofed enclosure w/ closeable bay door	$PM_{2.5}$	5.68e-06	4.98e-05
			PM_{10}	3.76e-05	3.29e-04
			PM	7.95e-05	6.96e-04
B231	Drop into Covered Coal Unloading Hopper	3-sided enclosure w/cover	$PM_{2.5}$	5.68e-06	4.98e-05
			PM_{10}	3.76e-05	3.29e-04
			PM	7.95e-05	6.96e-04

(1) Particulate Matter limits are filterable only.
(2) Hourly emission limits are based on a 24-hour average and are the **BACT** limits for the listed fugitive emission sources.

e. **Melting Furnace Portable Crusher**
Emissions from the Melting Furnace Portable Crusher (not including associated storage pile or pit waste drop) shall not exceed the limits given in the following table:

Table 4.1.2(e): Melting Furnace Portable Crusher Emission Limits

Pollutant(1)	PPH(2) (kg/hr)	TPY (tonne/yr)
$PM_{2.5}$	0.12 (0.05)	0.03 (0.03)
PM_{10}	0.36 (0.16)	0.10 (0.09
PM	0.81 (0.37)	0.22 (0.20)

(1) Particulate Matter limits are filterable only.
(2) Hourly emission limits are the **BACT** limits.

f. In addition to the particulate matter controls as required in the Emission Units Table 1.0, the raw material mixer and crusher located in the Charging Building (B220) and the coal conveyer transfer point located inside the Coal Milling Building (B235) shall be equipped with fabric filters to control particulate matter emissions from these sources. The maximum outlet grain loading concentration for each of these fabric filters shall not exceed 0.002 gr/dscf (5 mg/Nm^3)) of filterable PM/PM_{10} and 0.001 gr/dscf (2.5 mg/Nm^3) filterable $PM_{2.5}$;

g. **Outdoor Material Storage Areas**
All outdoor raw material, coal, pit waste, or recycled material storage shall be in accordance with the following:

(1) The permittee is authorized to operate one (1) raw material stockpile (RMS) that shall not exceed a base of 5,382 ft^2 (500 m^2) and shall utilize 3-sided enclosures to minimize the potential fugitive emissions of particulate matter from wind erosion and pile activity;

(2) The permittee is authorized to operate Building 210 and 211 for raw material storage. These buildings shall utilize 3-sided enclosures and a roof to minimize the potential fugitive emissions of particulate matter from wind erosion and pile activity;

(3) The permittee is authorized to operate one (1) coal bunker (B230) that shall utilize a 3-sided enclosure, a roof, and a closeable bay door (or equivalent design) to minimize the potential fugitive emissions of particulate matter from wind erosion and pile activity;

(4) The permittee is authorized to operate one (1) recycled material stockpile. The material in this storage area is limited to the slag-like material tapped from the Melting Furnace that is of such a physical nature so as to limit any significant generation of fugitive matter from wind erosion and pile activity;

(5) The permittee is authorized to operate one (1) pit waste (crushed recycled material) storage area (B170) that shall not exceed a base of 19,375 ft^2 (1,800 m^2) and shall utilize a 3-sided enclosure to minimize the potential fugitive emissions of particulate matter from wind erosion and pile activity;

(6) For all storage piles, the permittee shall manage on-pile activity so as to minimize the release of emissions; and

(7) All storage area enclosures shall be reasonably maintained and any significant holes shall be repaired immediately.

h. **Haulroads and Mobile Work Areas**
Fugitive particulate emissions resulting from use of haulroads and mobile work areas shall be minimized by the following:

(1) The permittee shall pave, and maintain such pavement, on all haulroads and mobile work areas (including a reasonable shoulder area) within the plant boundary;

(2) The permittee shall maintain access to a vacuum sweeper truck in good operating condition, and shall utilize same as needed to remove excess dirt and dust from all haulroads and mobile work areas. The haulroads and mobile work areas shall be flushed with water immediately prior to each vacuum sweeping (flushing may be part of vacuum sweeper truck); and

(3) The permittee shall collect, in a timely fashion, material spilled on haulroads that could become airborne if it dried or were subject to vehicle traffic.

i. **45CSR7**
The handling of raw materials used in the production of mineral wool and coal milling material handling operations shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) No person shall cause, suffer, allow or permit any manufacturing process or storage structure generating fugitive particulate matter to operate that is not equipped with a system, which may include, but not be limited to, process equipment design, control equipment design or operation and maintenance procedures, to minimize the emissions of fugitive particulate matter. To minimize means such system shall be installed, maintained and operated to ensure the lowest fugitive particulate matter emissions reasonably achievable.
[45CSR§7-5.1]

j. **40 CFR 60, Subpart OOO**
The non-metallic mineral handling operations (see Table 4-1 of Permit Application R14-0037 for a complete list of affected sources) prior to the furnace building (B300) are subject to the applicable limitations and standards under 40 CFR 60, Subpart OOO including, but not limited to, the following:

(1) Affected facilities must meet the stack emission limits and compliance requirements in Table 2 of Subpart OOO within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup as required under §60.8. The requirements in Table 2 of Subpart OOO apply for affected facilities with capture systems used to capture and transport particulate matter to a control device.
[40 CFR §60.672(a)]

(2) Affected facilities must meet the fugitive emission limits and compliance requirements in Table 3 of Subpart OOO within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup as required under §60.11. The requirements in Table 3 of Subpart OOO apply for fugitive emissions from affected facilities without capture systems and for fugitive emissions escaping capture systems.
[40 CFR §60.672(b)]

(3) Truck dumping of nonmetallic minerals into any screening operation, feed hopper, or crusher is exempt from the requirements of this section.
[40 CFR §60.672(d)]

(4) If any transfer point on a conveyor belt or any other affected facility is enclosed in a building, then each enclosed affected facility must comply with the emission limits in 40 CFR §60.672(a) and (b), or the building enclosing the affected facility or facilities must comply with the following emission limits:

(1) Fugitive emissions from the building openings (except for vents as defined in §60.671) must not exceed 7 percent opacity; and

(2) Vents (as defined in §60.671) in the building must meet the applicable stack emission limits and compliance requirements in Table 2 of Subpart OOO.
[40 CFR §60.672(e)]

(5) Any baghouse that controls emissions from only an individual, enclosed storage bin is exempt from the applicable stack PM concentration limit (and associated performance testing) in Table 2 of Subpart OOO but must meet the applicable stack opacity limit and compliance requirements in Table 2 of Subpart OOO. This exemption from the stack PM concentration limit does not apply for multiple storage bins with combined stack emissions.
[40 CFR §60.672(f)]

4.1.3. **Coal Mill Burner and Fluidized Bed Dryer**

The Coal Mill Burner and Fluidized Bed Dryer, identified as IMF05, shall meet the following requirements:

a. The Coal Mill Burner shall not exceed an MDHI of 6.00 mmBtu/hr (1,757 kW) shall only be fired by pipeline-quality natural gas (PNG);

b. The Fluidized Bed Dryer shall have a design capacity not to exceed 200 tons per day;

c. The combined exhaust from the Coal Mill Burner and Fluidized Bed Dryer shall be vented to first a separator and then to a baghouse (IMF05-BH) for control of filterable particulate matter;

d. The combined exhaust of the Coal Mill Burner and Fluidized Bed Dryer shall not exceed the emission limits, and shall utilize the specified BACT Technology, as given in the following table:

Table 4.1.3(d): Coal Mill Burner and Fluidized Bed Dryer Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
CO	n/a	n/a	0.49 (0.22)	2.15 (1.95)
NO_x	60 ppmvd @ 3% O_2	LNB, Temperature Control(1)	0.42 (0.19)	1.86 (1.68)
$PM_{2.5}$(2)	PPH	Baghouse	0.26 (0.12)	1.06 (0.96)
PM_{10}(2)			0.32 (0.14)	1.33 (1.20)

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
PM(3)	0.005 gr/dscf (12.3 mg/Nm^3)	Baghouse	0.12 (0.06)	0.54 (0.49)
SO_2	PPH	Use of Natural Gas	3.51e-03 (1.59e-03)	0.02 (0.01)
VOCs		Good Combustion Practices(4)	0.41 (0.19)	1.65 (1.50)
CO_2e	TPY	Use of Natural Gas, Good Combustion Practices(4)	--	3,080(5) (2,793)

(1) Drying in the Fluidized Bed Dryer shall take place at a temperature of less than 180 degrees Fahrenheit so as to prevent any combustion of the coal.
(2) Includes condensables.
(3) Filterable only.
(4) Good Combustion Practices shall mean activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.
(5) As based on emission factors from 40 CFR 98, Table A-1.

e. **45CSR7**
The Coal Mill Burner and Fluidized Bed Dryer shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

4.1.4. **Melting Furnace**
The Melting Furnace, identified as IMF01, shall meet the following requirements:

a. The Melting Furnace shall not exceed the emission limits, and shall utilize the specified **BACT** Technology, as given in the following table:

Table 4.1.4(a): Melting Furnace Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/ yr)
CO	n/a	n/a	11.21[1] (5.09)	49.10 (44.54)
NO_x	PPH	Integrated SNCR, Oxy-Fired Burners[2]	37.37[1] (16.95)	163.67 (148.48)
$PM_{2.5}$[3]		Baghouse	7.47 (3.39)	32.73 (29.70)
PM_{10}[3]			8.22 (3.73)	36.01 (32.67)
PM[4]	0.013 gr/dscf 31 mg/Nm^3		2.32 (1.05)	10.15 (9.21)
SO_2	PPH	Sorbent Injection in the Baghouse	33.63[1] (15.26)	147.31 (133.63)
VOCs		Good Combustion Practices[5]	11.66 (5.29)	51.08 (46.34)
H_2SO_4		Sorbent Injection in the Baghouse	3.74 (1.70)	16.37 (14.85)
Mineral Fiber	n/a	n/a	2.32 (1.05)	10.15 (9.21)
HF			0.37 (0.17)	1.62 (1.47)
HCl			0.29 (0.13)	1.29 (1.17)
COS			0.37 (0.17)	1.64 (1.48)
Total HAPs			3.43 (1.56)	15.04 (13.64)
CO_2e	TPY	Energy Efficiency[6]	--	95,547 (86,679)

(1) Compliance based on a 30-day rolling average.
(2) Integrated SNCR system utilizes ammonia injection to promote a de-NOx reaction to occur. The oxy-fuel burners are specially designed to fire with O_2 instead of ambient air.
(3) Includes condensables.
(4) Filterable only.
(5) Good combustion practices include, but are not limited to the following: (1) maintaining a proper oxidizing atmosphere to control VOC emissions through proper combustion tuning, temperature, and air/fuel mixing and (2) activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.
(6) Energy Efficiency measures listed in Table D-9-2 (pp. 554) of the permit application.

b. **45CSR7**
The Melting Furnace shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) Mineral acids shall not be released from any type source operation or duplicate source operation or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity given in Table 45-7B found at the end of this rule.
[45CSR§7-4.2]

c. **45CSR10**
The Melting Furnace shall comply with all applicable requirements of 45CSR10 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit the emission into the open air from any source operation an in-stack sulfur dioxide concentration exceeding 2,000 parts per million by volume from existing source operations, except as provided in subdivisions 4.1.a through 4.1.e.
[45CSR§10-3.1]

d. **40 CFR 63, Subpart DDD**
The Melting Furnace shall comply with all applicable requirements of 40 CFR 63, Subpart DDD including, but not limited to, the following:

(1) **§63.1178 For cupolas, what standards must I meet?**

(i) You must control emissions from each cupola as specified in Table 2 to this subpart.
[40 CFR§63.1178(a)]

Table 2 to Subpart DDD of Part 63—Emissions Limits and Compliance Dates

If your source is a:	And you commenced construction:	Your emission limits are:[1]	And you must comply by:[2]
2. Cupola	After May 8, 1997	0.10 lb PM per ton of melt	June 1, 1999
8. Open-top cupola	After November 25, 2011	3.2 lb of COS per ton melt	July 29, 2015[4]
10. Cupola using slag as a raw material	After November 25, 2011	0.015 lb of HF per ton melt 0.012 lb of HCl per ton melt.	July 29, 2015[4]

(1) The numeric emissions limits do not apply during startup and shutdown.
(2) Existing sources must demonstrate compliance by the compliance dates specified in this table. New sources have 180 days after the applicable compliance date to demonstrate compliance.
(4) Or upon initial startup, whichever is later.

(ii) You must meet the following operating limits for each cupola:
[40 CFR§63.1178(b)]

(A) Begin within one hour after the alarm on a bag leak detection system sounds, and complete in a timely manner, corrective actions as specified in your operations, maintenance, and monitoring plan required by §63.1187 of this subpart.
[40 CFR§63.1178(b)(1)]

(B) When the alarm on a bag leak detection system sounds for more than five percent of the total operating time in a six-month reporting period, develop and implement a written quality improvement plan (QIP) consistent with the compliance assurance monitoring requirements of §64.8(b)-(d) of 40 CFR part 64.
[40 CFR§63.1178(b)(2)]

(C) Additionally, on or after the applicable compliance date for each new or reconstructed cupola, you must either:
[40 CFR§63.1178(b)(3)]

(I) Maintain the operating temperature of the incinerator so that the average operating temperature for each three-hour block period never falls below the average temperature established during the performance test, or
[40 CFR§63.1178(b)(3)(I)]

(II) Maintain the percent excess oxygen in the cupola at or above the level established during the performance test. You must determine the percent excess oxygen using the following equation:
[40 CFR§63.1178(b)(3)(II)]

Percent excess oxygen = ((Oxygen available/Fuel demand for oxygen) - 1) * 100

Where:

Percent excess oxygen = Percentage of excess oxygen present above the stoichiometric balance of 1.00, (%).

1.00 = Ratio of oxygen in a cupola combustion chamber divided by the stoichiometric quantity of oxygen required to obtain complete combustion of fuel.

Oxygen available = Quantity of oxygen introduced into the cupola combustion zone.
Fuel demand for oxygen = Required quantity of oxygen for stoichiometric combustion of the quantity of fuel present.

4.1.5. Gutter Exhaust, Spinning Chamber, Curing Oven Hoods, Curing Oven, and Cooling Section

The Gutter Exhaust (GUT-EX), Spinning Chamber (SPN), Curing Oven Hoods (CO-HD), Curing Oven (CO), and Cooling Section (CS) shall meet the following requirements:

a. The Gutter Exhaust, Spinning Chamber, Curing Oven Hoods, Curing Oven, and Cooling Section shall not exceed the aggregate emission limits (as emitted from the Wet Electrostatic Precipitator (WESP) stack (HE01)), and each shall utilize the specified BACT Technology as given in the following table:

Table 4.1.5(a): Gutter Exhaust, Spinning Chamber, Curing Oven Hoods, Curing Oven, and Cooling Section Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
CO	n/a	n/a	1.82 (0.82)	7.97 (7.23)
NO_x	PPH	LNB, Good Combustion Practices(1)	14.55 (6.60)	63.73 (57.82)
$PM_{2.5}$(2)		WESP	19.22 (8.72)	84.20 (76.39)
PM_{10}(2)			21.21 (9.62)	92.89 (84.27)
PM(3)			21.21 (9.62)	92.89 (84.27)
SO_2		Use of Natural Gas	0.01 (4.89e-03)	0.05 (0.04)
VOCs		Afterburner Good Combustion Practices Subpart DDD Compliance(4)	78.02 (35.39)	341.71 (309.99)
Phenol	n/a	n/a(5)	19.37 (8.79)	84.84 (76.98)
Formaldehyde			12.79 (5.80)	56.02 (50.81)
Methanol			23.70 (10.75)	103.80 (94.17)
Mineral Fiber			21.21 (9.62)	92.89 (84.27)
Total HAPs			77.07 (34.96)	337.56 (306.23)

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
CO_2e	TPY	Use of Natural Gas, Good Combustion Practices(1)	--	35,644 (32,336)

(1) Good combustion practices include, but are not limited to the following: Proper combustion tuning, temperature, and air/fuel mixing and activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.
(2) Includes condensables.
(3) Filterable only.
(4) BACT Technology: Gutter Exhaust - Subpart DDD Compliance, Curing Oven - Afterburner/Good Combustion Practices, Spinning Chamber - Subpart DDD Compliance, Curing Oven Hoods - Subpart DDD Compliance.
(5) While the Afterburner is required as a control on Phenol, Formaldehyde, and Methanol, as these pollutants are not subject to PSD, the Afterburner is not listed here as it is not a BACT technology for these pollutants.

b. **45CSR7**
The Gutter Exhaust, Curing Oven Hoods, Curing Oven, and Spinning Chamber shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) Mineral acids shall not be released from any type source operation or duplicate source operation or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity given in Table 45-7B found at the end of this rule.
[45CSR§7-4.2]

c. **40 CFR 63, Subpart DDD**
The Gutter Exhaust, Curing Oven Hoods, Curing Oven, and Spinning Chamber shall comply with all applicable requirements of 40 CFR 63, Subpart DDD including, but not limited to, the following:

(1) **§63.1179 For curing ovens or combined collection/curing operations, what standards must I meet?**

(i) You must control emissions from each curing oven or combined collection/curing operations as specified in Table 2 to this subpart.
[43 CFR§60.1179(a)]

Table 2 to Subpart DDD of Part 63—Emissions Limits and Compliance Dates

If your source is a:	And you commenced construction:	Your emission limits are:[1]	And you must comply by:[2]
24. Combined vertical collection/curing operation	After November 25, 2011	2.4 lb of formaldehyde per ton melt 0.92 lb of methanol per ton melt. 0.71 lb of phenol per ton melt.	July 29, 2015[4]

(1) The numeric emissions limits do not apply during startup and shutdown.
(2) Existing sources must demonstrate compliance by the compliance dates specified in this table. New sources have 180 days after the applicable compliance date to demonstrate compliance.
(4) Or upon initial startup, whichever is later.

4.1.6. **Fleece Application**

The Fleece Application operations shall meet the following requirements:

a. The maximum emissions of VOCs and HAPs from the Fleece Application operations each shall not exceed of 7.14 tons per month (6.48 tonnes/month) and a **BACT** limit (BACT limit is VOCs only) of 28.58 TPY (23.21 tonnes/year);

b. The BACT Technology for the Fleece Application operations is the use of low-VOC coatings and the utilization of Good Work Practices. "Low-VOC coatings" shall mean the monthly average of all coating materials used during fleece application operations shall not exceed 0.016 lb-VOC/lb-coating (0.016 kg-VOC/kg-coating) material as-applied on a monthly average basis. "Good Work Practices" shall mean storing VOC-containing materials in closed tanks or containers, cleaning up spills, and minimizing cleaning with VOC-containing cleaners; and

c. **40 CFR 63, Subpart JJJJ**
The fleece application operations shall comply with all applicable requirements of 40 CFR 63, Subpart JJJJ including, but not limited to, the following:

What emission standards must I meet?

(1) If you own or operate any affected source that is subject to the requirements of this subpart, you must comply with these requirements on and after the compliance dates as specified in §63.3330.
[40 CFR§63.3320(a)]

(2) You must limit organic HAP emissions to the level specified in paragraph (b)(1), (2), (3), or (4) of this section.
[40 CFR§63.3320(b)]

(i) No more than 5 percent of the organic HAP applied for each month (95 percent reduction) at existing affected sources, and no more than 2 percent of the organic HAP applied for each month (98 percent reduction) at new affected sources; or
[40 CFR§63.3320(b)(1)]

(ii) No more than 4 percent of the mass of coating materials applied for each month at existing affected sources, and no more than 1.6 percent of the mass of coating materials applied for each month at new affected sources; or
[40 CFR§63.3320(b)(2)]

(iii) No more than 20 percent of the mass of coating solids applied for each month at existing affected sources, and no more than 8 percent of the coating solids applied for each month at new affected sources.
[40 CFR§63.3320(b)(3)]

(iv) If you use an oxidizer to control organic HAP emissions, operate the oxidizer such that an outlet organic HAP concentration of no greater than 20 parts per million by volume (ppmv) by compound on a dry basis is achieved and the efficiency of the capture system is 100 percent.
[40 CFR§63.3320(b)(4)]

(3) You must demonstrate compliance with this subpart by following the procedures in §63.3370.
[40 CFR§63.3320(c)]

4.1.7. **Rockfon Line**
The Rockfon Line shall meet the following requirements:

a. The maximum aggregate VOC emissions from the application of glue and coatings in the Rockfon line shall not exceed 8.98 tons/month (8.15 tonne/month) and a **BACT** limit of 35.93 TPY (32.60 tonne/yr);

b. The **BACT** Technology for the application of glue and coatings in the Rockfon Line is the use of low-VOC materials and the utilization of Good Work Practices. "Low-VOC materials" shall mean the use of glue is limited to containing (**BACT** Limit) of a maximum VOC content of 0.57 lb-VOC/gallon-glue (70 g-VOC/L-material) and the use of coatings are limited to containing (**BACT** Limit) a maximum VOC content of 0.67 lb-VOC/gallon-material (80 g-VOC/L-material). No HAP-containing glues or coatings shall be used in the Rockfon Line. "Good Work Practices" shall mean storing VOC-containing materials in closed tanks or containers, cleaning up spills, and minimizing cleaning with VOC-containing cleaners;

c. The ovens used in the Rockfon line shall only combust PNG and each not exceed the aggregate MDHI (of all burners) specified in the following table:

Table 4.1.7(c): Rockfon Line Ovens Maximum MDHI

Oven ID	MDHI
RFN-E3	2.73 mmBtu/hr (800 kW)
RFN-E4	2.05 mmBtu/hr (600 kW)
RFN-E6	4.78 mmBtu/hr (1,400 kW)
RFN-E9	2.73 mmBtu/hr (800 kW)

d. The Rockfon Line shall not exceed the emission limits (not including VOCs resulting from the use of glue and coatings as limited under 4.1.7(a)), and each shall utilize the specified **BACT** Technology as given in the following tables:

(1) **British Units**

Table 4.1.7(d)(1): Rockfon Line Emission Limits in British Units

Pollutant	BACT Limit	BACT Technology	PPH	TPY
RFN-E1: IR Zone				
$PM_{2.5}$(1)	PPH	Low-Particulate Emitting Process	0.01	0.06
PM_{10}(1)			0.02	0.08
PM(2)			0.01	0.04
Phenol	n/a	n/a	0.01	0.03
Formaldehyde			0.01	0.03
Mineral Fiber			0.01	0.04
Total HAPs			0.02	0.10
RFN-E2: Hot Press				
$PM_{2.5}$(1)	PPH	Low-Particulate Emitting Process	0.01	0.06
PM_{10}(1)			0.02	0.08
PM(2)			0.01	0.04
Phenol	n/a	n/a	0.01	0.03
Formaldehyde			0.01	0.03
Mineral Fiber			0.01	0.04
Total HAPs			0.02	0.10
RFN-E3: High Oven A				
CO	n/a	n/a	0.22	0.98
NO_x	0.10 lb/mmBtu	Good Combustion Practices(3)	0.27	1.17
$PM_{2.5}$(1)	PPH	Use of Natural Gas, Good Combustion Practices(3)	0.09	0.38
PM_{10}(1)			0.12	0.51
PM(2)			0.06	0.25
SO_2	PPH	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	0.06

Pollutant	BACT Limit	BACT Technology	PPH	TPY
Phenol	n/a	n/a	0.02	0.08
Formaldehyde			0.02	0.08
Mineral Fiber			0.06	0.25
Total HAPs			0.10	0.43
CO_2e	TPY	Use of Natural Gas, Good Combustion Practices(3)	--	1,400
RFN-E4: Drying Oven 1				
CO	n/a	n/a	0.17	0.73
NO_x	0.10 lb/mmBtu	Good Combustion Practices(3)	0.20	0.87
$PM_{2.5}$(1)	PPH	Use of Natural Gas, Good Combustion Practices(3), Fabric Filter (RFNE4-FF)	0.06	0.27
PM_{10}(1)			0.08	0.36
PM(2)	0.0015 gr/dscf		0.04	0.18
SO_2	PPH	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	0.05
Phenol	n/a	n/a	0.01	0.05
Formaldehyde			0.02	0.10
Mineral Fiber			0.04	0.18
Total HAPs			0.08	0.34
CO_2e	TPY	Use of Natural Gas, Good Combustion Practices(3)	--	1,050
RFN-E5: Spray Paint Cabin				
$PM_{2.5}$(1)	PPH	Fabric Filter (RFNE5-FF)	0.66	2.90
PM_{10}(1)			0.88	3.86
PM(2)	0.0081 gr/dscf		0.44	1.93
Phenol	n/a	n/a	0.06	0.24
Formaldehyde			0.02	0.10
Mineral Fiber			0.44	1.93
Total HAPs			0.52	2.27

Pollutant	BACT Limit	BACT Technology	PPH	TPY
RFN-E6: Drying Oven 2/3				
CO	n/a	n/a	0.39	1.71
NO_x	0.10 lb/mmBtu	Good Combustion Practices(3)	0.47	2.04
$PM_{2.5}$(1)	PPH	Use of Natural Gas, Good Combustion Practices(3), Fabric Filter (RFNE6-FF)	0.09	0.41
PM_{10}(1)			0.13	0.55
PM(2)	0.001 gr/dscf		0.06	0.28
SO_2	PPH	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.03	0.11
Phenol	n/a	n/a	0.03	0.12
Formaldehyde			0.05	0.23
Mineral Fiber			0.06	0.28
Total HAPs			0.15	0.66
CO_2e	TPY	Use of Natural Gas, Good Combustion Practices(3)	--	2,450
RFN-E7: Cooling Zone				
$PM_{2.5}$(1)	PPH	Low-Emitting Process	0.14	0.63
PM_{10}(1)			0.19	0.84
PM(2)			0.10	0.42
Phenol	n/a	n/a	0.06	0.24
Formaldehyde			0.06	0.24
Mineral Fiber			0.10	0.42
Total HAPs			0.21	0.91
RFN-E8: De-Dusting Baghouse				
$PM_{2.5}$(2)	PPH	Fabric Filter (RFNE8-FF)	0.17	0.75
PM_{10}(2)			0.34	1.49
PM(2)	0.00053 gr/dscf		0.34	1.49
Mineral Fiber	n/a	n/a	0.34	1.49
Total HAPs			0.34	1.49

Pollutant	BACT Limit	BACT Technology	PPH	TPY
RFNE9: High Oven B				
CO	n/a	n/a	0.22	0.98
NO_x	0.10 lb/mmBtu	Good Combustion Practices(3)	0.27	1.17
$PM_{2.5}$(1)	PPH	Use of Natural Gas, Good Combustion Practices(3)	0.09	0.38
PM_{10}(1)			0.12	0.51
PM(2)			0.06	0.25
SO_2	PPH	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	0.06
Phenol	n/a	n/a	0.02	0.08
Formaldehyde			0.02	0.08
Mineral Fiber			0.06	0.25
Total HAPs			0.10	0.43
CO_2e	TPY	Use of Natural Gas, Good Combustion Practices(3)	--	1,400

(1) Includes Condensables.
(2) Filterable Only.
(3) Good Combustion Practices shall mean activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.

(2) **Metric Units**

Table 4.1.7(d)(2): Rockfon Line Emission Limits in Metric Units

Pollutant	BACT Limit	BACT Technology	kg/hr	tonne/yr
RFN-E1: IR Zone				
$PM_{2.5}$(1)	kg/hr	Low-Particulate Emitting Process	6.30e-03	0.06
PM_{10}(1)			1.00e-02	0.07
PM(2)			4.20e-03	0.04
Phenol	n/a	n/a	3.00e-03	0.03
Formaldehyde			3.00e-03	0.03
Mineral Fiber			4.20e-03	0.04
Total HAPs			1.00e-02	0.09

Pollutant	BACT Limit	BACT Technology	kg/hr	tonne/yr
RFN-E2: Hot Press				
$PM_{2.5}$(1)	kg/hr	Low-Particulate Emitting Process	6.30e-03	0.06
PM_{10}(1)			1.00e-02	0.07
PM(2)			4.20e-03	0.04
Phenol	n/a	n/a	3.00e-03	0.03
Formaldehyde			3.00e-03	0.03
Mineral Fiber			4.20e-03	0.04
Total HAPs			1.02e-02	0.09
RFN-E3: High Oven A				
CO	n/a	n/a	0.10	0.89
NO_x	1,602 kg/mmsm^3	Good Combustion Practices(3)	0.12	1.06
$PM_{2.5}$(1)	kg/hr	Use of Natural Gas, Good Combustion Practices(3)	0.04	0.35
PM_{10}(1)			0.05	0.46
PM(2)			0.03	0.23
SO_2	kg/hr	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	0.06
Phenol	n/a	n/a	0.01	0.07
Formaldehyde			0.01	0.07
Mineral Fiber			0.03	0.23
Total HAPs			0.04	0.39
CO_2e	tonne/yr	Use of Natural Gas, Good Combustion Practices(3)	--	1,270
RFN-E4: Drying Oven 1				
CO	n/a	n/a	0.08	0.67
NO_x	1,602 kg/mmsm^3	Good Combustion Practices(3)	0.09	0.79
$PM_{2.5}$(1)	kg/hr	Use of Natural Gas, Good Combustion Practices(3), Fabric Filter (RFNE4-FF)	0.03	0.24
PM_{10}(1)			0.04	0.32
PM(2)	3.70 mg/Nm^3		0.02	0.16

Pollutant	BACT Limit	BACT Technology	kg/hr	tonne/yr
SO_2	kg/hr	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	0.04
Phenol	n/a	n/a	0.01	0.04
Formaldehyde			0.01	0.09
Mineral Fiber			0.02	0.16
Total HAPs			0.04	0.31
CO_2e	tonne/yr	Use of Natural Gas, Good Combustion Practices(3)	--	953
RFN-E5: Spray Paint Cabin				
$PM_{2.5}$(1)	kg/hr	Fabric Filter (RFNE5-FF)	0.30	2.63
PM_{10}(1)			0.40	3.50
PM(2)	20 mg/Nm^3		0.20	1.75
Phenol	n/a	n/a	0.03	0.22
Formaldehyde			0.01	0.09
Mineral Fiber			0.20	1.75
Total HAPs			0.23	2.06
RFN-E6: Drying Oven 2/3				
CO	n/a	n/a	0.18	1.55
NO_x	1,602 kg/mmsm^3	Good Combustion Practices(3)	0.21	1.86
$PM_{2.5}$(1)	kg/hr	Use of Natural Gas, Good Combustion Practices(3), Fabric Filter (RFNE6-FF)	0.04	0.38
PM_{10}(1)			0.06	0.50
PM(2)	2.38 mg/Nm^3		0.03	0.25
SO_2	kg/hr	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	0.10
Phenol	n/a	n/a	0.01	0.11
Formaldehyde			0.02	0.21
Mineral Fiber			0.03	0.25
Total HAPs			0.07	0.60

Pollutant	BACT Limit	BACT Technology	kg/hr	tonne/yr
CO_2e	tonne/yr	Use of Natural Gas, Good Combustion Practices(3)	--	2,223
RFN-E7: Cooling Zone				
$PM_{2.5}$(1)	kg/hr	Low-Emitting Process	0.07	0.57
PM_{10}(1)			0.09	0.77
PM(2)			0.04	0.38
Phenol	n/a	n/a	0.03	0.22
Formaldehyde			0.03	0.22
Mineral Fiber			0.04	0.38
Total HAPs			0.09	0.82
RFN-E8: De-Dusting Baghouse				
$PM_{2.5}$(2)	kg/hr	Fabric Filter (RFNE8-FF)	0.08	0.68
PM_{10}(2)			0.15	1.35
PM(2)	1.30 mg/Nm^3		0.15	1.35
Mineral Fiber	n/a	n/a	0.15	1.35
Total HAPs			0.15	1.35
RFNE9: High Oven B				
CO	n/a	n/a	0.10	0.89
NO_x	1,602 kg/mmsm^3	Good Combustion Practices(3)	0.12	1.06
$PM_{2.5}$(1)	kg/hr	Use of Natural Gas, Good Combustion Practices(3)	0.04	0.35
PM_{10}(1)			0.05	0.46
PM(2)			0.03	0.23
SO_2		Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	0.06
Phenol	n/a	n/a	0.01	0.07
Formaldehyde			0.01	0.07
Mineral Fiber			0.03	0.23
Total HAPs			0.04	0.39

Pollutant	BACT Limit	BACT Technology	kg/hr	tonne/yr
CO_2e	tonne/yr	Use of Natural Gas, Good Combustion Practices(3)	--	1,270

(1) Includes Condensables.
(2) Filterable Only.
(3) Good Combustion Practices shall mean activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.

e. As the annual emission limits of RFN-E3, RFN-E4, RFN-E6, and RFN-E9 listed under Table 4.1.7(d) are based on 8,760 hours of operation, there is no annual limit on hours of operation or natural gas combusted on an annual basis for these units.

f. **45CSR7**
The Rockfon Line shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) Mineral acids shall not be released from any type source operation or duplicate source operation or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity given in Table 45-7B found at the end of this rule.
[45CSR§7-4.2]

4.1.8. **Fuel Burning Units**
The Fuel Burning Units, identified as IMF24, CM03, CM04, and RFN10, shall meet the following requirements:

a. The units shall only combust PNG and each not exceed an aggregate MDHI (of all burners) of 5.1 mmBtu/hr (1,500 kW) for each permitted emission:

b. The units shall not exceed the emission limits given in the following table:

Table 4.1.8(b): Per-Fuel Burning Unit Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
CO	n/a	n/a	0.42 (0.19)	1.84 (1.67)
NO_x	30 ppm_vd @ 3% O_2	LNB, Good Combustion Practices(1)	0.18 (0.08)	0.79 (0.72)
NO_x (IMF24 Only)	60 ppm_vd @ 3% O_2	LNB, Good Combustion Practices(1)	0.36 (0.16)	1.58 (1.44)
$PM_{2.5}$(2)	PPH	Use of Natural Gas, Good Combustion Practices(1)	0.04 (0.02)	0.17 (0.15)
PM_{10}(2)	PPH	Use of Natural Gas, Good Combustion Practices(1)	0.04 (0.02)	0.17 (0.15)
PM(3)	PPH	Use of Natural Gas, Good Combustion Practices(1)	0.01 (4.30e-03)	0.04 (0.04)
SO_2	PPH	Use of Natural Gas	3.00e-03 (1.36e-03)	0.01 (0.01)
VOCs	PPH	Good Combustion Practices(1)	0.03 (0.01)	0.12 (0.11)
CO_2e	TPY	Use of Natural Gas, Good Combustion Practices(1)	--	2,627 (2,384)

(1) LNB = Low-NO_x Burning Technology. Good Combustion Practices shall mean activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.
(2) Includes Condensables.
(3) Filterable Only.

c. As all the annual emissions of the units listed under Table 4.1.8(b) are based on 8,760 hours of operation, there is no annual limit on hours of operation or natural gas combusted on an annual basis for those units; and

d. **45CSR2**
No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any fuel burning unit which is greater than ten (10) percent opacity based on a six minute block average.
[40CSR§2-3.1]

4.1.9. **Storage Tanks**
Use of the volatile organic liquid (VOL) storage tanks shall be in accordance with the following:

a. Tank size shall be limited as specified under Table 1.0 of this permit;

b. The aggregate emissions of VOCs from all storage shall not exceed a **BACT** Limit of 0.19 tons/year (0.17 tonnes/yr); and

c. Material stored shall be as specified and the aggregate annual storage tank throughputs shall not exceed those given in the following table:

Table 4.1.9(c): Storage Tanks Throughput Limits

Tank ID	Material Stored	Gallons
TK-DF	Diesel	20,000
TK-UO	Used Motor and Gear Oil	15,000
TK-TO1	Thermal Oil	681
TK-TO2	Thermal Oil	681
TK-TO3	Thermal Oil	2,642
TK-TO4	Thermal Oil	2,642
TK-DO	De-Dust Oil	200,000
TK-RS1 through TK-RS7	Resin	8,400,000(1)
TK-CA	Coupling Agent Solution	16,000
TK-AD	Binder Additive	65,000
TK-BM	Binder Solution(2)	24,000,000
TK-BC	Binder Solution(2)	24,000,000
TK-BD	Binder Solution(2)	24,000,000
TK-BS1 through TK-BS3	Fleece Coating	1,479,999(1)
TK-DOD	De-Dust Oil	200,000
TK-PD	Diluted Water-Based Paint	1,008,701
TK-PDD	Diluted Water-Based Paint	1,008,701

(1) This number represents the aggregate limit for all specified storage tanks.
(2) May refer to any type of Binder Solution that has an average vapor pressure less than 0.76 psia (5.24 kPa) at 60 degrees Fahrenheit (15.6°C).

d. For **BACT** purposes, the permittee shall utilize good operating practices in the operation of the storage tanks. Good operating practices shall mean maintaining and operating the storage tanks according to manufacturers recommendations and regularly inspecting the tanks for areas of disrepair or failure that would allow the escape of VOC-containing vapors.

4.1.10. Emergency Fire Pump Engine

The Emergency Fire Pump Engine, identified as EFP1, shall meet the following requirements:

a. The unit shall not exceed 197 horsepower (150 kW), shall be fired only with Ultra-Low Sulfur Diesel (with a maximum sulfur content not to exceed 0.0015%), and shall not operate in excess of 100 hours per year nor 0.5 hours in any 24-hour period during times not defined as emergencies;

b. The maximum emissions from the Emergency Fire Pump Engine shall not exceed the limits given in the following table:

Table 4.1.10(b): Emergency Fire Pump Engine Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
CO	n/a	n/a	1.13 (0.51)	0.28 (0.26)
NO_x	4.0 g/kw-hr	Subpart IIII Certification, Annual Hrs of Op Limit	1.30 (0.59)	0.32 (0.29)
$PM_{2.5}$(1)	PPH		0.08 (0.03)	0.02 (0.02)
PM_{10}(1)				
PM(2)	0.20 g/kw-hr		0.06 (0.03)	0.02 (0.01)
SO_2	PPH	ULSD Fuel Annual Hrs of Op(3) Limit	2.14e-03 (9.72e-04)	5.36e-04 (4.86e-04)
VOCs		Subpart IIII Certification, Annual Hrs of Op(3) Limit	0.19 (0.09)	0.05 (0.04)
CO_2e	TPY	Annual Hrs of Op(3) Limit	--	56 (51)

(1) Includes Condensables.
(2) Filterable Only.
(3) Non-emergency hours of operation.

c. **40 CFR 60, Subpart IIII**
The Emergency Fire Pump Engine shall meet all applicable requirements under 40 CFR 60, Subpart IIII including the following:

(1) Owners and operators of fire pump engines with a displacement of less than 30 liters per cylinder must comply with the emission standards in table 4 to this subpart, for all pollutants. **[40 CFR §60.4205(c)]**

(2) As stated in §§60.4202(d) and 60.4205(c), you must comply with the following emission standards for stationary fire pump engines:

Table 4 to Subpart IIII of Part 60—Emission Standards for Stationary Fire Pump Engines

Maximum Engine Power	Model year(s)	NMHC + NOX	CO	PM
130≤KW<225 (175≤HP<300)	2009+[(3)]	4.0(3.0)	3.5(2.6)	0.20(0.15)

(3) In model years 2009-2011, manufacturers of fire pump stationary CI ICE in this engine power category with a rated speed of greater than 2,650 rpm may comply with the emission limitations for 2008 model year engines.

d. **40 CFR 63, Subpart ZZZZ**
An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part.
[40 CFR §63.6590(c)]

4.1.11. **Miscellaneous Operations/Processes**

a. **Dry Ice Cleaning**
The maximum input design capacity of the dry ice production unit (DI) shall not exceed 4.37 tons/day (3.97 tonne/day), and the emissions of CO_2 from the use dry ice cleaning shall not exceed (**BACT** limit) 363.76 PPH (165 kg/hr) or 1,594 TPY (1,446 tonne/year).

b. **Cooling Towers**
The Cooling Towers shall operate in accordance with the following requirements:

(1) The Cooling Tower shall use the control device specified under Section 1.0 at all times in operation and not exceed the specified maximum design and operational limits in the following table:

Table 4.1.11(b)(1): Cooling Tower Specifications

ID No.	Max Design Capacity Water Circulation Pump (gal/min)	Total Dissolved Solids (ppm)	Mist Eliminator Max Drift Rate (%)[(1)]
IMF02	1,321 (300 m^3/hr)	1,500	0.001
HE02	308 (70 m^3/hr)	1,500	0.001

(1) As based on manufacturer or vendor guarantee or applicable product literature.

(2) The maximum emissions from the Cooling Towers shall not exceed the limits given in the following table:

Table 4.1.11(b)(2): Cooling Tower Emission Limits[1]

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
IMF02				
$PM_{2.5}$[1]	PPH	High Efficiency Drift Eliminator (@ 0.001% Drift)	4.96e-03 (2.25e-03)	0.02 (0.02)
PM_{10}[1]			0.01 (4.50e-03)	0.04 (0.04)
PM[2]				
HE02				
$PM_{2.5}$[1]	PPH	High Efficiency Drift Eliminator (@ 0.001% Drift)	1.16e-03 (5.25e-03)	0.01 (4.60e-03)
PM_{10}[1]			2.31e-03 (1.05e-03)	0.01 (9.19e-03)
PM				

c. **Product Marking**
The Product Marking Operations, identified as P_MARK, shall operate in accordance with the following requirements:

(1) The MDHI of the burners used with the branding wheels used in Product Marking shall not exceed 0.40 mmBtu/hr (120 kW) and shall only be fired with PNG. Combustion exhaust from the burners shall not exceed the following emissions:

Table 4.1.11(c)(1): Product Marking Burners Combustion Exhaust Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
CO	n/a	n/a	0.03 (0.01)	0.14 (0.13)
NO_x	PPH	Use of Natural Gas	0.04 (0.02)	0.17 (0.15)
$PM_{2.5}$[1]			2.96e-03 (1.34e-03)	0.01 (1.18e-03)
PM_{10}[1]				
PM[2]			7.41e-04 (3.36e-04)	0.01 (2.94e-03)
SO_2			2.34e-04 (1.06e-04)	1.02e-04 (9.29e-04)
VOCs			2.14e-03 (9.73e-04)	9.39e-03 (8.52e-03)
CO_2e	TPY		--	205 (186)

(1) Includes Condensables.
(2) Filterable Only.

(2) As all the annual emissions listed under Table 4.1.11(c)(1) are based on 8,760 hours of operation, there is no annual limit on hours of operation or natural gas combusted on an annual basis for the unit; and

(3) The **BACT** Technology for the use of ink and cleaners during Product Marking Operations is the utilization of Good Work Practices. "Good Work Practices" shall mean storing VOC-containing materials in closed tanks or containers, cleaning up spills, and minimizing cleaning with VOC-containing cleaners. VOC emissions from the use of ink and cleaners during Product Marking operations shall not exceed 2.37 tons/month (2.15 tonne/month) and a **BACT** limit of 9.49 TPY (8.61 tonne/yr) and no HAP-containing inks or cleaners shall be used during Product Marking Operations.

4.1.12. Control Devices

a. **Operation and Maintenance of Air Pollution Control Equipment.** The permittee shall, to the extent practicable, install, maintain, and operate all pollution control equipment listed in Section 1.0 and associated monitoring equipment in a manner consistent with safety and good air pollution control practices for minimizing emissions, or comply with any more stringent limits set forth in this permit or as set forth by any State rule, Federal regulation, or alternative control plan approved by the Secretary.
[45CSR§13-5.11.]

b. **Inherent SNCR De-NO_x System**
The permittee shall design and operate the Melting Furnace so as to promote the inherent removal of NO_x from the exhaust gas stream. The permittee shall maintain a proper temperature profile for NO_x removal and inject aqueous ammonia as necessary to facilitate the SNCR process. Compliance with 4.1.12(b) shall be determined by showing compliance with the NO_x emission limits given under Table 4.1.4(a) using the CEMS as required under 4.2.6.

c. **Sorbent Injection**
The permittee shall utilize sorbent injection in conjunction with Baghouse IMF-01 so as to reduce the emissions of SO_2, H_2SO_4, HF, and HCl from the Melting Furnace. Compliance with 4.1.12(c) shall be determined by showing compliance with the SO_2 emission limits given under Table 4.1.4(a) using the CEMS as required under 4.2.6.

d. **Baghouse IMF01-BH**
Use of Baghouse IMF01-BH shall be in accordance with the following requirements:

(1) The permittee shall monitor the differential pressure drop of IMF01-BH so as to ensure proper continuous operation of the baghouse. The monitoring system shall include an alarm to notify the control room if the differential pressure drop indicates abnormal performance of the unit. The appropriate alarm set-point(s) shall be determined as given under 4.1.12(g).

(2) **40 CFR 63, Subpart DDD**
How do I comply with the particulate matter standards for existing, new, and reconstructed cupolas? To comply with the PM standards, you must meet all of the following:
[40 CFR §63.1181]

(i) Install, adjust, maintain, and continuously operate a bag leak detection system for each fabric filter.
[40 CFR §63.1181(a)]

(ii) Do a performance test as specified in §63.1188 of this subpart and show compliance with the PM emission limits while the bag leak detection system is installed, operational, and properly adjusted.
[40 CFR §63.1181(b)]

(iii) Begin corrective actions specified in your operations, maintenance, and monitoring plan required by §63.1187 of this subpart within one hour after the alarm on a bag leak detection system sounds. Complete the corrective actions in a timely manner.
[40 CFR §63.1181(c)]

(iv) Develop and implement a written QIP consistent with compliance assurance monitoring requirements of 40 CFR 64.8(b) through (d) when the alarm on a bag leak detection system sounds for more than five percent of the total operating time in a six-month reporting period.
[40 CFR §63.1181(d)]

e. **Wet Electrostatic Precipitator (WESP)**
The operation of the WESP shall be in accordance with the following requirements:

(1) The permittee shall utilize a WESP, identified as HE01, so as to reduce the particulate matter emissions from the Gutter Exhaust, Spinning Chamber, Curing Oven Hoods, the Afterburner, and the Cooling Section at all times Melting, Spinning, Curing and Cooling operations are ongoing; and

(2) The permittee shall monitor the secondary voltage and secondary amperage range of the WESP for optimum mitigation of particulate matter emissions from the sources listed under 4.1.12(e)(1). The monitoring system shall include an alarm to notify the control room if the secondary voltage or amperage indicates abnormal performance of the unit. The appropriate alarm set-point(s) shall be determined as given under 4.1.12(g).

f. **Curing Oven Afterburner**
The Curing Oven Afterburner, CO-AB, shall operate according to the following requirements:

(1) The Curing Oven Afterburner shall not exceed a burner capacity of 6.83 mmBtu/hr (2,000 kW) and shall be in operation at all times when the Curing Oven is in operation and is venting VOC-containing vapors;

(2) **45CSR6**
The Curing Oven Afterburner is subject to 45CSR6. The requirements of 45CSR6 include but are not limited to the following:

(i) The permittee shall not cause, suffer, allow or permit particulate matter to be discharged from the flares into the open air in excess of the quantity determined by use of the following formula:

Emissions (lb/hr) = F x Incinerator Capacity (tons/hr)

Where, the factor, F, is as indicated in Table I below:

Table I: Factor, F, for Determining Maximum Allowable Particulate Emissions

Incinerator Capacity	Factor F
A. Less than 15,000 lbs/hr	5.43
B. 15,000 lbs/hr or greater	2.72

[45CSR§6-4.1]

(ii) No person shall cause, suffer, allow or permit emission of smoke into the atmosphere from any incinerator which is twenty (20%) percent opacity or greater.
[45CSR6 §4.3]

(iii) The provisions of paragraph (i) shall not apply to smoke which is less than forty (40%) percent opacity, for a period or periods aggregating no more than eight (8) minutes per start-up.
[45CSR6 §4.4]

(iv) No person shall cause or allow the emission of particles of unburned or partially burned refuse or ash from any incinerator which are large enough to be individually distinguished in the open air.
[45CSR6 §4.5]

(v) Incinerators, including all associated equipment and grounds, shall be designed, operated and maintained so as to prevent the emission of objectionable odors.
[45CSR6 §4.6]

(vi) Due to unavoidable malfunction of equipment, emissions exceeding those provided for in this rule may be permitted by the Director for periods not to exceed five (5) days upon specific application to the Director. Such application shall be made within twenty-four (24) hours of the malfunction. In cases of major equipment failure, additional time periods may be granted by the Director provided a corrective program has been submitted by the owner or operator and approved by the Director.
[45CSR6 §8.2]

(3) **40 CFR 63, Subpart DDD**

(i) How do I comply with the formaldehyde, phenol, and methanol standards for existing, new, and reconstructed combined collection/curing operations? To comply with the formaldehyde, phenol, and methanol standards, you must meet all of the following:
[40 CFR §63.1183]

(A) Install, calibrate, maintain, and operate a device that continuously measures the operating temperature in the firebox of each thermal incinerator.
[40 CFR §63.1183(a)]

(B) Conduct a performance test as specified in §63.1188 while manufacturing the product that requires a binder formulation made with the resin containing the highest free-formaldehyde content specification range. Show compliance with the formaldehyde, phenol, and methanol emissions limits, specified in Table 2 to this subpart, while the device for measuring the control device operating parameter is installed, operational, and properly calibrated. Establish the average operating parameter based on the performance test as specified in §63.1185(a).
[40 CFR §63.1183(b)]

(C) During the performance test that uses the binder formulation made with the resin containing the highest free-formaldehyde content specification range, record the free-formaldehyde content specification range of the resin used, and the formulation of the binder used, including the formaldehyde content and binder specification.
[40 CFR §63.1183(c)]

(D) Following the performance test, monitor and record the free-formaldehyde content of each resin lot and the formulation of each batch of binder used, including the formaldehyde, phenol, and methanol content.
[40 CFR §63.1183(d)]

(E) Maintain the free-formaldehyde content of each resin lot and the formaldehyde content of each binder formulation at or below the specification ranges established during the performance test.
[40 CFR §63.1183(e)]

(F) Following the performance test, measure and record the average operating temperature of the incinerator as specified in §63.1185(b) of this subpart.
[40 CFR §63.1183(f)]

(G) Maintain the operating temperature of the incinerator so that the average operating temperature for each three-hour block period never falls below the average temperature established during the performance test.
[40 CFR §63.1183(g)]

(H) Operate and maintain the incinerator as specified in your operations, maintenance, and monitoring plan required by §63.1187 of this subpart.
[40 CFR §63.1183(h)]

g. Where statutory requirements (MACT, NSPS) do not specify such points, the determination of appropriate alarm set-points under this section shall be based on data obtained from performance testing, manufacturing recommendations, or operational experience. The permittee shall maintain on-site, and update as necessary, a certified report listing the set-points and the basis for their selection. Any changes to the set-points shall be accompanied by the date of the change and reason for the change. The permittee shall, to the extent reasonably possible, operate the control devices within the operating ranges at all times the associated emission units are in operation and venting emissions. If an alarm occurs, the permittee shall attempt to immediately correct the problem and follow the record-keeping procedures under 4.4.3.

4.1.13. **Stack Parameters**
The emission point stack parameters (Inner Diameter, Emission Point Elevation, and UTM Coordinates) of each source identified under the Emission Units Table 1.0 shall be in accordance with the specifications as given on the Emission Points Data Sheet in the most updated version of Permit Application R14-0037.

4.1.14. **General Rule Applicability**
The permittee shall meet all applicable requirements, including those not specified above, as given under 45CSR2, 45CSR6, 45CSR7, 45CSR10, 40 CFR 60, Subparts OOO and IIII, and 40 CFR 63, Subparts DDD, JJJJ, ZZZZ, and DDDDD. Any final revisions made to the above rules will, where applicable, supercede those specifically cited in this permit.

4.2. Monitoring, Compliance Demonstration, Recording and Reporting Requirements

4.2.1. **Maximum Design Capacity Compliance**
Compliance with the maximum design capacity limitations as given under 4.1. shall be based on a clear and visible boilerplate rating or on product literature, manufacturer's data, or equivalent documentation that shows that the specific emission unit(s) or processing line in question is limited by design to a throughput or production rate that does not exceed the specified value under 4.1.

4.2.2. **Maximum Design Heat Input Compliance**
Compliance with the various combustion unit MDHI limitations as given under 4.1. shall be based on a clear and visible boilerplate rating or on product literature, manufacturer's data, or equivalent documentation that shows that the specific emission unit(s) in question is limited by design to an MDHI that does not exceed the specified value under 4.1.

4.2.3. **Material/Production Throughputs**
To determine continuous compliance with maximum production, throughputs, and combustion limits given under in 4.1 of the permit, the permittee shall monitor and record the following:

Table 4.2.3: Facility Quantities Monitored/Recorded

Quantity Monitored/Recorded	Emission Unit(s)	Measured Units
Portable Melt Crushing	Portable Melt Crusher	Hours of Operation/year
Emergency Fire Pump Hours of Operation(1)	EFP1	Hours of Operation/Year
Storage Tank Throughputs	Various	Gallons/year

(1) Strictly for the purposes of compliance with 4.1.10(a), only non-emergency hours of operation are required to be monitored. Subpart IIII, however, requires monitoring of all hours of operation.

4.2.4. **Baghouse/Filter Vents**
To determine continuous compliance with the filter/baghouse emission limits given under Section 4.1 of the permit, the permittee shall maintain and operate the control devices according to the requirements given under 4.1.12(a). The permittee shall keep a record of all significant maintenance or repair performed on these control devices (changing out bags, replacing filter material, etc.).

4.2.5. **Coal Fluidized Bed Dryer**
To determine continuous compliance with the maximum temperature requirement given under Table 4.1.3(d) - footnote (1), the permittee shall install and maintain instrumentation in the Coal Fluidized Bed Dryer so as to monitor and record the temperature in the drying zone of the dryer.

4.2.6. **Melting Furnace CEMS (IMF01)**
Within 60 days after achieving the maximum design mineral wool production rate at which the facility will be operated, but not later than 180 days after initial startup, the permittee shall, to show continuous compliance with the CO, NO_x, and SO_2 emission limits as given under Table 4.1.4(a), install and operate a Continuous Emissions Monitoring System (CEMS) for monitoring the emissions of CO, NO_x, and SO_2 from IMF01. The CEMS shall be installed, maintained and operated according to the manufacturers design, specifications, and recommendations, of which a protocol shall be developed by the permittee and approved by the Director prior to operation. The CEMS shall meet

the applicable performance specifications required by 40 Part 60, Appendix B, the applicable quality assurance procedures required in 40 CFR Part 60, Appendix F, and the requirements of 40 CFR 60.13. In lieu of the requirements of 40 CFR Part 60, Appendix F, 5.1.1, 5.1.3, and 5.1.4, the permittee may conduct either a Relative Accuracy Audit (RAA) or a Relative Accuracy Test Audit (RATA) on the CEMS at least once every three (3) years. The permittee shall conduct Cylinder Gas Audits (CGA) each calendar quarter during which a RAA or a RATA is not performed. Data recorded by the CEMS shall be kept for a period not less than three (3) years and shall be made available to the Director or his/her representative upon request.

4.2.7. **Fleece Application Station**
To determine continuous compliance with the VOC/HAP emission limits and the low-VOC requirement given under 4.1.6(a) and (b), the permittee shall monitor and record the following:

a. The monthly and twelve-month rolling total of the amount (in tons) of VOCs/HAPs used in the fleece application process. The amount shall be based on actual material properties (VOC/HAP contents and material densities) and the amount of material used during the applicable time period. The permittee shall assume a 100% volatilization of all VOCs/HAPs used in the fleece application process with no control percentage applied unless granted approval in writing by the Director to use an alternative calculation methodology. The material properties shall be based on applicable vendor data, MSDS, or Certified Product Data Sheets; and

b. The average monthly as-applied VOC/HAP content (in lb-VOC/lb-coating and lb-HAP/lb-coating) as based on the procedures under 40 CFR 63, Subpart JJJJ, Section §63.3370(a).

4.2.8. **Rockfon Line Coatings/Glue Usage**
To determine continuous compliance with the VOC emission limit and the low-VOC BACT requirements given under 4.1.7(a) and (b), the permittee shall monitor and record the monthly and twelve-month rolling total of the amount (in tons) of VOCs used in the Rockfon coating and gluing process. The amount shall be based on actual material properties (VOC contents and material densities) and the amount of material used during the applicable time period. The permittee shall assume a 100% volatilization of all VOCs used in the Rockfon coating and gluing process with no control percentage applied unless granted approval in writing by the Director to use an alternative calculation methodology. The material properties shall be based on applicable vendor data, MSDS, or Certified Product Data Sheets.

4.2.9. **Ultra Low Sulfur Fuel**
For the purposes of demonstrating continuing compliance with the maximum sulfur content limit under 4.1.10(a), the permittee shall, at a minimum of once per calendar year, obtain from the fuel oil supplier a certification of the sulfur content of the fuel combusted in the Emergency Fire Pump Engine. An alternative means of determining compliance with 4.2.10. will be subject to prior approval from the Director.

4.2.10. **Cooling Tower**
For the purposes of demonstrating initial and continuing compliance with the operational limits set forth in Table 4.1.11(b)(1), the permittee shall, for both cooling towers, within 180 days of startup, take an initial grab sample of the cooling tower circulating water and analyze such to determine the total solids content of the cooling tower circulating water. Thereafter, the permittee shall test for solids content on an annual basis (with no more than 14 months between tests).

4.2.11. **Product Marking**
To determine continuous compliance with the Product Marking (P_MARK) VOC emission limits and given under 4.1.11(c)(3), the permittee shall monitor and record the monthly and twelve-month rolling total of the amount (in tons) of VOCs used in the Product Marking process. The amount shall be based on actual material properties (VOC contents and material densities) and the amount of material used during the applicable time period. The permittee shall assume a 100% volatilization of all VOCs used in the Product Marking process with no control percentage applied unless granted approval in writing by the Director to use an alternative calculation methodology. The material properties shall be based on applicable vendor data, MSDS, or Certified Product Data Sheets.

4.2.12. **Control Device Monitoring**
The permittee shall install, maintain, and operate instrumentation to continuously monitor and record the control device parameters as required under 4.1.12 of this permit including, at a minimum, the following:

Table 4.2.12: Control Device Parameters Monitored/Recorded

Control Device	Control Device ID	Parameter(s)
Melting Furnace Baghouse	IMF01-BH	Pressure Drop
WESP	WESP	Secondary Voltage Secondary Amperage
Curing Oven Afterburner	CO-AB	Firebox Temperature(1)

(1) Pursuant to 40 CFR 63, Subpart DDD, §63.1182.

4.2.13. **Visible Emissions Compliance Demonstrations**
Visible emissions Monitoring, Compliance Demonstration, Recording and Reporting shall be in accordance with the following requirements:

a. **45CSR2**
Upon request by the Secretary, compliance with the visible emission requirements of 3.1 [of 45CSR2] shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 or by using measurements from continuous opacity monitoring systems approved by the Secretary. The Secretary may require the installation, calibration, maintenance and operation of continuous opacity monitoring systems and may establish policies for the evaluation of continuous opacity monitoring results and the determination of compliance with the visible emission requirements of 3.1 [of 45CSR2]. Continuous opacity monitors shall not be required on fuel burning units which employ wet scrubbing systems for emission control;
[40CSR§2-3.2]

b. **45CSR6**
Compliance with the afterburner opacity requirements given under 4.1.12(f)(2)(i) and (ii) shall be based on the compliance demonstrations required for emission point HE01 as given under 4.2.14(c) and (e);

c. **45CSR7**
At such reasonable time(s) as the Secretary may designate, compliance with the visible emission requirements of 4.1.2(i), 4.1.3(e), 4.1.4(b), 4.1.5(b), and 4.1.7(f) shall be determined in accordance with the procedures outlined under 45CSR7A;

d. **40 CFR 60, Subpart OOO**
The permittee shall meet all applicable visible emissions Monitoring, Compliance Demonstration, Recording and Reporting requirements as given under 40 CFR 60, Subpart OOO, Sections §60.674 through §60.676;

e. **IMF01, HE01, CE01, and IMF05.**
Emission Points IMF01, HE01, CE01, and IMF05 are subject to the following visible emissions monitoring and compliance demonstration requirements:

(1) In order to determine compliance with the opacity limits of 4.1.3(e), 4.1.4(b), 4.1.5(b), and 4.1.7(f) of this permit, the permittee shall conduct visible emission checks and/or opacity monitoring and recordkeeping for Emission Points IMF01, HE01, CE01, and IMF05 in accordance with the following:

(i) The visible emission check shall determine the presence or absence of visible emissions. At a minimum, the observer must be trained and knowledgeable regarding the effects of background contrast, ambient lighting, observer position relative to lighting, wind, and the presence of uncombined water (condensing water vapor) on the visibility of emissions. This training may be obtained from written materials found in the References 1 and 2 from 40CFR Part 60, Appendix A, Method 22 or from the lecture portion of the 40CFR Part 60, Appendix A, Method 9 certification course;

(ii) Visible emission checks shall be conducted at least once per calendar month with a maximum of forty-five (45) days between consecutive readings. These checks shall be performed for a sufficient time interval, but no less than one (1) minute, to determine if any visible emissions are present. Each observation must be recorded as either visible emissions observed or no visible emissions observed. Visible emission checks shall be performed during periods of normal facility operation and appropriate weather conditions;

(iii) If visible emissions are present at a source(s) the permittee shall perform Method 9 readings to confirm that visible emissions are within the limits of 4.1.10 of this permit. Said Method 9 readings shall be taken as soon as practicable, but within seventy-two (72) hours of the Method 22 emission check; and

(iv) If, one year of monthly Method 22 readings show that there are no visible emissions, then the frequency of observations can be reduced to quarterly. If, during quarterly checks, visible emissions are observed, then the frequency of observations shall be returned to monthly.

f. For the purpose of demonstrating compliance with the visible emissions and opacity requirements, the permittee shall maintain records of the visible emission opacity tests and checks. The permittee shall maintain records of all monitoring data required by 4.2.14 documenting the date and time of each visible emission check, the emission point or equipment/ source identification number, the name or means of identification of the observer, the results of the check(s), whether the visible emissions are normal for the process, and, if applicable, all corrective measures taken or planned. The permittee shall also record the general weather conditions (i.e. sunny, approximately 80°F, 6-10 mph NE wind) during the visual emission check(s). Should a visible emission observation be required to be performed per the requirements specified in Method 9, the data records of each observation shall be maintained per the requirements of Method 9. For an emission unit out of service during the evaluation, the record of observation may note "out of service" (O/S) or equivalent; and

g. Any deviation of the allowable visible emission requirement for any emission source discovered during observation using 40CFR Part 60, Appendix A, Method 9 must be reported in writing to the Director of the DAQ as soon as practicable, but within ten (10) calendar days, of the occurrence and shall include, at a minimum, the following information: the results of the visible determination of opacity of emissions, the cause or suspected cause of the violation(s), and any corrective measures taken or planned.

4.2.14. **Baghouse/Fabric Filter Compliance Demonstrations**
Unless specifically requested under 4.3.1. or listed in Table 4.3.2., compliance with all baghouse and fabric filter mass emission limits that have BACT outlet grain loading limits shall be based on vendor information or vendor guarantees that show the maximum outlet grain loading emissions from the baghouse/fabric filter is in compliance with the specific limit.

4.2.15. **Emission Point Map**
The permittee shall prepare and maintain an emission point map of the facility. This map shall consist of a diagram of the location and identification of all emission points at the facility that vent to ambient air. A legend shall be prepared with the map that identifies the emission point type and source(s) contributing to that emission point. This map shall be prepared within 180 days of startup and thereafter be updated as necessary to reflect current facility operations. The map(s) shall be retained on-site and be made available to the Director or his/her duly authorized representative upon request.

4.2.16. **Resin Tracking/N_2O Calculation**
To determine compliance with the annual CO_2e limit given under Table 4.1.5(a), the permittee shall monitor and record the information given under 4.2.16(a) and (b). The permittee shall then use this information to calculate N_2O emissions (based on an emission factor of 28.05 lb-N_2O/ton-resin solids [14 kg-N_2O/tonne-resin solids]) from the Melting Furnace, and along with established emission CO_2 factors, to determine the annual CO_2e emissions.

a. Annual amount (based on a rolling twelve month time period) of purchased resin (as solids) based on invoices. The amount may be corrected for binder not used or that is discarded and not applied in the production process; and

b. Solid content in Phenolic Resin (PUF) based on vendor data or operator analysis.

4.3. Performance Testing Requirements

4.3.1. At such reasonable time(s) as the Secretary may designate, in accordance with the provisions of 3.3 of this permit, the permittee shall conduct or have conducted test(s) to determine compliance with the emission limitations established in this permit and/or applicable regulations.

4.3.2. **Emissions Point Performance Testing**
Within 60 days after achieving the maximum permitted production rate of the emission unit in question, but not later than 180 days after initial startup of the unit, the permittee shall conduct, or have conducted, in accordance with a protocol submitted pursuant to 3.3.1(c), performance tests on the emission units (as emitted from the listed emission points) to show compliance with the specified pollutants as given in the following table:

Table 4.3.2.: Performance Testing Requirements

Emission Unit(s)	Emission Point	Pollutants	Limit
Melting Furnace	IMF01	All Pollutants under Table 4.1.4(a) with the exception of Mineral Fiber, Total HAPs, and CO_2e.	PPH(2)
Gutter Exhaust, Spinning Chamber, Curing Oven Hoods, Curing Oven, and Cooling Section	HE01	All Pollutants under Table 4.1.5(a) with the exception of SO_2, Mineral Fiber, Total HAPs, and CO_2e.	PPH(2)
Rockfon Line	RFNE8	$PM_{2.5}$(1), PM_{10}(1), PM(1)	PPH gr/dscf (PM only)
ROckfon De-Dusting Baghouse (CE01-BH)	CE01	$PM_{2.5}$(1), PM_{10}(1), PM(1)	PPH gr/dscf
Recycle Building Vent 1	CM10	$PM_{2.5}$(1), PM_{10}(1), PM(1)	PPH gr/dscf

(1) Filterable Only.
(2) Results from the required performance testing used to show compliance with the MACT standards (in lb/ton-melt) may be converted and used for compliance with the PPH limits. Compliance with the MACT standards does not necessarily mean compliance with the limits under Table 4.1.4(a).

4.3.3 With respect to the performance testing required above under Section 4.3.2, the permittee shall, after the initial performance test, periodically conduct additional performance testing on the specified sources according to the following schedule:

Table 4.3.3.: Performance Testing Schedule

Test	Test Results	Retesting Frequency
Initial Baseline	<50% of weight emission standard	Once/3 years
Initial Baseline	between 50% and 80 % of weight emission standard	Once/2 years
Initial Baseline	>80% of weight emission standard	Annual
Annual	after three successive tests indicate mass emission rates <50% of weight emission standard	Once/3 years
Annual	after two successive tests indicate mass emission rates <80 % of weight emission standard	Once/2 years
Annual	any tests indicates a mass emission rate >80% of weight emission standard	Annual
Once/2 years	After two successive tests indicate mass emission rates <50% of weight emission standard	Once/3 years
Once/2 years	any tests indicates a mass emission rate <80 % of weight emission standard	Once/2 years
Once/2 years	any tests indicates a mass emission rate >80% of weight emission standard	Annual
Once/3 years	any tests indicates a mass emission rate <50% of weight emission standard	Once/3 years

Test	Test Results	Retesting Frequency
Once/3 years	any test indicates mass emission rates between 50% and 80 % of weight emission standard	Once/2 years
Once/3 years	any test indicates a mass emission rate >80% of weight emission standard	Annual

4.3.4. Performance testing for pollutants monitored by CEMS (CO, NO_x, and SO_2 emitted from the Melting Furnace) are not subject to the performance testing schedule given under Table 4.3.4 and any performance testing shall, unless at such other reasonable time(s) as the Secretary may designate, be conducted on a schedule consistent with the required RATA testing.

4.3.5. The permittee shall use the test methods specified in Table 4.3.6. unless granted approval in writing by the Director to use an alternative test method in a protocol submitted pursuant to 3.3.1(c).

Table 4.3.5: Performance Test Methods

Pollutant	Test Method[1]
CO	Method 10
NO_x	Method 7E
$PM_{2.5}$ (filterable only)	Method 201A
PM_{10}/PM (filterable only)	Method 5
$PM_{2.5}$/PM_{10} (condensable)	Method 202
SO_2	Method 6C
VOCs	Method 18/25A
COS	Method 15
HF/HCl	Method 26A
Formaldehyde Phenol/ Methanol	Method 318
H_2SO_4	Method 8

(1) All test methods refer to those given under 40 CFR 60, Appendix A

4.3.6. **40 CFR 60, Subpart OOO**
The permittee shall meet all applicable Performance Testing requirements as given under 40 CFR 60, Subpart A, Section §60.8 and Subpart OOO, Section §60.675.

4.3.7. **40 CFR 63, Subpart DDD**
The permittee shall meet all applicable Performance Testing requirements as given under 40 CFR 63,

Subpart DDD, Sections §63.1188 through §63.1190.

4.4. Additional Recordkeeping Requirements

4.4.1. **Record of Monitoring.** The permittee shall keep records of monitoring information that include the following:

a. The date, place as defined in this permit and time of sampling or measurements;

b. The date(s) analyses were performed;

c. The company or entity that performed the analyses;

d. The analytical techniques or methods used;

e. The results of the analyses; and

f. The operating conditions existing at the time of sampling or measurement.

4.4.2. **Record of Maintenance of Air Pollution Control Equipment.** For all pollution control equipment listed in Section 1.0, the permittee shall maintain accurate records of all required pollution control equipment inspection and/or preventative maintenance procedures.

4.4.3. **Record of Malfunctions of Air Pollution Control Equipment.** For all air pollution control equipment listed in Section 1.0, the permittee shall maintain records of the occurrence and duration of any malfunction or operational shutdown of the air pollution control equipment during which excess emissions occur. For each such case, the following information shall be recorded:

a. The equipment involved.

b. Steps taken to minimize emissions during the event.

c. The duration of the event.

d. The estimated increase in emissions during the event.

For each such case associated with an equipment malfunction, the additional information shall also be recorded:

e. The cause of the malfunction.

f. Steps taken to correct the malfunction.

g. Any changes or modifications to equipment or procedures that would help prevent future recurrences of the malfunction.

4.5. Additional Reporting Requirements

4.5.1. The permittee shall submit the following information to the DAQ according to the specified schedules:

a. The permittee shall submit reports of all required monitoring on or before September 15 for the reporting period January 1 to June 30 and March 15 for the reporting period July 1 to December 31. All instances of deviation from permit requirements must be clearly identified in such reports; and

b. The permittee shall submit to the Director on or before March 15, a certification of compliance with all requirements of this permit for the previous calendar year ending on December 31. If, during the previous annual period, the permittee had been out of compliance with any part of this permit, it shall be noted along with the following information: 1) the source/equipment/process that was non-compliant and the specific requirement of this permit that was not met, 2) the date the permitted discovered that the source/ equipment/process was out of compliance, 3) the date the Director was notified, 4) the corrective measures to get the source/equipment/process back into compliance, and 5) the date the source began to operate in compliance. The submission of any non-compliance report shall give no enforcement action immunity to episodes of non-compliance contained therein.

CERTIFICATION OF DATA ACCURACY

I, the undersigned, hereby certify that, based on information and belief formed after reasonable inquiry, all information contained in the attached ______________________________, representing the period beginning ______________________ and ending ______________________, and any supporting documents appended hereto, is true, accurate, and complete.

Signature[1] ______________________________ ______________________
(please use blue ink) Responsible Official or Authorized Representative Date

Name and Title ______________________________ ______________________
(please print or type) Name Title

Telephone No. ______________________ Fax No. ______________________

---

[1] This form shall be signed by a "Responsible Official." "Responsible Official" means one of the following:

a. For a corporation: The president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either:

   (I) the facilities employ more than 250 persons or have a gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), or

   (ii) the delegation of authority to such representative is approved in advance by the Director;

b. For a partnership or sole proprietorship: a general partner or the proprietor, respectively;

c. For a municipality, State, Federal, or other public entity: either a principal executive officer or ranking elected official. For the purposes of this part, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of USEPA); or

d. The designated representative delegated with such authority and approved in advance by the Director.

Kessler, Joseph R

From: Kessler, Joseph R
Sent: Tuesday, November 21, 2017 2:16 PM
To: 'Grant Morgan'
Subject: RE: Inbound

OK, just ask for me at the front desk and ill come up and get it.

Thanks

Joe

From: Grant Morgan [mailto:Grant.Morgan@erm.com]
Sent: Tuesday, November 21, 2017 2:15 PM
To: Kessler, Joseph R <Joseph.R.Kessler@wv.gov>
Subject: Inbound

Joe,

Headed out my office here in a few minutes. Should arrive ~ 3 PM.

Grant Morgan, P.E.
ERM | 204 Chase Drive | Hurricane, WV | 25526
voice: 304.757.4777 ext. 109 | mobile: 304.590.6160
mail: grant.morgan@erm.com | www.erm.com

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Entire Document
NON-CONFIDENTIAL

I.D. No. 037-00108 Reg. R14-0037
Company Roxul
Facility RAN Region
Initials JK

Kessler, Joseph R

From:	Grant Morgan <Grant.Morgan@erm.com>
Sent:	Monday, December 18, 2017 3:12 PM
To:	McClung, Jon D; Kessler, Joseph R
Cc:	Lillian Nielsen; Jeff Twaddle; Kasey Harrington
Subject:	Roxul (R14-0037) PSD Modeling Report
Attachments:	ROXUL Air Quality Modeling Report 12-18-2017.pdf

Jon,

Please find the attached modeling report for the construction of a new mineral wool manufacturing facility in Jefferson County, West Virginia. ERM will setup an FTP to allow for the electronic submittal of the modeling files and will be providing that link shortly.

Hard-copes of the modeling report and a CD-ROM copy of the modeling files can be provided to WVDEP upon request.

As you are able to review, please reach out with any questions/comments.

Thank you,

Grant Morgan, P.E.
ERM | 204 Chase Drive | Hurricane, WV | 25526
voice: 304.757.4777 ext. 109 | mobile: 304.590.6160
mail: grant.morgan@erm.com | www.erm.com

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Kessler, Joseph R

From: Christina Perlick <Christina.Perlick@erm.com>
Sent: Wednesday, January 3, 2018 3:02 PM
To: McClung, Jon D
Cc: Yuchniuk, Lee; Kessler, Joseph R
Subject: RE: Roxul (R14-0037) PSD Modeling Report

Jon,

You are correct. This link contains the Annual NO2 Class II SIL analysis files, it will stay open until 1/10/18.

Sincerely,

Christina Perlick
ERM, Associate Engineer
T +1 615.656.5874 | **M** 734.552.6994

From: McClung, Jon D [mailto:Jon.D.McClung@wv.gov]
Sent: Tuesday, January 02, 2018 12:03 PM
To: Christina Perlick
Cc: Yuchniuk, Lee; Kessler, Joseph R
Subject: RE: Roxul (R14-0037) PSD Modeling Report

Christina,

It appears that, for the Annual NO2 Class II SIL analysis, the modeling files submitted may be a duplicate of the 1-hr NO2 analysis. Could you please check and if this is the case submit the Annual files?

Thanks,
Jon

Jonathan D. McClung, P.E.
West Virginia DEP
Division of Air Quality
601 57th Street SE
Charleston WV 25304
(304) 926-0499 ext. 1689
Jon.D.McClung@wv.gov

From: Christina Perlick [mailto:Christina.Perlick@erm.com]
Sent: Thursday, December 21, 2017 10:57 AM
To: McClung, Jon D <Jon.D.McClung@wv.gov>
Cc: Grant Morgan <Grant.Morgan@erm.com>
Subject: RE: Roxul (R14-0037) PSD Modeling Report

Great! Thank you for the positive confirmation. I'll be available through tomorrow afternoon if anything else comes up before the holiday weekend.

Sincerely,

Christina Perlick
ERM, Associate Engineer
T +1 615.656.5874 | **M** 734.552.6994

From: McClung, Jon D [mailto:Jon.D.McClung@wv.gov]
Sent: Thursday, December 21, 2017 7:40 AM
To: Christina Perlick
Cc: Kessler, Joseph R
Subject: RE: Roxul (R14-0037) PSD Modeling Report

Christina,

It appears that all the files were in this download.

Thank you.

Jon.

Jonathan D. McClung, P.E.
West Virginia DEP
Division of Air Quality
601 57th Street SE
Charleston WV 25304
(304) 926-0499 ext. 1689
Jon.D.McClung@wv.gov

From: Christina Perlick [mailto:Christina.Perlick@erm.com]
Sent: Wednesday, December 20, 2017 2:17 PM
To: McClung, Jon D <Jon.D.McClung@wv.gov>
Subject: RE: Roxul (R14-0037) PSD Modeling Report

Jon,

Looks like everything is set now. There was a longer lag time with the folders syncing than I expected.

Let me know if you have any other questions. I'll be working all this week through Friday late afternoon, and plan to be in the office next week after Christmas as well.

Sincerely,

Christina Perlick
ERM, Associate Engineer
T +1 615.656.5874 | **M** 734.552.6994

From: Christina Perlick
Sent: Wednesday, December 20, 2017 9:09 AM
To: 'McClung, Jon D'
Subject: RE: Roxul (R14-0037) PSD Modeling Report

Jon,

I'm sorry, It looks like quite a few are missing! I will try the transfer again on a better network and let you know when they are all in place.

Christina Perlick
ERM, Associate Engineer
T +1 615.656.5874 | **M** 734.552.6994

From: McClung, Jon D [mailto:Jon.D.McClung@wv.gov]
Sent: Wednesday, December 20, 2017 6:53 AM
To: Christina Perlick; Grant Morgan; Kessler, Joseph R
Cc: Lillian Nielsen; Jeff Twaddle; Kasey Harrington; Andrews, Edward S; Pursley, Steven R; Yuchniuk, Lee
Subject: RE: Roxul (R14-0037) PSD Modeling Report

Christina,

The modeling files I downloaded appear to not contain all the intended files. I do not see files relating to PM2.5 and PM10 and NAAQS - others may not be present as well. I will try to download the files again.

Thank you.

Jon.

From: Christina Perlick [mailto:Christina.Perlick@erm.com]
Sent: Tuesday, December 19, 2017 11:29 PM
To: Grant Morgan <Grant.Morgan@erm.com>; McClung, Jon D <Jon.D.McClung@wv.gov>; Kessler, Joseph R <Joseph.R.Kessler@wv.gov>
Cc: Lillian Nielsen <Mette.Drejstel@rockwool.com>; Jeff Twaddle <Jeff.Twaddle@erm.com>; Kasey Harrington <Kasey.Harrington@erm.com>
Subject: RE: Roxul (R14-0037) PSD Modeling Report

Mr. McClung,

This link below will give you access to the electronic modeling files. Access will be open through December 26th.

Please let me know if you have any issues.

Sincerely,

Christina Perlick
ERM, Associate Engineer
T +1 615.656.5874 | **M** 734.552.6994

From: Grant Morgan
Sent: Monday, December 18, 2017 2:12 PM
To: McClung, Jon D; Kessler, Joseph R (Joseph.R.Kessler@wv.gov)
Cc: Lillian Nielsen; Jeff Twaddle; Kasey Harrington
Subject: Roxul (R14-0037) PSD Modeling Report

Jon,

Please find the attached modeling report for the construction of a new mineral wool manufacturing facility in Jefferson County, West Virginia. ERM will setup an FTP to allow for the electronic submittal of the modeling files and will be providing that link shortly.

Hard-copes of the modeling report and a CD-ROM copy of the modeling files can be provided to WVDEP upon request.

As you are able to review, please reach out with any questions/comments.

Thank you,

Grant Morgan, P.E.
ERM I 204 Chase Drive I Hurricane, WV I 25526
voice: 304.757.4777 ext. 109 I mobile: 304.590.6160
mail: grant.morgan@erm.com I www.erm.com

ERM

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This electronic mail message may contain information which is (a) LEGALLY PRIVILEGED, PROPRIETARY IN NATURE, OR OTHERWISE PROTECTED BY LAW FROM DISCLOSURE, and (b) intended only for the use of the Addressee (s) names herein. If you are not the Addressee (s), or the person responsible for delivering this to the Addressee (s), you are hereby notified that reading, copying, or distributing this message is prohibited. If you have received this electronic mail message in error, please contact us immediately at our Atlanta office (678) 486-2700 and take the steps necessary to delete the message completely from your computer system. Thank you, Environmental Resources Management.

Kessler, Joseph R

From: Kessler, Joseph R
Sent: Wednesday, January 3, 2018 3:08 PM
To: 'Grant Morgan'
Subject: RE: Request for Comments - R14-0037
Attachments: SKM_454e18010315000.pdf

Attached is the only comment letter I have received concerning the Roxul Permit Application R14-0037.

Thanks

Joe Kessler

From: Grant Morgan [mailto:Grant.Morgan@erm.com]
Sent: Wednesday, January 3, 2018 3:05 PM
To: Kessler, Joseph R <Joseph.R.Kessler@wv.gov>
Subject: Request for Comments - R14-0037

Joe,

Can you please provide a copy of any comment letters received by DAQ regarding the Roxul R14 Permit Application?

Thank you,

Grant Morgan, P.E.
ERM | 204 Chase Drive | Hurricane, WV | 25526
voice: 304.757.4777 ext. 109 | mobile: 304.590.6160
mail: grant.morgan@erm.com | www.erm.com

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Kessler, Joseph R

From:	wentworth, paul <wentworth.paul@epa.gov>
Sent:	Tuesday, January 16, 2018 2:19 PM
To:	Kessler, Joseph R
Subject:	RE: WV PSD Application Notification (R14-0037 ROXUL USA, Inc.)No action needed until notified by WDEP

Joe: Disregard this email. Thanks!

From: Kessler, Joseph R [mailto:Joseph.R.Kessler@wv.gov]
Sent: Tuesday, January 16, 2018 2:12 PM
To: wentworth, paul <wentworth.paul@epa.gov>
Subject: FW: WV PSD Application Notification (R14-0037 ROXUL USA, Inc.)No action needed until notified by WDEP

Paul, I received a blank e-mail from you on 1/4/18 but never anything else. Just checking, making sure something wasn't left out.

Thanks

Joe Kessler

From: wentworth, paul [mailto:wentworth.paul@epa.gov]
Sent: Thursday, January 4, 2018 7:07 AM
To: Kessler, Joseph R <Joseph.R.Kessler@wv.gov>; Vyas, Himanshu <vyas.himanshu@epa.gov>
Subject: Re: WV PSD Application Notification (R14-0037 ROXUL USA, Inc.)No action needed until notified by WDEP

From: Kessler, Joseph R <Joseph.R.Kessler@wv.gov>
Sent: Monday, November 27, 2017 2:18:32 PM
To: wentworth, paul
Cc: Kessler, Joseph R
Subject: WV PSD Application Notification (R14-0037 ROXUL USA, Inc.)

Permit Number:	**R14-0037**
Applicant:	**ROXUL USA, Inc.**
Facility:	**Ran Facility**
Location:	**Ranson, Jefferson County, WV**
Facility ID Number:	**037-00108**

The permit application is available online at:
http://dep.wv.gov/daq/Documents/November%202017%20Applications/037-00108_APPL_R14-0037.pdf

The WV DAQ is providing notification that a PSD application has been filed for construction of a new major source in Jefferson County, WV. The proposed facility is a stone wool manufacturing facility. The application was submitted on November 21, 2017 and has not yet been deemed complete. Additionally, due to late changes to the design of the facility, CO is still listed as a PSD pollutant when in fact the proposed PTE of CO has fallen below 100 TPY. A revision to the application removing CO as a PSD pollutant will be submitted in the coming weeks.

Let me know if you have any questions or comments.

Thank You,

Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x1219
Fax: (304) 926-0478
Joseph.r.kessler@wv.gov

Kessler, Joseph R

From:	Stacy, Andrea <andrea_stacy@nps.gov>
Sent:	Thursday, January 18, 2018 1:14 PM
To:	Ash, Jeremy - FS
Cc:	Kessler, Joseph R; Jalyn Cummings (jalyn_cummings@nps.gov); Holly Salazer (holly_salazer@nps.gov); Jackson, Bill -FS; Pitrolo, Melanie -FS; McClung, Jon D; McKeone, Beverly D; Don Shepherd
Subject:	Re: WV PSD Application Notification (R14-0037 ROXUL USA, Inc.)

Joe,

Please send a copy of the draft and final permits and any associated staff analyses to the NPS as well. Thanks!

On Thu, Jan 18, 2018 at 11:09 AM, Ash, Jeremy - FS <jash@fs.fed.us> wrote:

Hello Joe,

Similar to NPS, we anticipate no significant impacts to any air quality related values (AQRVs) at Class I Areas administered by the Forest Service (based on the estimated emissions and the FLM information form you provided).

Should the nature of this project change such that maximum emissions increase, please let us know so that we can re-evaluate the proposal. Also, please send us a copy of the draft permit when it becomes available.

Thank you again for keeping the Forest Service informed about permit applications for facilities that may impact Forest Service Class I Areas. Should you have any questions about this determination, please let me know.

Best,

Jeremy

Jeremy Ash
Air Resource Specialist
Forest Service

Eastern Region (R9)
p: 414-297-1902
jash@fs.fed.us

626 E. Wisconsin Ave.
Milwaukee, WI 53202
www.fs.fed.us

Caring for the land and serving people

From: Stacy, Andrea [mailto:andrea_stacy@nps.gov]
Sent: Thursday, January 18, 2018 11:33 AM
To: Kessler, Joseph R <Joseph.R.Kessler@wv.gov>
Cc: Jalyn Cummings (jalyn_cummings@nps.gov) <jalyn_cummings@nps.gov>; Holly Salazer (holly_salazer@nps.gov) <holly_salazer@nps.gov>; Jackson, Bill -FS <bjackson02@fs.fed.us>; Pitrolo, Melanie -FS <mpitrolo@fs.fed.us>; Ash, Jeremy - FS <jash@fs.fed.us>; McClung, Jon D <Jon.D.McClung@wv.gov>; McKeone, Beverly D <Beverly.D.Mckeone@wv.gov>; Don Shepherd <don_shepherd@nps.gov>
Subject: Re: WV PSD Application Notification (R14-0037 ROXUL USA, Inc.)

Thanks for the quick response Joe.

I want to confirm that a Class I analysis will not be necessary for Shenandoah NP, as it is unlikely this facility would result in any adverse impacts in the Park. Thank you for notifying the NPS of the proposed ROXUL, US facility. Please feel free to contact me if you have any questions.

Regards,

Andrea

On Wed, Jan 17, 2018 at 1:23 PM, Kessler, Joseph R <Joseph.R.Kessler@wv.gov> wrote:

OK, let me attempt to clarify. The hourly and annual emissions I put on the form are not the hourly or annual emissions that were used as the basis for calculating the Q/D. As I send out the notification as soon as I can after receiving the app, I grab the given facility-wide PTE (and if they include a facility-wide hourly emission number I use that as well) and put it into the form. As there was no facility-wide hourly emission number given, I just calculated the hourly emissions for the form based on 8,760 hours of operation. But, for this facility, as most annual PTE were calculated at 8,760, the numbers should be pretty close to those used for the Q/D calculation (and, in fact, the PTE on the form gives a q/d of 9.26 as opposed to the official q/d of 9.40).

As for IMF01 and HE01, the PTE and the annual emissions used for Q/D calculation are the same. They are both based on the maximum hourly emissions and the unit operation 8,760 hrs/year. These short-term limits are given in the application on page 65.

I will see if I can get a copy of the excel spreadsheet, but I think the only formula in it will be the summing of the pollutants.

Let me know if you have any other questions or need further clarification.

Thanks,

Joe Kessler, PE

Engineer

West Virginia Division of Air Quality

601-57th St., SE

Charleston, WV 25304

Phone: (304) 926-0499 x1219

Fax: (304) 926-0478

Joseph.r.kessler@wv.gov

From: Stacy, Andrea [mailto:andrea_stacy@nps.gov]
Sent: Wednesday, January 17, 2018 2:23 PM
To: Kessler, Joseph R <Joseph.R.Kessler@wv.gov>
Cc: Jalyn Cummings (jalyn_cummings@nps.gov) <jalyn_cummings@nps.gov>; Holly Salazer (holly_salazer@nps.gov) <holly_salazer@nps.gov>; Jackson, Bill -FS (bjackson02@fs.fed.us) <bjackson02@fs.fed.us>; Pitrolo, Melanie -FS (mpitrolo@fs.fed.us) <mpitrolo@fs.fed.us>; Ash, Jeremy - FS <jash@fs.fed.us>; McClung, Jon D <Jon.D.McClung@wv.gov>; McKeone, Beverly D <Beverly.D.Mckeone@wv.gov>; Don Shepherd <don_shepherd@nps.gov>
Subject: Re: WV PSD Application Notification (R14-0037 ROXUL USA, Inc.)

Hi Joe,

I wanted to follow up with this permit & ensure I understand how the Q/d was calculated, particularly for the facility's larger sources such as the melting furnace (source ID IMF01). In your email you note that "the maximum facility-wide hourly emissions given in the FLM Information Form ***are calculated from the annual emissions and averaged over 8,760 hours***. This method was used as there was no aggregate facility-wide hourly emission numbers given in the permit application."

The attached pdf of the emissions spreadsheet indicates that there is "no difference in maximum 24-hr and annual for TPY basis" for the melting furnace. Can we have a copy of the excel version of this pdf spreadsheet?

Also, I understand that not all sources at the facility will have short-term limits, which is why facility-wide annual limits for Q were calculated in this way, however, can you please clarify what the maximum short-term emissions (in lb/hr) for emission sources IMF01 and HE01 are likely to be?

Thanks!

On Wed, Nov 29, 2017 at 9:43 AM, Kessler, Joseph R <Joseph.R.Kessler@wv.gov> wrote:

Attached is the FLM Notification Form for the following PSD Permit Application submitted on November 21, 2017:

Permit Number:	**R14-0037**
Applicant:	**ROXUL USA, Inc.**
Facility:	**Ran Facility**
Location:	**Ranson, Jefferson County, WV**
Facility ID Number:	**037-00108**

The permit application is available online at:
http://dep.wv.gov/daq/Documents/November%202017%20Applications/037-00108_APPL_R14-0037.pdf

The WV DAQ is providing notification that a PSD application has been filed for construction of a new major source in Jefferson County, WV. The proposed facility is a stone wool manufacturing facility. The application was submitted on November 21, 2017 and has not yet been deemed complete. The applicant has stated the highest Q/D (based on Shenandoah NP) has been calculated to be 9.6. In Appendix A of the permit application, the applicant provides individual emission unit Q/D TPY calculations where the annual emissions were not based on operating 8,760 hours. See the attached spreadsheet for a summary of the Q/D calculations. Additionally, due to late changes to the design of the facility, CO is still listed as a PSD pollutant when in fact the proposed PTE of CO has fallen below 100 TPY. A revision to the application removing CO as a PSD pollutant will be submitted in the coming weeks. As a final note, the maximum facility-wide hourly emissions given in the FLM Information Form are calculated from the annual emissions and averaged over 8,760 hours. This method was used as there was no aggregate facility-wide hourly emission numbers given in the permit application.

Let me know if you have any questions or comments.

Thank You,

Joe Kessler, PE

Engineer

West Virginia Division of Air Quality

601-57th St., SE

Charleston, WV 25304

Phone: (304) 926-0499 x1219

Fax: (304) 926-0478

Joseph.r.kessler@wv.gov

--

Andrea Stacy

National Park Service

Air Resources Division

12795 W. Alameda Pkwy

P.O. Box 25287

Denver, CO 80225

andrea_stacy@nps.gov

303-969-2816 (phone)

303-969-2822 (Fax)

--

Andrea Stacy

National Park Service

Air Resources Division

12795 W. Alameda Pkwy

P.O. Box 25287

Denver, CO 80225

andrea_stacy@nps.gov

303-969-2816 (phone)

303-969-2822 (Fax)

--
Andrea Stacy
National Park Service
Air Resources Division

12795 W. Alameda Pkwy
P.O. Box 25287
Denver, CO 80225
andrea_stacy@nps.gov
303-969-2816 (phone)
303-969-2822 (Fax)

Kessler, Joseph R

From: McClung, Jon D
Sent: Thursday, February 1, 2018 9:53 AM
To: Pursley, Steven R; Kessler, Joseph R
Subject: FW: Roxul Met Data Files

From: Christina Perlick [mailto:Christina.Perlick@erm.com]
Sent: Thursday, February 1, 2018 9:52 AM
To: McClung, Jon D <Jon.D.McClung@wv.gov>; Andrews, Edward S <Edward.S.Andrews@wv.gov>; Yuchniuk, Lee <Lee.Yuchniuk@wv.gov>
Cc: Grant Morgan <Grant.Morgan@erm.com>; Milena Borissova <milena.borissova@erm.com>
Subject: Roxul Met Data Files

Good Morning,

This link will be open until February 8th, and contains a zip file with the data files used to create the met data used in the Roxul PSD Modeling. This files includes a readme with file descriptions.

Have a good day,

Christina Perlick
Associate Engineer

ERM
5000 Meridian Blvd | Suite 300 | Franklin, TN 37067
T +1 615.656.5874 | **M** 734.552.6994
E Christina.Perlick@erm.com | **W** www.erm.com

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Kessler, Joseph R

From:	McClung, Jon D
Sent:	Friday, February 23, 2018 8:15 AM
To:	Kessler, Joseph R; Yuchniuk, Lee
Subject:	FW: Roxul Modeling
Attachments:	Monitor Summary.xlsx

From: Christina Perlick [mailto:Christina.Perlick@erm.com]
Sent: Thursday, February 22, 2018 6:16 PM
To: McClung, Jon D <Jon.D.McClung@wv.gov>
Cc: Milena Borissova <milena.borissova@erm.com>; Grant Morgan <Grant.Morgan@erm.com>
Subject: Roxul Modeling

Hello Jon,

1. Attached is a spreadsheet with the numbers pulled and calculations made for the background monitor values used in the Modeling report.

2. Regarding the 'refined' grid for SO2 1-hour NAAQS and Additional Analysis, here is some text from the report explaining the refined grid:

"For the NAAQS modeling, additional 100 m spaced receptors were placed around high impacts (within 90% of the standard) located in the >500m coarse grid. Such refined receptors grids were developed when applicable for the 1-hour averaging times for SO2. No other pollutants/averaging times had high impacts within 90% of the standard in the coarse grid area. The procedure insures that the Roxul's insignificant contributions to any potential NAAQS violations are resolved adequately."

In the modeling folders transferred the folder located under **NAAQS > SO2 1Hr > Refined Grid** contains the model runs done on the refined grid, which was reported in the final report as a modeled impact of 204.66 ug/m3. I apologize this should have been pointed out more clearly in Table 4-2.

For the "Additional Analysis" with the varying emission rates the receptor grid contained in the SO2 1-hour NAAQS refined grid modeling were conservatively used, as it has more receptors. This is why the Additional Analysis receptor grid differs from the grid used in the SO2 1Hr folder, the final run is in the "Refined Grid" folder a level deeper.

I'll be in the office Friday if you would like to discuss this further,

Christina Perlick
Associate Engineer

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Ambient Monitoring Summaries

POLLUTANT	MONITOR LOCATION	MONITOR ID	Distance to Project (km)	AVERAGING PERIOD	DESIGN CONCENTRATION 2014-16 (µg/m3)	2014	2015	2016	Units	Rank
$PM_{2.5}$	Garrett Co., MD	24-023-0002	105	24-Hour	14.3	15.5	14.5	13	µg/m3	98th pct
				Annual	5.7	6.24	5.13	5.6	µg/m3	
PM_{10}	Winchester City	51-840-0002	33	24-Hour	24.0	17	23	24	µg/m3	H2H
SO_2	Garrett, MD	24-023-0002	105	1-Hour	39.5	21.8	16.5	7	ppb	99th pct
NO_2	Adams, PA	42-001-0001	77	1-Hour	33.2	21	18	14	ppb	98th pcts
				Annual	9.4	5.01	4.57	1.24	ppb	

Monitor Values obtained from AQS Data Mart

Conversion Equation: Y ug/m3 = (X ppb)(MW)/24.45

The conversion equation is based on 25 °C and 1 atmosphere

MW = molecular weight:

NO2	46
SO2	64
O3	48
CO	28

Kessler, Joseph R

From: McClung, Jon D
Sent: Friday, February 23, 2018 1:26 PM
To: Kessler, Joseph R
Subject: FW: Roxul Ozone files

From: Christina Perlick [mailto:Christina.Perlick@erm.com]
Sent: Friday, February 23, 2018 11:43 AM
To: McClung, Jon D <Jon.D.McClung@wv.gov>
Subject: Roxul Ozone files

Jon,

Link to ozone files

Hopefully that works, otherwise I'll email them all seperately. Talked to our Calpuff modeler, they said the runs were relatively short and definetly less than 8 hours. Let me know if you are not able to get the met data off the external hardrive and we'll figure something ese out.

Sincerely,

Christina Perlick
Associate Engineer

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Kessler, Joseph R

From:	Grant Morgan <Grant.Morgan@erm.com>
Sent:	Thursday, March 15, 2018 1:14 PM
To:	Kessler, Joseph R; McClung, Jon D
Cc:	Lillian Nielsen; Tom Wickstrom; Jeff Twaddle
Subject:	Roxul Class II Visibility Modeling Analysis
Attachments:	Roxul RAN - Class II Visibility Report- 3-15-18.pdf

Joe,

Please find the attached Class II Visibility Modeling Analysis for the Roxul RAN facility currently under review by WVDEP.

As you are able to review, please let us know of any questions or comments. A hard copy and a flash drive with the modeling files will follow for DEP's records.

Thank you,

Grant Morgan, P.E.
ERM I 204 Chase Drive I Hurricane, WV I 25526
voice: 304.757.4777 ext. 109 I mobile: 304.590.6160
mail: grant.morgan@erm.com I www.erm.com

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Kessler, Joseph R

From:	Grant Morgan <Grant.Morgan@erm.com>
Sent:	Monday, March 26, 2018 10:58 AM
To:	Kessler, Joseph R
Cc:	Lillian Nielsen
Subject:	FW: Revised Pre-Draft ROXUL R14-0037
Attachments:	R14-0037_dpmV0.4_Final Pre-public notice comments.pdf

Joe,

Thank you again for your attention to the comments below. As discussed last week, please find the attached strike-through commenting on the draft permit emission limitations.

Please reach out should you need to confirm/discuss the attached notes.

Thank you,

Grant Morgan, P.E.
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Entire Document
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I.D. No. 037-00108 Reg. R14-0037
Company ROXUL
Facility BAN Region
Initials [illegible]

From: Grant Morgan [mailto:Grant.Morgan@erm.com]
Sent: Friday, March 23, 2018 10:18 PM
To: Kessler, Joseph R <Joseph.R.Kessler@wv.gov>
Cc: Mette Drejstel <Mette.Drejstel@rockwool.com>
Subject: Re: Revised Pre-Draft ROXUL R14-0037

Joe,

Thank you for your attention to the round of comments on March 5th. As discussed, please find the below list for minor, clean-up type items that Roxul requests prior to public notice issuance.

1. Table 4.1.2(c) denotes the Coal Storage Silos as silos 1/2/3. Section 1.0 of the permit refers to the silos as Silos A/B/C. Please update references to A/B/C.
2. Condition 4.1.2(g) states “"All outdoor raw material, coal, waste, or recycled material storage shall be in accordance with the following:". Roxul requests an update to change waste to pit waste.
3. Table 4.1.14, NESHAP JJJJ is cited as 3 J’s instead of 4 J’s.
4. Table 4.3.2, the Cooling source should be added to the table. This comment to add cooling to the list may appear in other places as well.
5. Table 4.1.3(d), can DEP add a note to the BACT limit of CO2e to note the Part 98 emission factor?
6. Across the permit, requested reference as “gr/dscf”. Some instances of g/dscf exist and there is concern about misinterpretation as grams.
7. Table 4.1.7(d), high oven B should be referenced as EP RFNE9.
8. Section 4.1.10(b), request a change from “generator” to “fire water pump”.

9. Section 4.1.10(c)(2) Table 4, can DEP add units of measure to the IIII Table?
10. Section 4.1.12(c), please remove "dry" from dry sorbent injection.
11. On page 46, Table 4.3.2, please refer to the "De-dusting baghouse" as the "Rockfon De-dusting baghouse".

I will follow-up with the review of the permit limitations table and provide comments on differences noted in review.

Thank you,

Grant Morgan, P.E.
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From: Grant Morgan
Sent: Monday, March 05, 2018 9:26 AM
To: 'Kessler, Joseph R' <Joseph.R.Kessler@wv.gov>
Subject: Revised Pre-Draft ROXUL R14-0037

Joe,

Thank you for providing the pre-draft for review and commenting. Upon Roxul's review of the pre-draft permit, we have generated a list of comments for your review below. Please reach out if there are questions/comments on the below.

1. Table 4.1.2(d) describes B230 as a 3-sided enclosure w/ cover. Can an update be made to be consistent with permit condition 4.1.2(g)(3) to note the closeable bay door or equivalent design.
2. Section 4.1.2(e) includes a footnote that states "Hourly emission limits are based on a 24-hour average and are the BACT limits". The permit application takes an operational restriction on the portable crusher to operate 12 hours per day. To keep this footnote, an update to the PPH number to multiple by 0.5 is required.
3. Condition 4.1.8(a) states "The units shall only combust PNG and each not exceed an aggregate MDHI (of all burners) of 5.1 mmBtu/hr (1,500 kW)". It is somewhat unclear if all units aggregated must be less than 5.1 or that the aggregate of the burners with each source shall be less than 5.1. Suggested update to language to include "for each permitted emission unit" at the end of this statement.
4. Table 4.1.11(b)(1) states the mist eliminator max drift rate (%) to be "0.0010". Suggested update to "0.001".
5. Condition 4.1.11(a) states "the maximum design capacity of the dry ice production unit (DI) shall not exceed 4.37 tons/day ....." Given the loss associated with the production of dry ice, Roxul suggests updated language to states the "maximum input design capacity" to note that output production will not equate to the unit rating.
6. Condition 4.2.3 states Roxul must monitor the non-emergency hours of operation. Per IIII, the operator must monitor all hours of operation, but is restricted to 100 hours of non-emergency operation. This could impact the footnote to Table 4.1.10(b) as well.
7. Citation 4.1.5(d)(1) cites the cupola standards of the MACT. Requested update to reflect the collection/curing section of the MACT.
8. Condition 4.1.12(g), requested added clarification that this applies to non-MACT sources, or "where other standards do not apply".
9. Condition 4.2.7(2), requested update to the citation from 63.3370(a)(2) to 63.3370(a) to allow for alternative methods of compliance under the MACT.
10. Condition 4.3.2 states "within 60 days of achieving the maximum mineral wool production rate". Since Rockfon startup is not directly tied to mineral wool line startup, suggest just maximum production rate.

11. Table 4.3.2 – The MACT compliance testing is conducted on a lb/ton melt basis. Roxul requests the MACT testing units be reflected for the MACT testing constituents.
12. Stack Testing methods
    a. General
        i. PM10/PM – Method 5 or Method 201A (as you know M5 wont measure PM10; we have proposed in test protocols for Roxul to combine the filterable fraction from M201A to get total filterable PM.)
        ii. SO2 – we actually used 6C (analyzer method). I would think its acceptable alternative/equivalent to M6.
    b. MACT related
        i. Form/Phenol/Methanol not listed (M318). Note for MAR M318 (use of FTIR) wasn't feasible for measuring phenol from spinning. We petitioned EPA for an alternative which was granted (an NCASI method w/some site-specific conditions). The same alt. method was used for Spinning and Curing and for phenol/form/methanol.
        ii. COS (M318)
        iii. HF/HCL (M26A)
        iv. For WESP stack, at MAR we observed "saturated gas stream conditions which exhibited visible water droplets" and used EPA Method 5. This is discussed in M201A, Section 1.5 (Limitations). We didn't propose a split for PM10/PM2.5, but ended up reporting everything measured for PM was in the 2.5 size fraction (we had engineering data to support).
13. Calculation related to Rockfon paint and glue

Total IR Zone/Press VOC (glue VOC + minor process HAP)	7.48	Short ton per yea
IR Zone/Press Minor Process HAP	0.12	tpy
Total Glue-related VOC from IR/Press	**7.36**	Tpy (7.48-0.12)
Total Ovens/Spray Cabin/Cooling VOC (paint VOC + minor process HAP + oven combustion VOC)	30.69	tpy
Ovens/Spray Cabin/Cooling - Minor Process HAP	1.62	Tpy
Oven Combustion VOC	0.29	Tpy
Total Paint-related VOC from Ovens/Spray Cabin/Cooling	**28.78**	Tpy (28.78-1.62-
Annual Total Glue/Paint-related VOC	**36.14**	Tpy (7.36+28.78)
Monthly Total Glue/Paint-related VOC	**9.04**	ton/mth (36.14 /

Also, as discussed on our call last week, Roxul is working to provide data on the N2O binder relationship and the Tanks vapor pressure data. We are pushing that hard currently and hope to provide an update on that shortly.

Thank you,

Grant Morgan, P.E.
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voice: 304.757.4777 ext. 109 I mobile: 304.590.6160
mail: grant.morgan@erm.com I www.erm.com

The business of sustainability

From: Kessler, Joseph R [mailto:Joseph.R.Kessler@wv.gov]
Sent: Friday, March 02, 2018 3:56 PM
To: Grant Morgan <Grant.Morgan@erm.com>
Subject: Revised Pre-Draft ROXUL R14-0037

Grant, attached is a revised "pre-draft" version of R14-0037. Please provide to interested parties at ROXUL.

It is important to note that this pre-draft version of the permit has not yet been approved by my supervisor and therefore all language is subject to change. Further, the review of permit application is ongoing and the access provided to this pre-draft permit does not indicate that a preliminary determination has made regarding the application. ROXUL may be required to subsequently submit, in a timely manner, any additional or corrected information deemed necessary for a final permit determination.

Thanks,

Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x1219
Fax: (304) 926-0478
Joseph.r.kessler@wv.gov

West Virginia Department of Environmental Protection
Austin Caperton
Cabinet Secretary

Permit to Construct

R14-0037

This permit is issued in accordance with the West Virginia Air Pollution Control Act (West Virginia Code §§ 22-5-1 et seq.), 45 C.S.R. 13 — Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation, and 45 C.S.R. 14 - Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration. The permittee identified at the facility listed below is authorized to construct the stationary sources of air pollutants identified herein in accordance with all terms and conditions of this permit.

Issued to:
ROXUL USA, Inc.
RAN Facility
037-00108

William F. Durham
Director, Division of Air Quality

Issued: ***DRAFT***

Facility Location:	Ranson, Jefferson County, West Virginia
Mailing Address:	71 Edmond Road, Suite 6 Kearneysville, WV 25430
Facility Description:	Mineral Wool Manufacturing Facility
SIC/NAICS Code:	3296/327993
UTM Coordinates:	Easting: 252.06 km Northing: 4,362.62 km Zone: 18
Latitude/Longitude:	39.37754, -77.87844
Permit Type:	Major Source Construction
Desc. of Change:	Construction of a new mineral wool manufacturing facility defined as a major stationary source and subject to Prevention of Significant Deterioration (PSD) permitting requirements.

Any person whose interest may be affected, including, but not necessarily limited to, the applicant and any person who participated in the public comment process, by a permit issued, modified or denied by the Secretary may appeal such action of the Secretary to the Air Quality Board pursuant to article one [§§ 22B-1-1 et seq.], Chapter 22B of the Code of West Virginia. West Virginia Code §22-5-14.

As a result of this permit, the source is a major source subject to 45CSR30. The Title V (45CSR30) application will be due within twelve (12) months after the commencement date of any operation authorized by this permit.

Table of Contents

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity(1)	Control Device(2)
Raw Material Handling					
IMF11	IMF11	Conveyor Transfer Point	2018	1,800 scfm (1,137 Nm^3/hr)	IMF11-FF
B215	B215	Raw Material Loading Hopper	2018	716 ton/day (650 tonne/day)	PE
IMF12	IMF12	Conveyor Transfer Point	2018	1,800 scfm (1,137 Nm^3/hr)	IMF12-FF
IMF14	IMF14	Conveyor Transfer Point	2018	1,800 scfm (1,137 Nm^3/hr)	IMF14-FF
IMF15	IMF15	Conveyor Transfer Point	2018	1,800 scfm (1,137 Nm^3/hr)	IMF15-FF
IMF16	IMF16	Conveyor Transfer Point	2018	1,800 scfm (1,137 Nm^3/hr)	IMF16-FF
IMF21	IMF21	Charging Building Vacuum Cleaning Filter	2018	316 scfm (500 Nm^3/hr)	IMF21-FF
RM_REJ	RM_REJ	Raw Material Reject Bin	2018	TBD	PE
S_REJ	S_REJ	Sieve Reject Bin	2018	TBD	PE
B170	B170	Melting Furnace Portable Crusher & Storage	2018	<150 TPH (<136 tonne/hr)	None
B210	B210	Raw Material Storage - Loading	2018	716 ton/day (650 tonne/day)	PE
IMF25	IMF25	Coal Feed Tank	2018	758 scfm (1,200 Nm^3/hr)	IMF25-FF
RMS	RMS	Raw Material Open Storage & Delivery	2018	5,382 ft^2 (500m^2)	PE
IMF17	IMF17	Charging Building Vent 1	2018	n/a	None
IMF18	IMF18	Charging Building Vent 2	2018	n/a	None
Coal Milling					
IMF03A	IMF03A	Coal Storage Silo A	2018	758 scfm (1,200 Nm^3/hr)	IMF03A-FF
IMF03B	IMF03B	Coal Storage Silo B	2018	758 scfm (1,200 Nm^3/hr)	IMF03B-FF
IMF03C	IMF03C	Coal Storage Silo C	2018	758 scfm (1,200 Nm^3/hr)	IMF03C-FF

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity(1)	Control Device(2)
IMF04	IMF04	Conveyor Transfer Point	2018	1,800 scfm (1,137 Nm^3/hr)	IMF04-FF
IMF05	IMF05	Coal Milling Burner & Baghouse	2018	2,873 scfm (4,547 Nm^3/hr)	IMF05-BH
IMF06	IMF06	Coal Milling De-Dusting Baghouse	2018	6,317 scfm (10,000 Nm^3/hr)	IMF06-BH
IMF13	IMF13	Conveyor Transfer Point	2018	1,800 scfm (1,137 Nm^3/hr)	IMF13-FF
B235	B235	Coal Milling Building	2018	93 ton/day (84 tonne/day)	None
B230	B230	Coal Unloading	2018	93 ton/day (84 tonne/day)	PE
B231	B231	Coal Unloading Hopper	2018	93 ton/day (84 tonne/day)	PE
Mineral Wool Line					
IMF01	IMF01	Melting Furnace	2018	21,414 scfm (33,900 Nm^3/hr)	IMF01-BH De-NO_x De-SO_x
IMF02	IMF02	Furnace Cooling Tower	2018	1,321 gpm (300 m^3/hr)	Drift Eliminator
IMF07A	IMF07A	Filter Fines Day Silo	2018	1,250 scfm (790 Nm^3/hr)	IMF07A-FF
IMF07B	IMF07B	Secondary Energy Materials Silo	2018	1,250 scfm (790 Nm^3/hr)	IMF07B-FF
IMF08	IMF08	Sorbent Silo	2018	758 scfm (1,200 Nm^3/hr)	IMF08-FF
IMF09	IMF09	Spent Sorbent Silo	2018	758 scfm (1,200 Nm^3/hr)	IMF09-FF
IMF10	IMF10	Filter Fines Receiving Silo	2018	758 scfm (1,200 Nm^3/hr)	IMF10-FF
IMF24	IMF24	Preheat Burner	2018	5.1 mmBtu/hr (1,500 kW)	None
CO	HE01	Curing Oven	2018	18,950 scfm (30,000 Nm^3/hr)	WESP (HE01) CO-AB
CO-HD	HE01	Curing Oven Hoods	2018	25,267 scfm (40,000 Nm^3/hr)	WESP (HE01)

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity(1)	Control Device(2)
GUT-EX	HE01	Gutter Exhaust	2018	15,792 scfm (25,000 Nm^3/hr)	WESP (HE01)
SPN	HE01	Spinning Chamber	2018	258,986 scfm (410,000 Nm^3/hr)	WESP (HE01)
CS	HE01	Cooling Section	2018	50,534 scfm (80,000 Nm^3/hr)	WESP (HE01)
HE02	HE02	Gutter Cooling Tower	2018	308 gpm (70 m^3/hr)	Drift Eliminator
CM12	CM12	Fleece Application Vent 1	2018	408 lb/hr (185 kg/hr)	None
CM13	CM13	Fleece Application Vent 2	2018		None
CE01	CE01	De-dusting Baghouse	2018	44,217 scfm (70,000 Nm^3/hr)	CE01-BH
CE02	CE02	Vacuum Cleaning Baghouse	2018	12,633 scfm (20,000 Nm^3/hr)	CE02-BH
DI	DI	Dry Ice Cleaning	2018	165.3 lbs/hour (75 kg/hr)	None
P_MARK	P_MARK	Product Marking	2018	0.40 mmBtu/hr (88 kW)	None
Recycling					
CM08	CM08	Recycle Plant Building Vent 3	2018	1,579 scfm (2,500 Nm^3/hr)	CM08-FF
CM09	CM09	Recycle Plant Building Vent 4	2018	1,579 scfm (2,500 Nm^3/hr)	CM09-FF
CM10	CM10	Recycle Plant Building Vent 1	2018	18,950 scfm (30,000 Nm^3/hr)	CM10-FF
CM11	CM11	Recycle Plant Building Vent 2	2018	18,950 scfm (30,000 Nm^3/hr)	CM11-FF
Rockfon Line					
RFNE1	RFNE1	IR Zone	2018	1,895 scfm (3,000 Nm^3/hr)	None
RFNE2	RFNE2	Hot Press	2018	1,895 scfm (3,000 Nm^3/hr)	None
RFNE3	RFNE3	High Oven A	2018	2.73 mmBtu/hr, 5,053 scfm (800 kW, 8,000 Nm^3/hr)	None

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity(1)	Control Device(2)
RFNE4	RFNE4	Drying Oven 1	2018	2.05 mmBtu/hr, 3.158 scfm (600 kW, 5,000 Nm^3/hr)	RFNE4-FF
RFNE5	RFNE5	Spraying Cabin	2018	6,317 scfm (10,000 Nm^3/hr)	RFNE5-FF
RFNE6	RFNE6	Drying Oven 2 & 3	2018	4.78 mmBtu/hr, 7,580 scfm (1,400 kW, 12,000 Nm^3/hr)	RFNE6-FF
RFNE7	RFNE7	Cooling Zone	2018	15,792 scfm (25,000 Nm^3/hr)	None
RFNE8	RFNE8	Rockfon De-dusting Baghouse	2018	74,419 scfm (117,812 Nm^3/hr)	RFNE8-BH
RFNE9	RFNE9	High Oven B	2018	2.73 mmBtu/hr, 5,053 scfm (800 kW, 8,000 Nm^3/hr)	None
Miscellaneous Emission Units					
CM03	CM03	Natural Gas Boiler 1	2018	5.1 mmBtu/hr (1,500 kW)	None
CM04	CM04	Natural Gas Boiler 2	2018	5.1 mmBtu/hr (1,500 kW)	None
EFP1	EFP1	Emergency Fire Pump Engine	2018	197 hp (147 kw)	None
RFN10	RFN10	Rockfon Building Heater	2018	5.1 mmBtu/hr (1,500 kW)	None
Storage Tanks					
TK-DF	TK-DF	Diesel Fuel Tank	2018	2,642 gallons (10 m^3)	None
TK-UO	TK-UO	Used Oil Tank	2018	581 gallons (2.2 m^3)	None
TK-TO1	TK-TO1	Thermal Oil Expansion Tank - Rockfon	2018	212 gallons (0.8 m^3)	None
TK-TO2	TK-TO2	Thermal Oil Drain Tank - Rockfon	2018	159 gallons (0.6 m^3)	None
TK-TO3	TK-TO3	Thermal Oil Tank - IMF	2018	2,642 gallons (10 m^3)	None

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity(1)	Control Device(2)
TK-TO4	TK-TO4	Thermal Oil Expansion Tank - IMF	2018	1,321 gallons ($5\ m^3$)	None
TK-DO	TK-DO	De-dust Oil Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS1	TK-RS1	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS2	TK-RS2	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS3	TK-RS3	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS4	TK-RS4	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS5	TK-RS5	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS6	TK-RS6	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS7	TK-RS7	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-CA	TK-CA	Coupling Agent Storage Tank	2018	264 gallons ($1\ m^3$)	None
TK-AD	TK-AD	Additive Storage Tank	2018	53 gallons ($0.2\ m^3$)	None
TK-BM	TK-BM	Binder Mix Tank	2018	2,642 gallons ($10m^3$)	None
TK-BC	TK-BC	Binder Circulation Tank	2018	4,227 gallons ($16\ m^3$)	None
TK-BD	TK-BD	Binder Day Tank	2018	793 gallons ($3\ m^3$)	None
TK-BS1	TK-BS1	Binder Storage Container	2018	264 gallons ($1\ m^3$)	None
TK-BS2	TK-BS2	Binder Storage Container	2018	264 gallons ($1\ m^3$)	None
TK0-BS3	TK-BS3	Binder Storage Container	2018	264 gallons ($1\ m^3$)	None
TK-DOD	TK-DOD	De-dust Oil Day Tank	2018	264 gallons ($1\ m^3$)	None

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity(1)	Control Device(2)
TK-PD	TK-PD	Paint Dilution Storage Tank	2018	793 gallons ($3\ m^3$)	None
TK-PDD	TK-PDD	Paint Dilution Day Tank	2018	397 gallons ($1.5\ m^3$)	None

(1) Where air flow rates are listed, it represents the maximum design capacity of the mechanical flow - if applicable - through the listed particulate matter control device or uncontrolled vent .

(2) AB = Afterburner; BH = Baghouse; FF = Fabric Filter; PE = Partial Enclosure; WESP = Wet Electrostatic Precipitator.

2.0. General Conditions

2.1. Definitions

2.1.1. All references to the "West Virginia Air Pollution Control Act" or the "Air Pollution Control Act" mean those provisions contained in W.Va. Code §§ 22-5-1 to 22-5-18.

2.1.2. The "Clean Air Act" means those provisions contained in 42 U.S.C. §§ 7401 to 7671q, and regulations promulgated thereunder.

2.1.3. "Secretary" means the Secretary of the Department of Environmental Protection or such other person to whom the Secretary has delegated authority or duties pursuant to W.Va. Code §§ 22-1-6 or 22-1-8 (45 CSR § 30-2.12.). The Director of the Division of Air Quality is the Secretary's designated representative for the purposes of this permit.

2.2. Acronyms

CAAA	Clean Air Act Amendments	**NSPS**	New Source Performance Standards
CBI	Confidential Business Information	**PM**	Particulate Matter
CEM	Continuous Emission Monitor	**$PM_{2.5}$**	Particulate Matter less than 2.5µm in diameter
CES	Certified Emission Statement	**PM_{10}**	Particulate Matter less than 10µm in diameter
C.F.R. *or* **CFR**	Code of Federal Regulations	**Ppb**	Pounds per Batch
CO	Carbon Monoxide	**pph**	Pounds per Hour
C.S.R. *or* **CSR**	Codes of State Rules	**ppm**	Parts per Million
DAQ	Division of Air Quality	**Ppmv or ppmv**	Parts per million by volume
DEP	Department of Environmental Protection	**PSD**	Prevention of Significant Deterioration
dscm	Dry Standard Cubic Meter	**psi**	Pounds per Square Inch
FOIA	Freedom of Information Act	**SIC**	Standard Industrial Classification
HAP	Hazardous Air Pollutant	**SIP**	State Implementation Plan
HON	Hazardous Organic NESHAP	**SO_2**	Sulfur Dioxide
HP	Horsepower	**TAP**	Toxic Air Pollutant
lbs/hr	Pounds per Hour	**TPY**	Tons per Year
LDAR	Leak Detection and Repair	**TRS**	Total Reduced Sulfur
M	Thousand	**TSP**	Total Suspended Particulate
MACT	Maximum Achievable Control Technology	**USEPA**	United States Environmental Protection Agency
MDHI	Maximum Design Heat Input	**UTM**	Universal Transverse Mercator
MM	Million	**VEE**	Visual Emissions Evaluation
MMBtu/hr *or* **mmbtu/hr**	Million British Thermal Units per Hour	**VOC**	Volatile Organic Compounds
MMCF/hr *or* **mmcf/hr**	Million Cubic Feet per Hour	**VOL**	Volatile Organic Liquids
NA	Not Applicable		
NAAQS	National Ambient Air Quality Standards		
NESHAPS	National Emissions Standards for Hazardous Air Pollutants		
NO_x	Nitrogen Oxides		

2.3. Authority

This permit is issued in accordance with West Virginia Air Pollution Control Law W.Va. Code §§22-5-1 et seq. and the following Legislative Rules promulgated thereunder:

2.3.1. 45CSR13 – *Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation; and*

2.3.2. *45CSR14 – Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration.*

2.4. Term and Renewal

2.4.1. This permit shall remain valid, continuous and in effect unless it is revised, suspended, revoked or otherwise changed under an applicable provision of 45CSR13 or any applicable legislative rule.

2.5. Duty to Comply

2.5.1. The permitted facility shall be constructed and operated in accordance with the plans and specifications filed in Permit Applications R14-0037 and any modifications, administrative updates, or amendments thereto. The Secretary may suspend or revoke a permit if the plans and specifications upon which the approval was based are not adhered to;
[45CSR§§13-5.11 and 13-10.3]

2.5.2. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the West Virginia Code and the Clean Air Act and is grounds for enforcement action by the Secretary or USEPA;

2.5.3. Violations of any of the conditions contained in this permit, or incorporated herein by reference, may subject the permittee to civil and/or criminal penalties for each violation and further action or remedies as provided by West Virginia Code 22-5-6 and 22-5-7;

2.5.4. Approval of this permit does not relieve the permittee herein of the responsibility to apply for and obtain all other permits, licenses and/or approvals from other agencies; i.e., local, state and federal, which may have jurisdiction over the construction and/or operation of the source(s) and/or facility herein permitted.

2.6. Duty to Provide Information

The permittee shall furnish to the Secretary within a reasonable time any information the Secretary may request in writing to determine whether cause exists for administratively updating, modifying, revoking or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Secretary copies of records to be kept by the permittee. For information claimed to be confidential, the permittee shall furnish such records to the Secretary along with a claim of confidentiality in accordance with 45CSR31. If confidential information is to be sent to USEPA, the permittee shall directly provide such information to USEPA along with a claim of confidentiality in accordance with 40 C.F.R. Part 2.

2.7. Duty to Supplement and Correct Information

Upon becoming aware of a failure to submit any relevant facts or a submittal of incorrect information in any permit application, the permittee shall promptly submit to the Secretary such supplemental facts or corrected information.

2.8. Administrative Update

The permittee may request an administrative update to this permit as defined in and according to the procedures specified in 45CSR13.
[45CSR§13-4]

2.9. Permit Modification

The permittee may request a minor modification to this permit as defined in and according to the procedures specified in 45CSR13.
[45CSR§13-5.4.]

2.10. Major Permit Modification

The permittee may request a major modification as defined in and according to the procedures specified in 45CSR14 or 45CSR19, as appropriate.
[45CSR§13-5.1]

2.11. Inspection and Entry

The permittee shall allow any authorized representative of the Secretary, upon the presentation of credentials and other documents as may be required by law, to perform the following:

a. At all reasonable times (including all times in which the facility is in operation) enter upon the permittee's premises where a source is located or emissions related activity is conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times (including all times in which the facility is in operation) any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit;

d. Sample or monitor at reasonable times substances or parameters to determine compliance with the permit or applicable requirements or ascertain the amounts and types of air pollutants discharged.

2.12. Emergency

2.12.1. An "emergency" means any situation arising from sudden and reasonable unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission

limitation under the permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

2.12.2. Effect of any emergency. An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if the conditions of Section 2.12.3 are met.

2.12.3. The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:

a. An emergency occurred and that the permittee can identify the cause(s) of the emergency;

b. The permitted facility was at the time being properly operated;

c. During the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in the permit; and,

d. The permittee submitted notice of the emergency to the Secretary within one (1) working day of the time when emission limitations were exceeded due to the emergency and made a request for variance, and as applicable rules provide. This notice must contain a detailed description of the emergency, any steps taken to mitigate emission, and corrective actions taken.

2.12.4. In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency has the burden of proof.

2.12.5. The provisions of this section are in addition to any emergency or upset provision contained in any applicable requirement.

2.13. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it should have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. However, nothing in this paragraph shall be construed as precluding consideration of a need to halt or reduce activity as a mitigating factor in determining penalties for noncompliance if the health, safety, or environmental impacts of halting or reducing operations would be more serious than the impacts of continued operations.

2.14. Suspension of Activities

In the event the permittee should deem it necessary to suspend, for a period in excess of sixty (60) consecutive calendar days, the operations authorized by this permit, the permittee shall notify the Secretary, in writing, within two (2) calendar weeks of the passing of the sixtieth (60) day of the suspension period.

2.15. Property Rights

This permit does not convey any property rights of any sort or any exclusive privilege.

2.16. Severability

The provisions of this permit are severable and should any provision(s) be declared by a court of competent jurisdiction to be invalid or unenforceable, all other provisions shall remain in full force and effect.

2.17. Transferability

This permit is transferable in accordance with the requirements outlined in Section 10.1 of 45CSR13.
[45CSR§13-10.1]

2.18. Notification Requirements

The permittee shall notify the Secretary, in writing, no later than thirty (30) calendar days after the actual startup of the operations authorized under this permit.

2.19. Credible Evidence

Nothing in this permit shall alter or affect the ability of any person to establish compliance with, or a violation of, any applicable requirement through the use of credible evidence to the extent authorized by law. Nothing in this permit shall be construed to waive any defense otherwise available to the permittee including, but not limited to, any challenge to the credible evidence rule in the context of any future proceeding.

3.0. Facility-Wide Requirements

3.1. Limitations and Standards

3.1.1. **Open burning.** The open burning of refuse by any person, firm, corporation, association or public agency is prohibited except as noted in 45CSR§6-3.1.
[45CSR§6-3.1.]

3.1.2. **Open burning exemptions.** The exemptions listed in 45CSR§6-3.1 are subject to the following stipulation: Upon notification by the Secretary, no person shall cause, suffer, allow or permit any form of open burning during existing or predicted periods of atmospheric stagnation. Notification shall be made by such means as the Secretary may deem necessary and feasible.
[45CSR§6-3.2.]

3.1.3. **Asbestos.** The permittee is responsible for thoroughly inspecting the facility, or part of the facility, prior to commencement of demolition or renovation for the presence of asbestos and complying with 40 C.F.R. § 61.145, 40 C.F.R. § 61.148, and 40 C.F.R. § 61.150. The permittee, owner, or operator must notify the Secretary at least ten (10) working days prior to the commencement of any asbestos removal on the forms prescribed by the Secretary if the permittee is subject to the notification requirements of 40 C.F.R. § 61.145(b)(3)(i). The USEPA, the Division of Waste Management and the Bureau for Public Health - Environmental Health require a copy of this notice to be sent to them.
[40CFR§61.145(b) and 45CSR§34]

3.1.4. **Odor.** No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public.
[45CSR§4-3.1 State-Enforceable only.]

3.1.5. **Permanent shutdown.** A source which has not operated at least 500 hours in one 12-month period within the previous five (5) year time period may be considered permanently shutdown, unless such source can provide to the Secretary, with reasonable specificity, information to the contrary. All permits may be modified or revoked and/or reapplication or application for new permits may be required for any source determined to be permanently shutdown.
[45CSR§13-10.5.]

3.1.6. **Standby plan for reducing emissions.** When requested by the Secretary, the permittee shall prepare standby plans for reducing the emissions of air pollutants in accordance with the objectives set forth in Tables I, II, and III of 45 C.S.R. 11.
[45CSR§11-5.2.]

3.2. Monitoring Requirements

3.2.1. **Emission Limit Averaging Time.** Unless otherwise specified, compliance with all annual limits shall be based on a rolling twelve month total. A rolling twelve month total shall be the sum of the measured parameter of the previous twelve calendar months. Unless otherwise specified, compliance with all hourly emission limits shall be based on the applicable NAAQS averaging times or, where applicable, as given in any approved performance test method. However, nothing under 3.2.1. requires that continuous performance testing take place for the entire averaging period time frame (e.g., performance testing to show compliance with a PM_{10} emission limit is not necessarily required for 24 consecutive hours). The required length of time of a performance test will be determined by th appropriate test method and compliance procedures as approved under a protocol submitted pursuant to 3.3.1(c).

3.3. Testing Requirements

3.3.1. **Stack testing.** As per provisions set forth in this permit or as otherwise required by the Secretary, in accordance with the West Virginia Code, underlying regulations, permits and orders, the permittee shall conduct test(s) to determine compliance with the emission limitations set forth in this permit and/or established or set forth in underlying documents. The Secretary, or his duly authorized representative, may at his option witness or conduct such test(s). Should the Secretary exercise his option to conduct such test(s), the operator shall provide all necessary sampling connections and sampling ports to be located in such manner as the Secretary may require, power for test equipment and the required safety equipment, such as scaffolding, railings and ladders, to comply with generally accepted good safety practices. Such tests shall be conducted in accordance with the methods and procedures set forth in this permit or as otherwise approved or specified by the Secretary in accordance with the following:

a. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with 40 C.F.R. Parts 60, 61, and 63 in accordance with the Secretary's delegated authority and any established equivalency determination methods which are applicable. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4 or 45CSR§13-5.4 as applicable.

b. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with applicable requirements which do not involve federal delegation. In specifying or approving such alternative testing to the test methods, the Secretary, to the extent possible, shall utilize the same equivalency criteria as would be used in approving such changes under Section 3.3.1.a. of this permit. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4 or -5.4 as applicable.

c. All periodic tests to determine mass emission limits from or air pollutant concentrations in discharge stacks and such other tests as specified in this permit shall be conducted in accordance with an approved test protocol. Unless previously approved, such protocols shall be submitted to the Secretary in writing at least thirty (30) days prior to any testing and shall contain the information set forth by the Secretary. In addition, the permittee shall notify the Secretary at least fifteen (15) days prior to any testing so the Secretary may have the opportunity to observe such tests. This notification shall include the actual date and time during which the test will be conducted and, if appropriate, verification that the tests will fully conform to a referenced protocol previously approved by the Secretary.

d. The permittee shall submit a report of the results of the stack test within sixty (60) days of completion of the test. The test report shall provide the information necessary to document the objectives of the test and to determine whether proper procedures were used to accomplish these objectives. The report shall include the following: the certification described in paragraph 3.5.1.; a statement of compliance status, also signed by a responsible official; and, a summary of conditions which form the basis for the compliance status evaluation. The summary of conditions shall include the following:

   1. The permit or rule evaluated, with the citation number and language;
   2. The result of the test for each permit or rule condition; and,
   3. A statement of compliance or noncompliance with each permit or rule condition.

   [WV Code § 22-5-4(a)(14-15) and 45CSR13]

3.4. Recordkeeping Requirements

3.4.1. **Retention of records.** The permittee shall maintain records of all information (including monitoring data, support information, reports and notifications) required by this permit recorded in a form suitable and readily available for expeditious inspection and review. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation. The files shall be maintained for at least five (5) years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. At a minimum, the most recent two (2) years of data shall be maintained on site. The remaining three (3) years of data may be maintained off site, but must remain accessible within a reasonable time. Where appropriate, the permittee may maintain records electronically (on a computer, on computer floppy disks, CDs, DVDs, or magnetic tape disks), on microfilm, or on microfiche.

3.4.2. **Odors.** For the purposes of 45CSR4, the permittee shall maintain a record of all odor complaints received, any investigation performed in response to such a complaint, and any responsive action(s) taken.
[45CSR§4. *State-Enforceable only.*]

3.5. Reporting Requirements

3.5.1. **Responsible official.** Any application form, report, or compliance certification required by this permit to be submitted to the DAQ and/or USEPA shall contain a certification by the responsible official that states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate and complete.

3.5.2. **Confidential information.** A permittee may request confidential treatment for the submission of reporting required by this permit pursuant to the limitations and procedures of W.Va. Code § 22-5-10 and 45CSR31.

3.5.3. **Correspondence.** All notices, requests, demands, submissions and other communications required or permitted to be made to the Secretary of DEP and/or USEPA shall be made in writing and shall be deemed to have been duly given when delivered by hand, or mailed first class or by private carrier with postage prepaid to the address(es), or submitted in electronic format by email as set forth below or to such other person or address as the Secretary of the Department of Environmental Protection may designate:

Table 3.5.3.: Correspondence Addresses

If to the DAQ:	If to the US EPA:
Director WVDEP Division of Air Quality 601 57th Street, SE Charleston, WV 25304-2345 **DAQ Compliance and Enforcement[1]:** **DEPAirQualityReports@wv.gov**	Associate Director Office of Air Enforcement and Compliance Assistance - (3AP20) U. S. Environmental Protection Agency Region III 1650 Arch Street Philadelphia, PA 19103-2029

[1] For all self-monitoring reports (MACT, GACT, NSPS, etc.), stack tests and protocols, notice of Compliance Status Reports, Initial Notifications, etc.

3.5.4. **Operating Fee.**

3.5.4.1. In accordance with 45CSR30 – Operating Permit Program, the permittee shall submit a Certified Emissions Statement (CES) and pay fees on an annual basis in accordance with the submittal requirements of the Division of Air Quality. A receipt for the appropriate fee shall be maintained on the premises for which the receipt has been issued, and shall be made immediately available for inspection by the Secretary or his/her duly authorized representative.

3.5.4.2. In accordance with 45CSR30 – Operating Permit Program, enclosed with this permit is a Certified Emissions Statement (CES) Invoice, from the date of initial startup through the following June 30. Said invoice and the appropriate fee shall be submitted to this office no later than 30 days prior to the date of initial startup. For any startup date other than July 1, the permittee shall pay a fee or prorated fee in accordance with the Section 4.5 of 45CSR22. A copy of this schedule may be found attached to the Certified Emissions Statement (CES) Invoice.

3.5.5. **Emission inventory.** At such time(s) as the Secretary may designate, the permittee herein shall prepare and submit an emission inventory for the previous year, addressing the emissions from the facility and/or process(es) authorized herein, in accordance with the emission inventory submittal requirements of the Division of Air Quality. After the initial submittal, the Secretary may, based upon the type and quantity of the pollutants emitted, establish a frequency other than on an annual basis.

4.0. Source-Specific Requirements

4.1. Limitations and Standards

4.1.1. Only those emission units/sources as identified in Table 1.0, with the exception of any *de minimis* sources as identified under Table 45-13B of 45CSR13, are authorized at the permitted facility by this permit. In accordance with the information filed in Permit Application R14-0037, the emission units/sources identified under Table 1.0 of this permit shall be installed, maintained, and operated so as to minimize any fugitive escape of pollutants, shall not exceed the listed maximum design capacities, shall use the specified control devices, and comply with any other information provided under Table 1.0.

4.1.2. **Material Handling Operations**
The handling of raw materials used in the production of mineral wool (including but not limited to igneous rocks, slags, dolomite/limestone, and mineral additives), coal milling material handling operations, recycling operations, and all other operations involved in the handling or processing of friable materials with a potential of producing particulate matter emissions, shall be in accordance with the following requirements:

a. The permittee shall not exceed the specified maximum design capacities of the following operations:

Table 4.1.2(a): Maximum Design Capacities

Parameter	Limit	Units
Raw Materials(1)	716(2) (650)	Ton/Day (Tonne/Day)
Lump Coal/Pet Coke	93(3) (84)	Ton/Day (Tonne/Day)
Portable Melt Crushing	<150 (<136)	TPH (Tonne/Hour)

(1) Rock, Slag, and Minerals
(2) As based on the Charging Building (B220) Conveyer Belt.
(3) As based on the Coal Mill Feed Conveyer Belt.

b. The permittee shall not exceed the specified maximum annual throughputs or hours of operation of the following operations:

Table 4.1.2(b): Maximum Annual Throughputs

Parameter	Limit	Units
Portable Melt Crushing	540	Hours of Operation

c. The permittee shall not exceed the maximum emission limits for the specified emission points given in the following tables:

(1) **British Units**

Table 4.1.2(c)(1): Material Handling Operations Stack Emission Limits in British Units

Emission Point ID	Source Description	Filter Outlet (gr/dscf)(1)	Pollutant(2)	PPH(3)	TPY	
IMF03A	Coal Storage Silo 1	0.001	$PM_{2.5}$	~~0.006~~	0.03	6.6E-3
		0.002	PM/PM_{10}	0.013	0.06	
IMF03B	Coal Storage Silo 2	0.001	$PM_{2.5}$	~~0.006~~	0.03	6.6E-3
		0.002	PM/PM_{10}	0.013	0.06	
IMF03C	Coal Storage Silo 3	0.001	$PM_{2.5}$	~~0.006~~	0.03	6.6E-3
		0.002	PM/PM_{10}	0.013	0.06	
IMF04	Conveyer TP (B231 to B235)	0.001	$PM_{2.5}$	0.010	0.04	
		0.002	PM/PM_{10}	0.019	0.09	
IMF06	Coal Milling Building (B235) De-Dusting Baghouse(4)	0.002	$PM_{2.5}$	~~0.108~~	~~0.47~~	0.11; 0.48
		0.004	PM/PM_{10}	~~0.217~~	0.95	0.221; 0.97
IMF07A	Filter Fines Day Silo	0.001	$PM_{2.5}$	0.007	0.03	
		0.002	PM/PM_{10}	0.014	0.06	
IMF07B	Secondary Energy Materials Silo	0.001	$PM_{2.5}$	0.007	0.03	
		0.002	PM/PM_{10}	0.014	0.06	
IMF08	Sorbent Silo	0.001	$PM_{2.5}$	~~0.006~~	0.03	6.6E-3
		0.002	PM/PM_{10}	0.013	0.06	
IMF09	Spent Sorbent Silo	0.001	$PM_{2.5}$	~~0.006~~	0.03	6.6E-3
		0.002	PM/PM_{10}	0.013	0.06	
IMF10	Filter Fines Receiving Silo	0.001	$PM_{2.5}$	~~0.006~~	0.03	6.6E-3
		0.002	PM/PM_{10}	0.013	0.06	
IMF11	Conveyer TP (B215 to B220)	0.001	$PM_{2.5}$	0.010	0.04	
		0.002	PM/PM_{10}	~~0.019~~	0.09	0.020
IMF12	Conveyer TP (B210 to B220)	0.001	$PM_{2.5}$	0.010	0.04	
		0.002	PM/PM_{10}	~~0.019~~	0.09	0.020
IMF13	Bin-Conveyer TP (B231 to Conveyer)	0.001	$PM_{2.5}$	0.010	0.04	
		0.002	PM/PM_{10}	~~0.019~~	0.09	0.020

Emission Point ID	Source Description	Filter Outlet (gr/dscf)(1)	Pollutant(2)	PPH(3)	TPY	
IMF14	Conveyer TP (B220 No. 1)	0.001	$PM_{2.5}$	0.010	0.04	
		0.002	PM/PM_{10}	~~0.019~~	0.09	0.020
IMF15	Conveyer TP (B220 No. 2)	0.001	$PM_{2.5}$	0.010	0.04	
		0.002	PM/PM_{10}	~~0.019~~	0.09	0.020
IMF16	Conveyer TP (B220 to B300)	0.001	$PM_{2.5}$	0.010	0.04	
		0.002	PM/PM_{10}	~~0.019~~	0.09	0.020
IMF17	Charging Building Vent 1	n/a(5)	$PM_{2.5}$	~~0.009~~	0.04	0.010
			PM/PM_{10}	0.019	0.08	
IMF18	Charging Building Vent 2	n/a(5)	$PM_{2.5}$	~~0.009~~	0.04	0.010
			PM/PM_{10}	0.019	0.08	
IMF21	Charging Building Vacuum Cleaning	0.001	$PM_{2.5}$	0.003	0.01	
		0.002	PM/PM_{10}	~~0.005~~	0.02	0.006
IMF25	Coal Feed Tank	0.001	$PM_{2.5}$	~~0.006~~	0.03	0.007
		0.002	PM/PM_{10}	0.013	0.06	
B235	Coal Milling Building	n/a(5)	$PM_{2.5}$	0.005	0.02	
			PM/PM_{10}	~~0.009~~	0.04	0.010
CE01	De-Dusting Baghouse	0.0020	$PM_{10}/PM_{2.5}$	~~0.770~~	3.38	0.772
		0.0041	PM	~~1.540~~	6.76	1.543
		n/a	Mineral Fiber	~~0.770~~	3.38	0.772
CE02	Vacuum Cleaning Baghouse	0.0020	$PM_{10}/PM_{2.5}$	0.220	0.97	
		0.0041	PM	~~0.440~~	1.93	0.441
		n/a	Mineral Fiber	0.220	0.97	
CM08	Recycle Building Vent 3	0.002	$PM_{2.5}$	~~0.027~~	0.12	0.028
		0.004	PM/PM_{10}	~~0.054~~	0.24	0.055
CM09	Recycle Building Vent 4	0.002	$PM_{2.5}$	~~0.027~~	0.12	0.028
		0.004	PM/PM_{10}	~~0.054~~	0.24	0.055

Emission Point ID	Source Description	Filter Outlet (gr/dscf)(1)	Pollutant(2)	PPH(3)	TPY
CM10	Recycle Building Vent 1	0.002	$PM_{2.5}$	~~0.330~~ 0.331	1.45
		0.004	PM/PM_{10}	~~0.660~~ 0.661	2.90
CM11	Recycle Building Vent 2	0.002	$PM_{2.5}$	~~0.330~~ 0.331	1.45
		0.004	PM/PM_{10}	~~0.660~~ 0.661	2.90

(1) gr/dscf = grains/dry standard cubic feet. Where applicable, the filter is the **BACT** technology and the outlet loading is PM/PM_{10} **BACT** limit for the specified emission points. Where a limit is not specified, **BACT** is the PPH limit.
(2) Particulate Matter limits are filterable only. With the exception of CE01 and CE02, PM/PM_{10} limits are the same.
(3) Hourly emission limits are based on a 24-hour average.
(4) This baghouse is optional and not required but if installed will be subject to the given emission limits.
(5) This is an uncontrolled building opening.

(2) <u>Metric Units</u>

Table 4.1.2(c)(2): Material Handling Operations Stack Emission Limits in Metric Units

Emission Point ID	Source Description	Filter Outlet (mg/Nm^3)(1)	Pollutant(2)	kg/hr(3)	tonne/yr
IMF03A	Coal Storage Silo 1	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF03B	Coal Storage Silo 2	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF03C	Coal Storage Silo 3	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF04	Conveyer TP (B231 to B235)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF06	Coal Milling Building (B235) De-Dusting Baghouse(4)	5	$PM_{2.5}$	0.050	0.44
		10	PM/PM_{10}	0.100	0.88
IMF07A	Filter Fines Day Silo	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF07B	Secondary Energy Materials Silo	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05

Emission Point ID	Source Description	Filter Outlet (mg/Nm^3)(1)	Pollutant(2)	kg/hr(3)	tonne/yr
IMF08	Sorbent Silo	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF09	Spent Sorbent Silo	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF10	Filter Fines Receiving Silo	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF11	Conveyer TP (B215 to B220)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF12	Conveyer TP (B210 to B220)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF13	Bin-Conveyer TP (B231 to Conveyer)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF14	Conveyer TP (B220 No. 1)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF15	Conveyer TP (B220 No. 2)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF16	Conveyer TP (B220 to B300)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF17	Charging Building Vent 1	n/a(5)	$PM_{2.5}$	0.004	0.04
			PM/PM_{10}	0.010	0.08
IMF18	Charging Building Vent 2	n/a(5)	$PM_{2.5}$	0.004	0.04
			PM/PM_{10}	0.010	0.08
IMF21	Charging Building Vacuum Cleaning	2.5	$PM_{2.5}$	0.001	0.01
		5	PM/PM_{10}	0.003	0.02
IMF25	Coal Feed Tank	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
B235	Coal Milling Building	n/a(5)	$PM_{2.5}$	0.005	0.02
			PM/PM_{10}	0.009	0.04

Emission Point ID	Source Description	Filter Outlet (mg/Nm^3)$^{(1)}$	Pollutant$^{(2)}$	kg/hr$^{(3)}$	tonne/yr	
CE01	De-Dusting Baghouse	5	$PM_{10}/PM_{2.5}$	0.350	3.07	
		10	PM	0.700	6.13	
		n/a	Mineral Fiber	0.350	3.07	
CE02	Vacuum Cleaning Baghouse	5	$PM_{10}/PM_{2.5}$	~~0.350~~	~~3.07~~	0.10; 0.88
		10	PM	0.200	1.75	
		n/a	Mineral Fiber	~~0.350~~	~~3.07~~	0.10; 0.88
CM08	Recycle Building Vent 3	5	$PM_{2.5}$	~~0.010~~	0.11	0.013
		10	PM/PM_{10}	0.030	0.22	
CM09	Recycle Building Vent 4	5	$PM_{2.5}$	~~0.010~~	0.11	0.013
		10	PM/PM_{10}	0.030	0.22	
CM10	Recycle Building Vent 1	5	$PM_{2.5}$	0.150	1.31	
		10	PM/PM_{10}	0.300	2.63	
CM11	Recycle Building Vent 2	5	$PM_{2.5}$	0.150	1.31	
		10	PM/PM_{10}	0.300	2.63	

(1) mg/Nm^3 = milligrams/cubic meter. Where applicable, the filter is the **BACT** technology and the outlet loading is PM/PM_{10} **BACT** limit for the specified emission points. Where a limit is not specified, **BACT** is the kg/hr limit.
(2) Particulate Matter limits are filterable only. With the exception of CE01 and CE02, PM/PM_{10} limits are the same.
(3) Hourly emission limits are based on a 24-hour average.
(4) This baghouse is optional and not required but if installed will be subject to the given emission limits.
(5) This is an uncontrolled building opening.

d. The permittee shall not exceed the maximum emission limits and shall utilize the control methods for the specified fugitive emission sources given in the following tables:

(1) **British Units**

Table 4.1.2(d)(1): Material Handling Operations Fugitive Emission Limits in British Units

Emission Unit ID	Source Description	Control Technology	Pollutant$^{(1)}$	PPH$^{(2)}$	TPY	
B215	Drop into Raw Material Loading Hopper	3-sided enclosure w/cover	$PM_{2.5}$	~~9.20e-04~~	4.03e-03	6.07E-3
			PM_{10}	6.85e-03	3.00e-02	
			PM	1.37e-02	6.00e-02	

Emission Unit ID	Source Description	Control Technology	Pollutant[(1)]	PPH[(2)]	TPY	
RMS	Drop onto Raw Material Stockpile	3-sided enclosure	$PM_{2.5}$	2.47e-04	1.08e-03	
			PM_{10}	1.63e-03	7.14e-03	
			PM	4.57e-03	2.00e-02	
	Stockpile Erosion		$PM_{2.5}$	1.55e-03	1.00e-02	
			PM_{10}	1.00e-02	~~4.00e-02~~	4.25E-2
			PM	~~2.00e-02~~	~~9.00e-02~~	2.07E-2; 9.05E-2
RM_REJ	Drop into Raw Material Reject Collection Bin	4-sided rubber drop guard	$PM_{2.5}$	1.84e-05	8.05e-05	
			PM_{10}	1.21e-04	5.32e-04	
			PM	~~2.56e-04~~	1.12e-03	2.57E-4
S_REJ	Drop into Sieve Reject Collection Bin	4-sided rubber drop guard	$PM_{2.5}$	1.84e-05	8.05e-05	
			PM_{10}	1.21e-04	5.32e-04	
			PM	~~2.56e-04~~	1.12e-03	2.57E-4
B170	Drop from Portable Crusher into Pit Waste Storage Pile	3-sided enclosure	$PM_{2.5}$	1.18e-02	3.18e-03	
			PM_{10}	7.41e-02	~~2.00e-02~~	2.10E-2
			PM	1.48e-01	4.00e-02	
	Stockpile Erosion		$PM_{2.5}$	1.00e-02	~~2.00e-02~~	2.44E-2
			PM_{10}	~~3.00e-02~~	~~1.50e-01~~	3.50E-2; 1.53E-01
			PM	~~7.00e-02~~	3.30e-01	7.44E-2
B210	Drop into B210	3-sided enclosure w/cover	$PM_{2.5}$	1.49e-02	4.03e-03	
			PM_{10}	1.11e-01	3.00e-02	
			PM	2.22e-01	6.00e-02	
	Truck or FEL Drop into B210	None	$PM_{2.5}$	7.41e-02	2.00e-02	
			PM_{10}	4.07e-01	1.10e-01	
			PM	8.15e-01	~~2.20e-01~~	2.25E-1
B230	Truck Dump to Coal Bunker	3-sided enclosure w/cover	$PM_{2.5}$	2.03e-04	5.49e-05	
			PM_{10}	1.34e-03	3.63e-04	
			PM	2.84e-03	7.67e-04	

Emission Unit ID	Source Description	Control Technology	Pollutant(1)	PPH(2)	TPY
B231	Drop into Coal Unloading Hopper	3-sided enclosure w/cover	$PM_{2.5}$	2.03e-04	5.49e-05
			PM_{10}	1.34e-03	3.63e-04
			PM	2.84e-03	7.67e-04

(1) Particulate Matter limits are filterable only.

(2) Hourly emission limits are based on a 24-hour average and are the **BACT** limits for the listed fugitive emission sources.

(2) **Metric Units**

Table 4.1.2(d)(2): Material Handling Operations Fugitive Emission Limits in Metric Units

Emission Unit ID	Source Description	Control Technology	Pollutant(1)	kg/hr(2)	tonne/yr	
B215	Drop into Raw Material Loading Hopper	3-sided enclosure w/cover	$PM_{2.5}$	~~4.17e-04~~	3.65e-03	1.67E-3
			PM_{10}	~~2.28e-03~~	~~2.00e-02~~	1.10E-2; 2.41E-2
			PM	~~5.71e-03~~	~~5.00e-02~~	5.82E-3, 5.10E-2
RMS	Drop onto Raw Material Stockpile	3-sided enclosure	$PM_{2.5}$	1.12e-04	9.81e-04	
			PM_{10}	7.40e-04	6.48e-03	
			PM	~~1.14e-03~~	~~1.00e-02~~	1.56E-3; 1.37E-2
	Stockpile Erosion		$PM_{2.5}$	7.03e-04	1.00e-02	
			PM_{10}	4.40e-03	4.00e-02	
			PM	1.00e-02	~~8.00e-02~~	8.21E-2
RM_REJ	Drop into Raw Material Reject Collection Bin	4-sided rubber drop guard	$PM_{2.5}$	8.57e-06	7.51e-05	
			PM_{10}	5.51e-05	4.83e-04	
			PM	1.16e-04	1.02e-03	
S_REJ	Drop into Sieve Reject Collection Bin	4-sided rubber drop guard	$PM_{2.5}$	8.34e-06	7.31e-05	
			PM_{10}	5.51e-05	4.83e-04	
			PM	1.16e-04	1.02e-03	
B170	Drop from Portable Crusher into Pit Waste Storage Pile	3-sided enclosure	$PM_{2.5}$	3.29e-04	2.88e-03	
			PM_{10}	2.28e-03	2.00e-02	
			PM	~~4.57e-03~~	~~4.00e-02~~	4.60E-3; 4.03E-2
	Stockpile Erosion		$PM_{2.5}$	2.53e-03	~~2.00e-02~~	2.22E-2
			PM_{10}	2.00e-02	1.40e-01	
			PM	~~3.00e-02~~	3.00e-01	3.07E-2

Emission Unit ID	Source Description	Control Technology	Pollutant(1)	kg/hr(2)	tonne/yr	
B210	Drop into B210	3-sided enclosure w/cover	$PM_{2.5}$	4.17e-04	3.65e-03	
			PM_{10}	~~2.28e-03~~	~~2.00e-02~~	2.75E-3; 2.41E-2
			PM	~~5.71e-03~~	~~5.00e-02~~	5.82E-3; 5.10E-2
	Truck or FEL Drop into B210	None	$PM_{2.5}$	~~1.14e-03~~	~~1.00e-02~~	1.67E-3; 1.46E-2
			PM_{10}	1.14e-02	1.00e-01	
			PM	~~2.28e-02~~	~~2.00e-01~~	2.33E-2, 2.04E-1
B230	Truck Dump to Coal Bunker	3-sided roofed enclosure w/ closeable bay door	$PM_{2.5}$	5.68e-06	4.98e-05	
			PM_{10}	3.76e-05	3.29e-04	
			PM	7.95e-05	6.96e-04	
B231	Drop into Covered Coal Unloading Hopper	3-sided enclosure w/cover	$PM_{2.5}$	5.68e-06	4.98e-05	
			PM_{10}	3.76e-05	3.29e-04	
			PM	7.95e-05	6.96e-04	

(1) Particulate Matter limits are filterable only.
(2) Hourly emission limits are based on a 24-hour average and are the **BACT** limits for the listed fugitive emission sources.

e. **Melting Furnace Portable Crusher**
Emissions from the Melting Furnace Portable Crusher (not including associated storage pile or pit waste drop) shall not exceed the limits given in the following table:

Table 4.1.2(e): Melting Furnace Portable Crusher Emission Limits

Pollutant(1)	PPH(2) (kg/hr)	TPY (tonne/yr)
$PM_{2.5}$	0.12 (0.05)	0.03 (0.03)
PM_{10}	0.36 (0.16)	0.10 (0.09
PM	0.81 (0.37)	0.22 (0.20)

(1) Particulate Matter limits are filterable only.
(2) Hourly emission limits are the **BACT** limits.

f. In addition to the particulate matter controls as required in the Emission Units Table 1.0, the raw material mixer and crusher located in the Charging Building (B220) and the coal conveyer transfer point located inside the Coal Milling Building (B235) shall be equipped with fabric filters to control particulate matter emissions from these sources. The maximum outlet grain loading concentration for each of these fabric filters shall not exceed 0.002 gr/dscf (5 mg/Nm^3)) of filterable PM/PM_{10} and 0.001 gr/dscf (2.5 mg/Nm^3) filterable $PM_{2.5}$;.

g. **Outdoor Material Storage Areas**
All outdoor raw material, coal, waste, or recycled material storage shall be in accordance with the following:

(1) The permittee is authorized to operate one (1) raw material stockpile (RMS) that shall not exceed a base of 5,382 ft^2 (500 m^2) and shall utilize 3-sided enclosures to minimize the potential fugitive emissions of particulate matter from wind erosion and pile activity;

(2) The permittee is authorized to operate Building 210 and 211 for raw material storage. These buildings shall utilize 3-sided enclosures and a roof to minimize the potential fugitive emissions of particulate matter from wind erosion and pile activity;

(3) The permittee is authorized to operate one (1) coal bunker (B230) that shall utilize a 3-sided enclosure, a roof, and a closeable bay door (or equivalent design) to minimize the potential fugitive emissions of particulate matter from wind erosion and pile activity;

(4) The permittee is authorized to operate one (1) recycled material stockpile. The material in this storage area is limited to the slag-like material tapped from the Melting Furnace that is of such a physical nature so as to limit any significant generation of fugitive matter from wind erosion and pile activity;

(5) The permittee is authorized to operate one (1) pit waste (crushed recycled material) storage area (B170) that shall not exceed a base of 19,375 ft^2 (1,800 m^2) and shall utilize a 3-sided enclosure to minimize the potential fugitive emissions of particulate matter from wind erosion and pile activity;

(6) For all storage piles, the permittee shall manage on-pile activity so as to minimize the release of emissions; and

(7) All storage area enclosures shall be reasonably maintained and any significant holes shall be repaired immediately.

h. **Haulroads and Mobile Work Areas**
Fugitive particulate emissions resulting from use of haulroads and mobile work areas shall be minimized by the following:

(1) The permittee shall pave, and maintain such pavement, on all haulroads and mobile work areas (including a reasonable shoulder area) within the plant boundary;

(2) The permittee shall maintain access to a vacuum sweeper truck in good operating condition, and shall utilize same as needed to remove excess dirt and dust from all haulroads and mobile work areas. The haulroads and mobile work areas shall be flushed with water immediately prior to each vacuum sweeping (flushing may be part of vacuum sweeper truck); and

(3) The permittee shall collect, in a timely fashion, material spilled on haulroads that could become airborne if it dried or were subject to vehicle traffic.

i. **45CSR7**
The handling of raw materials used in the production of mineral wool and coal milling material handling operations shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) No person shall cause, suffer, allow or permit any manufacturing process or storage structure generating fugitive particulate matter to operate that is not equipped with a system, which may include, but not be limited to, process equipment design, control equipment design or operation and maintenance procedures, to minimize the emissions of fugitive particulate matter. To minimize means such system shall be installed, maintained and operated to ensure the lowest fugitive particulate matter emissions reasonably achievable.
[45CSR§7-5.1]

j. **40 CFR 60, Subpart OOO**
The non-metallic mineral handling operations (see Table 4-1 of Permit Application R14-0037 for a complete list of affected sources) prior to the furnace building (B300) are subject to the applicable limitations and standards under 40 CFR 60, Subpart OOO including, but not limited to, the following:

(1) Affected facilities must meet the stack emission limits and compliance requirements in Table 2 of Subpart OOO within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup as required under §60.8. The requirements in Table 2 of Subpart OOO apply for affected facilities with capture systems used to capture and transport particulate matter to a control device.
[40 CFR §60.672(a)]

(2) Affected facilities must meet the fugitive emission limits and compliance requirements in Table 3 of Subpart OOO within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup as required under §60.11. The requirements in Table 3 of Subpart OOO apply for fugitive emissions from affected facilities without capture systems and for fugitive emissions escaping capture systems.
[40 CFR §60.672(b)]

(3) Truck dumping of nonmetallic minerals into any screening operation, feed hopper, or crusher is exempt from the requirements of this section.
[40 CFR §60.672(d)]

(4) If any transfer point on a conveyor belt or any other affected facility is enclosed in a building, then each enclosed affected facility must comply with the emission limits in 40 CFR §60.672(a) and (b), or the building enclosing the affected facility or facilities must comply with the following emission limits:

(1) Fugitive emissions from the building openings (except for vents as defined in §60.671) must not exceed 7 percent opacity; and

(2) Vents (as defined in §60.671) in the building must meet the applicable stack emission limits and compliance requirements in Table 2 of Subpart OOO.
[40 CFR §60.672(e)]

(5) Any baghouse that controls emissions from only an individual, enclosed storage bin is exempt from the applicable stack PM concentration limit (and associated performance testing) in Table 2 of Subpart OOO but must meet the applicable stack opacity limit and compliance requirements in Table 2 of Subpart OOO. This exemption from the stack PM concentration limit does not apply for multiple storage bins with combined stack emissions.
[40 CFR §60.672(f)]

4.1.3. Coal Mill Burner and Fluidized Bed Dryer

The Coal Mill Burner and Fluidized Bed Dryer, identified as IMF05, shall meet the following requirements:

a. The Coal Mill Burner shall not exceed an MDHI of 6.00 mmBtu/hr (1,757 kW) shall only be fired by pipeline-quality natural gas (PNG);

b. The Fluidized Bed Dryer shall have a design capacity not to exceed 200 tons per day;

c. The combined exhaust from the Coal Mill Burner and Fluidized Bed Dryer shall be vented to first a separator and then to a baghouse (IMF05-BH) for control of filterable particulate matter;

d. The combined exhaust of the Coal Mill Burner and Fluidized Bed Dryer shall not exceed the emission limits, and shall utilize the specified BACT Technology, as given in the following table:

Table 4.1.3(d): Coal Mill Burner and Fluidized Bed Dryer Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/ year)
CO	n/a	n/a	0.49 (0.22)	2.15 (1.95)
NO_x	60 ppmvd @ 3% O_2	LNB, Temperature Control(1)	0.42 (0.19)	1.86 (1.68)
$PM_{2.5(2)}$	PPH	Baghouse	0.26 (0.12)	1.06 (0.96)
$PM_{10(2)}$			0.32 (0.14)	1.33 (1.20)

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/ year)
PM(3)	0.005 gr/dscf (12.3 mg/Nm^3)	Baghouse	0.12 (0.06)	0.54 (0.49)
SO_2	PPH	Use of Natural Gas	3.51e-03 (1.59e-03)	0.02 (0.01)
VOCs		Good Combustion Practices(4)	0.41 ~~(0.18)~~ 0.19	1.65 (1.50)
CO_2e	TPY	Use of Natural Gas, Good Combustion Practices(4)	--	3,080 (2,793)

(1) Drying in the Fluidized Bed Dryer shall take place at a temperature of less than 180 degrees Fahrenheit so as to prevent any combustion of the coal.
(2) Includes condensables.
(3) Filterable only.
(4) Good Combustion Practices shall mean activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.

e. **45CSR7**
The Coal Mill Burner and Fluidized Bed Dryer shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

4.1.4. **Melting Furnace**
The Melting Furnace, identified as IMF01, shall meet the following requirements:

a. The Melting Furnace shall not exceed the emission limits, and shall utilize the specified **BACT** Technology, as given in the following table:

Table 4.1.4(a): Melting Furnace Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
CO	n/a	n/a	11.21(1) (5.09)	49.10 (44.54)
NO_x		Integrated SNCR, Oxy-Fired Burners(2)	37.37(1) (16.95)	163.67 (148.48)
$PM_{2.5(3)}$	PPH		7.47 (3.39)	32.73 ~~(29.10)~~ 29.70
$PM_{10(3)}$		Baghouse	8.22 (3.73)	36.01 (32.67)
PM(4)	0.013 gr/dscf 31 mg/Nm^3		2.32 (1.05)	10.15 (9.21)
SO_2		Sorbent Injection in the Baghouse	33.63(1) (15.26)	147.31 ~~(33.63)~~ 133.63
VOCs	PPH	Good Combustion Practices(5)	11.66 (5.29)	51.08 (46.34)
H_2SO_4		Sorbent Injection in the Baghouse	3.74 (1.70)	16.37 (14.85)
Mineral Fiber			2.32 (1.05)	10.15 (9.21)
HF			0.37 (0.17)	1.62 (1.47)
HCl	n/a	n/a	0.29 (0.13)	1.29 (1.17)
COS			0.37 (0.17)	1.64 (1.48)
Total HAPs			3.43 (1.56)	15.04 (13.64)
CO_2e	TPY	Energy Efficiency(6)	--	95,547 (86,679)

(1) Compliance based on a 30-day rolling average.
(2) Integrated SNCR system utilizes ammonia injection to promote a de-NOx reaction to occur. The oxy-fuel burners are specially designed to fire with O_2 instead of ambient air.
(3) Includes condensables.
(4) Filterable only.
(5) Good combustion practices include, but are not limited to the following: (1) maintaining a proper oxidizing atmosphere to control VOC emissions through proper combustion tuning, temperature, and air/fuel mixing and (2) activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.
(6) Energy Efficiency measures listed in Table D-9-2 (pp. 554) of the permit application.

b. **45CSR7**
The Melting Furnace shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) Mineral acids shall not be released from any type source operation or duplicate source operation or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity given in Table 45-7B found at the end of this rule.
[45CSR§7-4.2]

c. **45CSR10**
The Melting Furnace shall comply with all applicable requirements of 45CSR10 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit the emission into the open air from any source operation an in-stack sulfur dioxide concentration exceeding 2,000 parts per million by volume from existing source operations, except as provided in subdivisions 4.1.a through 4.1.e.
[45CSR§10-3.1]

d. **40 CFR 63, Subpart DDD**
The Melting Furnace shall comply with all applicable requirements of 40 CFR 63, Subpart DDD including, but not limited to, the following:

(1) **§63.1178 For cupolas, what standards must I meet?**

(i) You must control emissions from each cupola as specified in Table 2 to this subpart.
[40 CFR§63.1178(a)]

Table 2 to Subpart DDD of Part 63—Emissions Limits and Compliance Dates

If your source is a:	And you commenced construction:	Your emission limits are:[1]	And you must comply by:[2]
2. Cupola	After May 8, 1997	0.10 lb PM per ton of melt	June 1, 1999
8. Open-top cupola	After November 25, 2011	3.2 lb of COS per ton melt	July 29, 2015[4]
10. Cupola using slag as a raw material	After November 25, 2011	0.015 lb of HF per ton melt 0.012 lb of HCl per ton melt.	July 29, 2015[4]

(1) The numeric emissions limits do not apply during startup and shutdown.
(2) Existing sources must demonstrate compliance by the compliance dates specified in this table. New sources have 180 days after the applicable compliance date to demonstrate compliance.
(4) Or upon initial startup, whichever is later.

(ii) You must meet the following operating limits for each cupola:
[40 CFR§63.1178(b)]

(A) Begin within one hour after the alarm on a bag leak detection system sounds, and complete in a timely manner, corrective actions as specified in your operations, maintenance, and monitoring plan required by §63.1187 of this subpart.
[40 CFR§63.1178(b)(1)]

(B) When the alarm on a bag leak detection system sounds for more than five percent of the total operating time in a six-month reporting period, develop and implement a written quality improvement plan (QIP) consistent with the compliance assurance monitoring requirements of §64.8(b)-(d) of 40 CFR part 64.
[40 CFR§63.1178(b)(2)]

(C) Additionally, on or after the applicable compliance date for each new or reconstructed cupola, you must either:
[40 CFR§63.1178(b)(3)]

(I) Maintain the operating temperature of the incinerator so that the average operating temperature for each three-hour block period never falls below the average temperature established during the performance test, or
[40 CFR§63.1178(b)(3)(I)]

(II) Maintain the percent excess oxygen in the cupola at or above the level established during the performance test. You must determine the percent excess oxygen using the following equation:
[40 CFR§63.1178(b)(3)(II)]

Percent excess oxygen = ((Oxygen available/Fuel demand for oxygen) - 1) * 100

Where:

Percent excess oxygen = Percentage of excess oxygen present above the stoichiometric balance of 1.00, (%).

1.00 = Ratio of oxygen in a cupola combustion chamber divided by the stoichiometric quantity of oxygen required to obtain complete combustion of fuel.

Oxygen available = Quantity of oxygen introduced into the cupola combustion zone.
Fuel demand for oxygen = Required quantity of oxygen for stoichiometric combustion of the quantity of fuel present.

4.1.5. **Gutter Exhaust, Spinning Chamber, Curing Oven Hoods, Curing Oven, and Cooling Section**

The Gutter Exhaust (GUT-EX), Spinning Chamber (SPN), Curing Oven Hoods (CO-HD), Curing Oven (CO), and Cooling Section (CS) shall meet the following requirements:

a. The Gutter Exhaust, Spinning Chamber, Curing Oven Hoods, Curing Oven, and Cooling Section shall not exceed the aggregate emission limits (as emitted from the Wet Electrostatic Precipitator (WESP) stack (HE01)), and each shall utilize the specified BACT Technology as given in the following table:

Table 4.1.5(a): Gutter Exhaust, Spinning Chamber, Curing Oven Hoods, Curing Oven, and Cooling Section Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
CO	n/a	n/a	1.82 (0.82)	7.97 (7.23)
NO_x	PPH	LNB, Good Combustion Practices(1)	14.55 (6.60)	63.73 (57.82)
$PM_{2.5(2)}$		WESP	19.22 (8.72)	84.20 (76.39)
$PM_{10(2)}$			21.21 (9.62)	92.89 (84.27)
PM(3)			21.21 (9.62)	92.89 (84.27)
SO_2		Use of Natural Gas	0.01 (4.89e-03)	0.05 (0.04)
VOCs		Afterburner Good Combustion Practices Subpart DDD Compliance(4)	78.02 (35.39)	341.71 (309.99)
Phenol	n/a	n/a(5)	19.37 (8.79)	84.84 (76.98)
Formaldehyde			12.79 (5.80)	56.02 (50.81)
Methanol			23.70 (10.75)	103.80 (94.17)
Mineral Fiber			21.21 (9.62)	92.89 (84.27)
Total HAPs			77.07 (34.96)	337.56 (306.23)

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
CO_2e	TPY	Use of Natural Gas, Good Combustion Practices[(1)]	--	35,644 (32,336)

(1) Good combustion practices include, but are not limited to the following: Proper combustion tuning, temperature, and air/fuel mixing and activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.
(2) Includes condensables.
(3) Filterable only.
(4) BACT Technology: Gutter Exhaust - Subpart DDD Compliance, Curing Oven - Afterburner/Good Combustion Practices, Spinning Chamber - Subpart DDD Compliance, Curing Oven Hoods - Subpart DDD Compliance.
(5) While the Afterburner is required as a control on Phenol, Formaldehyde, and Methanol, as these pollutants are not subject to PSD, the Afterburner is not listed here as it is not a BACT technology for these pollutants.

b. **45CSR7**
The Gutter Exhaust, Curing Oven Hoods, Curing Oven, and Spinning Chamber shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) Mineral acids shall not be released from any type source operation or duplicate source operation or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity given in Table 45-7B found at the end of this rule.
[45CSR§7-4.2]

c. **40 CFR 63, Subpart DDD**
The Gutter Exhaust, Curing Oven Hoods, Curing Oven, and Spinning Chamber shall comply with all applicable requirements of 40 CFR 63, Subpart DDD including, but not limited to, the following:

(1) **§63.1179 For curing ovens or combined collection/curing operations, what standards must I meet?**

(i) You must control emissions from each curing oven or combined collection/curing operations as specified in Table 2 to this subpart.
[43 CFR§60.1179(a)]

Table 2 to Subpart DDD of Part 63—Emissions Limits and Compliance Dates

If your source is a:	And you commenced construction:	Your emission limits are:[1]	And you must comply by:[2]
24. Combined vertical collection/curing operation	After November 25, 2011	2.4 lb of formaldehyde per ton melt 0.92 lb of methanol per ton melt. 0.71 lb of phenol per ton melt.	July 29, 2015[4]

(1) The numeric emissions limits do not apply during startup and shutdown.
(2) Existing sources must demonstrate compliance by the compliance dates specified in this table. New sources have 180 days after the applicable compliance date to demonstrate compliance.
(4) Or upon initial startup, whichever is later.

4.1.6. **Fleece Application**

The Fleece Application operations shall meet the following requirements:

a. The maximum emissions of VOCs and HAPs from the Fleece Application operations each shall not exceed of 7.14 tons per month (6.48 tonnes/month) and a **BACT** limit (BACT limit is VOCs only) of 28.58 TPY (23.21 tonnes/year);

b. The BACT Technology for the Fleece Application operations is the use of low-VOC coatings and the utilization of Good Work Practices. "Low-VOC coatings" shall mean the monthly average of all coating materials used during fleece application operations shall not exceed 0.016 lb-VOC/lb-coating (0.016 kg-VOC/kg-coating) material as-applied on a monthly average basis. "Good Work Practices" shall mean storing VOC-containing materials in closed tanks or containers, cleaning up spills, and minimizing cleaning with VOC-containing cleaners; and

c. **40 CFR 63, Subpart JJJJ**

The fleece application operations shall comply with all applicable requirements of 40 CFR 63, Subpart JJJJ including, but not limited to, the following:

What emission standards must I meet?

(1) If you own or operate any affected source that is subject to the requirements of this subpart, you must comply with these requirements on and after the compliance dates as specified in §63.3330.
[40 CFR§63.3320(a)]

(2) You must limit organic HAP emissions to the level specified in paragraph (b)(1), (2), (3), or (4) of this section.
[40 CFR§63.3320(b)]

(i) No more than 5 percent of the organic HAP applied for each month (95 percent reduction) at existing affected sources, and no more than 2 percent of the organic HAP applied for each month (98 percent reduction) at new affected sources; or
[40 CFR§63.3320(b)(1)]

(ii) No more than 4 percent of the mass of coating materials applied for each month at existing affected sources, and no more than 1.6 percent of the mass of coating materials applied for each month at new affected sources; or
[40 CFR§63.3320(b)(2)]

(iii) No more than 20 percent of the mass of coating solids applied for each month at existing affected sources, and no more than 8 percent of the coating solids applied for each month at new affected sources.
[40 CFR§63.3320(b)(3)]

(iv) If you use an oxidizer to control organic HAP emissions, operate the oxidizer such that an outlet organic HAP concentration of no greater than 20 parts per million by volume (ppmv) by compound on a dry basis is achieved and the efficiency of the capture system is 100 percent.
[40 CFR§63.3320(b)(4)]

(3) You must demonstrate compliance with this subpart by following the procedures in §63.3370.
[40 CFR§63.3320(c)]

4.1.7. **Rockfon Line**

The Rockfon Line shall meet the following requirements:

a. The maximum aggregate VOC emissions from the application of glue and coatings in the Rockfon line shall not exceed 8.98 tons/month (8.15 tonne/month) and a **BACT** limit of 35.93 TPY (32.60 tonne/yr);

b. The **BACT** Technology for the application of glue and coatings in the Rockfon Line is the use of low-VOC materials and the utilization of Good Work Practices. "Low-VOC materials" shall mean the use of glue is limited to containing (**BACT** Limit) of a maximum VOC content of 0.57 lb-VOC/gallon-glue (70 g-VOC/L-material) and the use of coatings are limited to containing (**BACT** Limit) a maximum VOC content of 0.67 lb-VOC/gallon-material (80 g-VOC/L-material). No HAP-containing glues or coatings shall be used in the Rockfon Line. "Good Work Practices" shall mean storing VOC-containing materials in closed tanks or containers, cleaning up spills, and minimizing cleaning with VOC-containing cleaners;

c. The ovens used in the Rockfon line shall only combust PNG and each not exceed the aggregate MDHI (of all burners) specified in the following table:

Table 4.1.7(c): Rockfon Line Ovens Maximum MDHI

Oven ID	MDHI
RFN-E3	2.73 mmBtu/hr (800 kW)
RFN-E4	2.05 mmBtu/hr (600 kW)
RFN-E6	4.78 mmBtu/hr (1,400 kW)
RFN-E9	2.73 mmBtu/hr (800 kW)

d. The Rockfon Line shall not exceed the emission limits, and each shall utilize the specified **BACT** Technology as given in the following tables:

(1) **British Units**

Table 4.1.7(d)(1): Rockfon Line Emission Limits in British Units

Pollutant	BACT Limit	BACT Technology	PPH	TPY
RFN-E1: IR Zone				
$PM_{2.5(1)}$	PPH	Low-Particulate Emitting Process	0.01	0.06
$PM_{10(1)}$			0.02	0.08
PM[(2)]			0.01	0.04
Phenol	n/a	n/a	0.01	0.03
Formaldehyde			0.01	0.03
Mineral Fiber			0.01	0.04
Total HAPs			0.02	0.10
RFN-E2: Hot Press				
$PM_{2.5(1)}$	PPH	Low-Particulate Emitting Process	0.01	0.06
$PM_{10(1)}$			0.02	0.08
PM[(2)]			0.01	0.04
Phenol	n/a	n/a	0.01	0.03
Formaldehyde			0.01	0.03
Mineral Fiber			0.01	0.04
Total HAPs			0.02	0.10
RFN-E3: High Oven A				
CO	n/a	n/a	0.22	0.98
NO_x	0.10 lb/mmBtu	Good Combustion Practices[(3)]	0.27	1.17
$PM_{2.5(1)}$	PPH	Use of Natural Gas, Good Combustion Practices[(3)]	0.09	0.38
$PM_{10(1)}$			0.12	0.51
PM[(2)]			0.06	0.25
SO_2	PPH	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices[(3)]	0.01	0.06

Pollutant	BACT Limit	BACT Technology	PPH	TPY
Phenol	n/a	n/a	0.02	0.08
Formaldehyde			0.02	0.08
Mineral Fiber			0.06	0.25
Total HAPs			0.10	0.43
CO_2e	TPY	Use of Natural Gas, Good Combustion Practices(3)	--	1,400
RFN-E4: Drying Oven 1				
CO	n/a	n/a	0.17	0.73
NO_x	0.10 lb/mmBtu	Good Combustion Practices(3)	0.20	0.87
$PM_{2.5(1)}$	PPH	Use of Natural Gas, Good Combustion Practices(3), Fabric Filter (RFNE4-FF)	0.06	0.27
$PM_{10(1)}$			0.08	0.36
PM(2)	0.0015 g/dscf		0.04	0.18
SO_2	PPH	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	0.05
Phenol	n/a	n/a	0.01	0.05
Formaldehyde			0.02	0.10
Mineral Fiber			0.04	0.18
Total HAPs			0.08	0.34
CO_2e	TPY	Use of Natural Gas, Good Combustion Practices(3)	--	1,050
RFN-E5: Spray Paint Cabin				
$PM_{2.5(1)}$	PPH	Fabric Filter (RFNE5-FF)	0.66	2.90
$PM_{10(1)}$			0.88	3.86
PM(2)	0.0081 g/dscf		0.44	1.93
Phenol	n/a	n/a	0.06	0.24
Formaldehyde			0.02	0.10
Mineral Fiber			0.44	1.93
Total HAPs			0.52	2.27

Pollutant	BACT Limit	BACT Technology	PPH	TPY
RFN-E6: Drying Oven 2/3				
CO	n/a	n/a	0.39	1.71
NO_x	0.10 lb/mmBtu	Good Combustion Practices(3)	0.47	2.04
$PM_{2.5(1)}$	PPH	Use of Natural Gas, Good Combustion Practices(3), Fabric Filter (RFNE6-FF)	0.09	0.41
$PM_{10(1)}$			0.13	0.55
PM(2)	0.001 g/dscf		0.06	0.28
SO_2	PPH	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.03	0.11
Phenol	n/a	n/a	0.03	0.12
Formaldehyde			0.05	0.23
Mineral Fiber			0.06	0.28
Total HAPs			0.15	0.66
CO_2e	TPY	Use of Natural Gas, Good Combustion Practices(3)	--	2,450
RFN-E7: Cooling Zone				
$PM_{2.5(1)}$	PPH	Low-Emitting Process	0.14	0.63
$PM_{10(1)}$			0.19	0.84
PM(2)			0.10	0.42
Phenol	n/a	n/a	0.06	0.24
Formaldehyde			0.06	0.24
Mineral Fiber			0.10	0.42
Total HAPs			0.21	0.91
RFN-E8: De-Dusting Baghouse				
$PM_{2.5(2)}$	PPH	Fabric Filter (RFNE8-FF)	0.17	0.75
$PM_{10(2)}$			0.34	1.49
PM(2)	0.00053 g/dscf		0.34	1.49
Mineral Fiber	n/a	n/a	0.34	1.49
Total HAPs			0.34	1.49

Pollutant	BACT Limit	BACT Technology	PPH	TPY
RFN-E9: High Oven B				
CO	n/a	n/a	0.22	0.98
NO_x	0.10 lb/mmBtu	Good Combustion Practices(3)	0.27	1.17
$PM_{2.5(1)}$	PPH	Use of Natural Gas, Good Combustion Practices(3)	0.09	0.38
$PM_{10(1)}$			0.12	0.51
PM(2)			0.06	0.25
SO_2	PPH	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	0.06
Phenol	n/a	n/a	0.02	0.08
Formaldehyde			0.02	0.08
Mineral Fiber			0.06	0.25
Total HAPs			0.10	0.43
CO_2e	TPY	Use of Natural Gas, Good Combustion Practices(3)	--	1,400

(1) Includes Condensables.
(2) Filterable Only.
(3) Good Combustion Practices shall mean activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.

(2) **Metric Units**

Table 4.1.7(d)(2): Rockfon Line Emission Limits in Metric Units

Pollutant	BACT Limit	BACT Technology	kg/hr	tonne/yr
RFN-E1: IR Zone				
$PM_{2.5(1)}$	kg/hr	Low-Particulate Emitting Process	6.30e-03	0.06
$PM_{10(1)}$			1.00e-02	0.07
PM(2)			4.20e-03	0.04
Phenol	n/a	n/a	3.00e-03	0.03
Formaldehyde			3.00e-03	0.03
Mineral Fiber			4.20e-03	0.04
Total HAPs			~~1.00e-02~~	0.09

1.02E-2

Pollutant	BACT Limit	BACT Technology	kg/hr	tonne/yr
RFN-E2: Hot Press				
$PM_{2.5(1)}$	kg/hr	Low-Particulate Emitting Process	6.30e-03	0.06
$PM_{10(1)}$			1.00e-02	0.07
PM[2]			4.20e-03	0.04
Phenol	n/a	n/a	3.00e-03	0.03
Formaldehyde			3.00e-03	0.03
Mineral Fiber			4.20e-03	0.04
Total HAPs			~~1.00e-02~~ 1.02E-2	0.09
RFN-E3: High Oven A				
CO	n/a	n/a	0.10	0.89
NO_x	1,602 kg/mmsm^3	Good Combustion Practices[3]	0.12	1.06
$PM_{2.5(1)}$	kg/hr	Use of Natural Gas, Good Combustion Practices[3]	0.04	0.35
$PM_{10(1)}$			0.05	0.46
PM[2]			0.03	0.23
SO_2	kg/hr	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices[3]	0.01	~~0.05~~ 0.06
Phenol	n/a	n/a	0.01	0.07
Formaldehyde			0.01	0.07
Mineral Fiber			0.03	0.23
Total HAPs			0.04	0.39
CO_2e	tonne/yr	Use of Natural Gas, Good Combustion Practices[3]	--	1,270
RFN-E4: Drying Oven 1				
CO	n/a	n/a	0.08	0.67
NO_x	1,602 kg/mmsm^3	Good Combustion Practices[3]	0.09	0.79
$PM_{2.5(1)}$	kg/hr	Use of Natural Gas, Good Combustion Practices[3], Fabric Filter (RFNE4-FF)	0.03	0.24
$PM_{10(1)}$			0.04	0.32
PM[2]	3.70 mg/Nm^3		0.02	0.16

Pollutant	BACT Limit	BACT Technology	kg/hr	tonne/yr
SO_2	kg/hr	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	0.04
Phenol	n/a	n/a	0.01	0.04
Formaldehyde			0.01	0.09
Mineral Fiber			0.02	0.16
Total HAPs			0.04	0.31
CO_2e	tonne/yr	Use of Natural Gas, Good Combustion Practices(3)	--	953
RFN-E5: Spray Paint Cabin				
$PM_{2.5(1)}$	kg/hr	Fabric Filter (RFNE5-FF)	0.30	2.63
$PM_{10(1)}$			0.40	3.50
$PM^{(2)}$	20 mg/Nm³		0.20	1.75
Phenol	n/a	n/a	0.03	0.22
Formaldehyde			0.01	0.09
Mineral Fiber			0.20	1.75
Total HAPs			0.23	2.06
RFN-E6: Drying Oven 2/3				
CO	n/a	n/a	0.18	1.55
NO_x	1,602 kg/mmsm³	Good Combustion ~~Practices(3)~~	~~0.02~~ 0.21	1.86
$PM_{2.5(1)}$	kg/hr	Use of Natural Gas, Good Combustion Practices(3), Fabric Filter (RFNE6-FF)	0.04	0.38
$PM_{10(1)}$			0.06	0.50
$PM^{(2)}$	2.38 mg/Nm³		0.03	0.25
SO_2	kg/hr	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	~~0.05~~ 0.10
Phenol	n/a	n/a	0.01	0.11
Formaldehyde			0.02	0.21
Mineral Fiber			0.03	0.25
Total HAPs			0.07	0.60

Pollutant	BACT Limit	BACT Technology	kg/hr	tonne/yr
CO_2e	tonne/yr	Use of Natural Gas, Good Combustion Practices(3)	--	2,223
RFN-E7: Cooling Zone				
$PM_{2.5(1)}$	kg/hr	Low-Emitting Process	0.07	0.57
$PM_{10(1)}$			0.09	0.77
$PM^{(2)}$			0.04	0.38
Phenol	n/a	n/a	0.03	0.22
Formaldehyde			0.03	0.22
Mineral Fiber			0.04	0.38
Total HAPs			0.09	0.82
RFN-E8: De-Dusting Baghouse				
$PM_{2.5(2)}$	kg/hr	Fabric Filter (RFNE8-FF)	0.08	0.68
$PM_{10(2)}$			0.15	1.35
$PM^{(2)}$	1.30 mg/Nm^3		0.15	1.35
Mineral Fiber	n/a	n/a	0.15	1.35
Total HAPs			0.15	1.35
RFN-E9: High Oven B				
CO	n/a	n/a	0.10	0.89
NO_x	1,602 kg/mmsm^3	Good Combustion Practices(3)	0.12	1.06
$PM_{2.5(1)}$	kg/hr	Use of Natural Gas, Good Combustion Practices(3)	0.04	0.35
$PM_{10(1)}$			0.05	0.46
$PM^{(2)}$			0.03	0.23
SO_2		Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	~~0.05~~ 0.06
Phenol	n/a	n/a	0.01	0.07
Formaldehyde			0.01	0.07
Mineral Fiber			0.03	0.23
Total HAPs			0.04	0.39

Pollutant	BACT Limit	BACT Technology	kg/hr	tonne/yr
CO_2e	tonne/yr	Use of Natural Gas, Good Combustion Practices(3)	--	1,270

(1) Includes Condensables.
(2) Filterable Only.
(3) Good Combustion Practices shall mean activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.

e. As the annual emission limits of RFN-E3, RFN-E4, RFN-E6, and RFN-E9 listed under Table 4.1.7(d) are based on 8,760 hours of operation, there is no annual limit on hours of operation or natural gas combusted on an annual basis for these units.

f. **45CSR7**
The Rockfon Line shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) Mineral acids shall not be released from any type source operation or duplicate source operation or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity given in Table 45-7B found at the end of this rule.
[45CSR§7-4.2]

4.1.8. **Fuel Burning Units**
The Fuel Burning Units, identified as IMF24, CM03, CM04, and RFN10, shall meet the following requirements:

a. The units shall only combust PNG and each not exceed an aggregate MDHI (of all burners) of 5.1 mmBtu/hr (1,500 kW) for each permitted emission:

b. The units shall not exceed the emission limits given in the following table:

Table 4.1.8(b): Per-Fuel Burning Unit Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
CO	n/a	n/a	0.42 (0.19)	1.84 (1.67)
NO_x	30 ppm_vd @ 3% O_2	LNB, Good Combustion Practices(1)	0.18 (0.08)	0.79 ~~(0.40)~~ 0.72
NO_x (IMF24 Only)	60 ppm_vd @ 3% O_2	LNB, Good Combustion Practices(1)	0.36 (0.16)	1.58 (1.44)
$PM_{2.5(2)}$	PPH	Use of Natural Gas, Good Combustion Practices(1)	0.04 (0.02)	0.17 (0.15)
$PM_{10(2)}$	PPH	Use of Natural Gas, Good Combustion Practices(1)	0.04 (0.02)	0.17 (0.15)
PM(3)	PPH	Use of Natural Gas, Good Combustion Practices(1)	0.01 (4.30e-03)	0.04 (0.04)
SO_2	PPH	Use of Natural Gas	3.00e-03 (1.36e-03)	0.01 (0.01)
VOCs	PPH	Good Combustion Practices(1)	0.03 (0.01)	0.12 (0.11)
CO_2e	TPY	Use of Natural Gas, Good Combustion Practices(1)	--	2,627 (2,384)

(1) LNB = Low-NO_x Burning Technology. Good Combustion Practices shall mean activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.
(2) Includes Condensables.
(3) Filterable Only.

c. As all the annual emissions of the units listed under Table 4.1.8(b) are based on 8,760 hours of operation, there is no annual limit on hours of operation or natural gas combusted on an annual basis for those units; and

d. **45CSR2**
No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any fuel burning unit which is greater than ten (10) percent opacity based on a six minute block average.
[40CSR§2-3.1]

4.1.9. **Storage Tanks**
Use of the volatile organic liquid (VOL) storage tanks shall be in accordance with the following:

a. Tank size shall be limited as specified under Table 1.0 of this permit;

b. The aggregate emissions of VOCs from all storage shall not exceed a **BACT** Limit of 0.19 tons/year (0.17 tonnes/yr); and

c. Material stored shall be as specified and the aggregate annual storage tank throughputs shall not exceed those given in the following table:

Table 4.1.9(c): Storage Tanks Throughput Limits

Tank ID	Material Stored	Gallons
TK-DF	Diesel	20,000
TK-UO	Used Motor and Gear Oil	15,000
TK-TO1	Thermal Oil	681
TK-TO2	Thermal Oil	681
TK-TO3	Thermal Oil	2,642
TK-TO4	Thermal Oil	2,642
TK-DO	De-Dust Oil	200,000
TK-RS1 through TK-RS7	Resin	8,400,000(1)
TK-CA	Coupling Agent Solution	16,000
TK-AD	Binder Additive	65,000
TK-BM	Binder Solution(2)	24,000,000
TK-BC	Binder Solution(2)	24,000,000
TK-BD	Binder Solution(2)	24,000,000
TK-BS1 through TK-BS3	Fleece Coating	1,479,999(1)
TK-DOD	De-Dust Oil	200,000
TK-PD	Diluted Water-Based Paint	1,008,701
TK-PDD	Diluted Water-Based Paint	1,008,701

(1) This number represents the aggregate limit for all specified storage tanks.
(2) May refer to any type of Binder Solution that has an average vapor pressure less than 0.76 psia (5.24 kPa) at 60 degrees Fahrenheit (15.6°C).

d. For **BACT** purposes, the permittee shall utilize good operating practices in the operation of the storage tanks. Good operating practices shall mean maintaining and operating the storage tanks according to manufacturers recommendations and regularly inspecting the tanks for areas of disrepair or failure that would allow the escape of VOC-containing vapors.

4.1.10. Emergency Fire Pump Engine

The Emergency Fire Pump Engine, identified as EFP1, shall meet the following requirements:

a. The unit shall not exceed 197 horsepower (150 kW), shall be fired only with Ultra-Low Sulfur Diesel (with a maximum sulfur content not to exceed 0.0015%), and shall not operate in excess of 100 hours per year nor 0.5 hours in any 24-hour period during times not defined as emergencies;

b. The maximum emissions from the Emergency Generator shall not exceed the limits given in the following table:

Table 4.1.10(b): Emergency Fire Pump Engine Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
CO	n/a	n/a	1.13 (0.51)	0.28 (0.26)
NO_x	4.0 g/kw-hr	Subpart IIII Certification, Annual Hrs of Op Limit	1.30 (0.59)	0.32 (0.29)
$PM_{2.5(1)}$	PPH		0.08 (0.03)	0.02 (0.02)
$PM_{10(1)}$				
$PM^{(2)}$	0.20 g/kw-hr		0.06 (0.03)	0.02 (0.01)
SO_2	PPH	ULSD Fuel Annual Hrs of Op(3) Limit	2.14e-03 (9.72e-04)	5.36e-04 (4.86e-04)
VOCs		Subpart IIII Certification, Annual Hrs of Op(3) Limit	0.19 (0.09)	0.05 (0.04)
CO_2e	TPY	Annual Hrs of Op(3) Limit	--	56 (51)

(1) Includes Condensables.
(2) Filterable Only.
(3) Non-emergency hours of operation.

c. **40 CFR 60, Subpart IIII**
The Emergency Fire Pump Engine shall meet all applicable requirements under 40 CFR 60, Subpart IIII including the following:

(1) Owners and operators of fire pump engines with a displacement of less than 30 liters per cylinder must comply with the emission standards in table 4 to this subpart, for all pollutants. **[40 CFR §60.4205(c)]**

(2) As stated in §§60.4202(d) and 60.4205(c), you must comply with the following emission standards for stationary fire pump engines:

Table 4 to Subpart IIII of Part 60—Emission Standards for Stationary Fire Pump Engines

Maximum Engine Power	Model year(s)	NMHC + NOX	CO	PM
130≤KW<225 (175≤HP<300)	2009+(3)	4.0(3.0)	3.5(2.6)	0.20(0.15)

(3) In model years 2009-2011, manufacturers of fire pump stationary CI ICE in this engine power category with a rated speed of greater than 2,650 rpm may comply with the emission limitations for 2008 model year engines.

d. **40 CFR 63, Subpart ZZZZ**
An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part.
[40 CFR §63.6590(c)]

4.1.11. Miscellaneous Operations/Processes

a. **Dry Ice Cleaning**
The maximum input design capacity of the dry ice production unit (DI) shall not exceed 4.37 tons/day (3.97 tonne/day), and the emissions of CO_2 from the use dry ice cleaning shall not exceed (**BACT** limit) 363.76 PPH (165 kg/hr) or 1,594 TPY (1,446 tonne/year).

b. **Cooling Towers**
The Cooling Towers shall operate in accordance with the following requirements:

(1) The Cooling Tower shall use the control device specified under Section 1.0 at all times in operation and not exceed the specified maximum design and operational limits in the following table:

Table 4.1.11(b)(1): Cooling Tower Specifications

ID No.	Max Design Capacity Water Circulation Pump (gal/min)	Total Dissolved Solids (ppm)	Mist Eliminator Max Drift Rate (%)(1)
IMF02	1,321 (300 m^3/hr)	1,500	0.001
HE02	308 (70 m^3/hr)	1,500	0.001

(1) As based on manufacturer or vendor guarantee or applicable product literature.

(2) The maximum emissions from the Cooling Towers shall not exceed the limits given in the following table:

Table 4.1.11(b)(2): Cooling Tower Emission Limits(1)

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
IMF02				
$PM_{2.5(1)}$	PPH	High Efficiency Drift Eliminator (@ 0.001% Drift)	4.96e-03 (2.25e-03)	0.02 (0.02)
$PM_{10(1)}$			0.01 (4.50e-03)	0.04 (0.04)
PM(2)				
HE02				
$PM_{2.5(1)}$	PPH	High Efficiency Drift Eliminator (@ 0.001% Drift)	1.16e-03 (5.25e-03)	0.01 (4.60e-03)
$PM_{10(1)}$			2.31e-03 (1.05e-03)	0.01 (9.19e-03)
PM				

c. **Product Marking**
The Product Marking Operations, identified as P_MARK, shall operate in accordance with the following requirements:

(1) The MDHI of the burners used with the branding wheels used in Product Marking shall not exceed 0.40 mmBtu/hr (120 kW) and shall only be fired with PNG. Combustion exhaust from the burners shall not exceed the following emissions:

Table 4.1.11(c)(1): Product Marking Burners Combustion Exhaust Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
CO	n/a	n/a	0.03 (0.01)	0.14 (0.13)
NO_x	PPH	Use of Natural Gas	0.04 (0.02)	0.17 (0.15)
$PM_{2.5(1)}$			2.96e-03 (1.34e-03)	0.01 (1.18e-03)
$PM_{10(1)}$				
PM(2)			7.41e-04 (3.36e-04)	0.01 (2.94e-03)
SO_2			2.34e-04 (1.06e-04)	~~1.06e-04~~ (9.29e-04) 1.02E-3
VOCs			2.14e-03 (9.73e-04)	9.39e-03 (8.52e-03)
CO_2e	TPY		--	205 (186)

(1) Includes Condensables.
(2) Filterable Only.

(2) As all the annual emissions listed under Table 4.1.11(c)(1) are based on 8,760 hours of operation, there is no annual limit on hours of operation or natural gas combusted on an annual basis for the unit; and

(3) The **BACT** Technology for the use of ink and cleaners during Product Marking Operations is the utilization of Good Work Practices. "Good Work Practices" shall mean storing VOC-containing materials in closed tanks or containers, cleaning up spills, and minimizing cleaning with VOC-containing cleaners. VOC emissions from the use of ink and cleaners during Product Marking operations shall not exceed 2.37 tons/month (2.15 tonne/month) and a **BACT** limit of 9.49 TPY (8.61 tonne/yr) and no HAP-containing inks or cleaners shall be used during Product Marking Operations.

4.1.12. Control Devices

a. **Operation and Maintenance of Air Pollution Control Equipment.** The permittee shall, to the extent practicable, install, maintain, and operate all pollution control equipment listed in Section 1.0 and associated monitoring equipment in a manner consistent with safety and good air pollution control practices for minimizing emissions, or comply with any more stringent limits set forth in this permit or as set forth by any State rule, Federal regulation, or alternative control plan approved by the Secretary.
[45CSR§13-5.11.]

b. **Inherent SNCR De-NO_x System**
The permittee shall design and operate the Melting Furnace so as to promote the inherent removal of NO_x from the exhaust gas stream. The permittee shall maintain a proper temperature profile for NO_x removal and inject aqueous ammonia as necessary to facilitate the SNCR process. Compliance with 4.1.12(b) shall be determined by showing compliance with the NO_x emission limits given under Table 4.1.4(a) using the CEMS as required under 4.2.6.

c. **Sorbent Injection**
The permittee shall utilize dry sorbent injection in conjunction with Baghouse IMF-01 so as to reduce the emissions of SO_2, H_2SO_4, HF, and HCl from the Melting Furnace. Compliance with 4.1.12(c) shall be determined by showing compliance with the SO_2 emission limits given under Table 4.1.4(a) using the CEMS as required under 4.2.6.

d. **Baghouse IMF01-BH**
Use of Baghouse IMF01-BH shall be in accordance with the following requirements:

(1) The permittee shall monitor the differential pressure drop of IMF01-BH so as to ensure proper continuous operation of the baghouse. The monitoring system shall include an alarm to notify the control room if the differential pressure drop indicates abnormal performance of the unit. The appropriate alarm set-point(s) shall be determined as given under 4.1.12(g).

(2) **40 CFR 63, Subpart DDD**
How do I comply with the particulate matter standards for existing, new, and reconstructed cupolas? To comply with the PM standards, you must meet all of the following:
[40 CFR §63.1181]

(i) Install, adjust, maintain, and continuously operate a bag leak detection system for each fabric filter.
[40 CFR §63.1181(a)]

(ii) Do a performance test as specified in §63.1188 of this subpart and show compliance with the PM emission limits while the bag leak detection system is installed, operational, and properly adjusted.
[40 CFR §63.1181(b)]

(iii) Begin corrective actions specified in your operations, maintenance, and monitoring plan required by §63.1187 of this subpart within one hour after the alarm on a bag leak detection system sounds. Complete the corrective actions in a timely manner.
[40 CFR §63.1181(c)]

(iv) Develop and implement a written QIP consistent with compliance assurance monitoring requirements of 40 CFR 64.8(b) through (d) when the alarm on a bag leak detection system sounds for more than five percent of the total operating time in a six-month reporting period.
[40 CFR §63.1181(d)]

e. **Wet Electrostatic Precipitator (WESP)**
The operation of the WESP shall be in accordance with the following requirements:

(1) The permittee shall utilize a WESP, identified as HE01, so as to reduce the particulate matter emissions from the Gutter Exhaust, Spinning Chamber, Curing Oven Hoods, the Afterburner, and the Cooling Section at all times Melting, Spinning, Curing and Cooling operations are ongoing; and

(2) The permittee shall monitor the secondary voltage and secondary amperage range of the WESP for optimum mitigation of particulate matter emissions from the sources listed under 4.1.12(e)(1). The monitoring system shall include an alarm to notify the control room if the secondary voltage or amperage indicates abnormal performance of the unit. The appropriate alarm set-point(s) shall be determined as given under 4.1.12(g).

f. **Curing Oven Afterburner**
The Curing Oven Afterburner, CO-AB, shall operate according to the following requirements:

(1) The Curing Oven Afterburner shall not exceed a burner capacity of 6.83 mmBtu/hr (2,000 kW) and shall be in operation at all times when the Curing Oven is in operation and is venting VOC-containing vapors;

(2) **45CSR6**
The Curing Oven Afterburner is subject to 45CSR6. The requirements of 45CSR6 include but are not limited to the following:

(i) The permittee shall not cause, suffer, allow or permit particulate matter to be discharged from the flares into the open air in excess of the quantity determined by use of the following formula:

Emissions (lb/hr) = F x Incinerator Capacity (tons/hr)

Where, the factor, F, is as indicated in Table I below:

Table I: Factor, F, for Determining Maximum Allowable Particulate Emissions

Incinerator Capacity	Factor F

A. Less than 15,000 lbs/hr 5.43
B. 15,000 lbs/hr or greater 2.72
[45CSR§6-4.1]

(ii) No person shall cause, suffer, allow or permit emission of smoke into the atmosphere from any incinerator which is twenty (20%) percent opacity or greater.
[45CSR6 §4.3]

(iii) The provisions of paragraph (i) shall not apply to smoke which is less than forty (40%) percent opacity, for a period or periods aggregating no more than eight (8) minutes per start-up.
[45CSR6 §4.4]

(iv) No person shall cause or allow the emission of particles of unburned or partially burned refuse or ash from any incinerator which are large enough to be individually distinguished in the open air.
[45CSR6 §4.5]

(v) Incinerators, including all associated equipment and grounds, shall be designed, operated and maintained so as to prevent the emission of objectionable odors.
[45CSR6 §4.6]

(vi) Due to unavoidable malfunction of equipment, emissions exceeding those provided for in this rule may be permitted by the Director for periods not to exceed five (5) days upon specific application to the Director. Such application shall be made within twenty-four (24) hours of the malfunction. In cases of major equipment failure, additional time periods may be granted by the Director provided a corrective program has been submitted by the owner or operator and approved by the Director.
[45CSR6 §8.2]

(3) **40 CFR 63, Subpart DDD**

(i) How do I comply with the formaldehyde, phenol, and methanol standards for existing, new, and reconstructed combined collection/curing operations? To comply with the formaldehyde, phenol, and methanol standards, you must meet all of the following:
[40 CFR §63.1183]

(A) Install, calibrate, maintain, and operate a device that continuously measures the operating temperature in the firebox of each thermal incinerator.
[40 CFR §63.1183(a)]

(B) Conduct a performance test as specified in §63.1188 while manufacturing the product that requires a binder formulation made with the resin containing the highest free-formaldehyde content specification range. Show compliance with the formaldehyde, phenol, and methanol emissions limits, specified in Table 2 to this subpart, while the device for measuring the control device operating parameter is installed, operational, and properly calibrated. Establish the average operating parameter based on the performance test as specified in §63.1185(a).
[40 CFR §63.1183(b)]

(C) During the performance test that uses the binder formulation made with the resin containing the highest free-formaldehyde content specification range, record the free-formaldehyde content specification range of the resin used, and the formulation of the binder used, including the formaldehyde content and binder specification.
[40 CFR §63.1183(c)]

(D) Following the performance test, monitor and record the free-formaldehyde content of each resin lot and the formulation of each batch of binder used, including the formaldehyde, phenol, and methanol content.
[40 CFR §63.1183(d)]

(E) Maintain the free-formaldehyde content of each resin lot and the formaldehyde content of each binder formulation at or below the specification ranges established during the performance test.
[40 CFR §63.1183(e)]

(F) Following the performance test, measure and record the average operating temperature of the incinerator as specified in §63.1185(b) of this subpart.
[40 CFR §63.1183(f)]

(G) Maintain the operating temperature of the incinerator so that the average operating temperature for each three-hour block period never falls below the average temperature established during the performance test.
[40 CFR §63.1183(g)]

(H) Operate and maintain the incinerator as specified in your operations, maintenance, and monitoring plan required by §63.1187 of this subpart.
[40 CFR §63.1183(h)]

g. Where statutory requirements (MACT, NSPS) do not specify such points, the determination of appropriate alarm set-points under this section shall be based on data obtained from performance testing, manufacturing recommendations, or operational experience. The permittee shall maintain on-site, and update as necessary, a certified report listing the set-points and the basis for their selection. Any changes to the set-points shall be accompanied by the date of the change and reason for the change. The permittee shall, to the extent reasonably possible, operate the control devices within the operating ranges at all times the associated emission units are in operation and venting emissions. If an alarm occurs, the permittee shall attempt to immediately correct the problem and follow the record-keeping procedures under 4.4.3.

4.1.13. **Stack Parameters**
The emission point stack parameters (Inner Diameter, Emission Point Elevation, and UTM Coordinates) of each source identified under the Emission Units Table 1.0 shall be in accordance with the specifications as given on the Emission Points Data Sheet in the most updated version of Permit Application R14-0037.

4.1.14. **General Rule Applicability**
The permittee shall meet all applicable requirements, including those not specified above, as given under 45CSR2, 45CSR6, 45CSR7, 45CSR10, 40 CFR 60, Subparts OOO and IIII, and 40 CFR 63, Subparts DDD, JJJ, ZZZZ, and DDDDD. Any final revisions made to the above rules will, where applicable, supercede those specifically cited in this permit.

4.2. Monitoring, Compliance Demonstration, Recording and Reporting Requirements

4.2.1. **Maximum Design Capacity Compliance**
Compliance with the maximum design capacity limitations as given under 4.1. shall be based on a clear and visible boilerplate rating or on product literature, manufacturer's data, or equivalent documentation that shows that the specific emission unit(s) or processing line in question is limited by design to a throughput or production rate that does not exceed the specified value under 4.1.

4.2.2. **Maximum Design Heat Input Compliance**
Compliance with the various combustion unit MDHI limitations as given under 4.1. shall be based on a clear and visible boilerplate rating or on product literature, manufacturer's data, or equivalent documentation that shows that the specific emission unit(s) in question is limited by design to an MDHI that does not exceed the specified value under 4.1.

4.2.3. **Material/Production Throughputs**
To determine continuous compliance with maximum production, throughputs, and combustion limits given under in 4.1 of the permit, the permittee shall monitor and record the following:

Table 4.2.3: Facility Quantities Monitored/Recorded

Quantity Monitored/Recorded	Emission Unit(s)	Measured Units
Portable Melt Crushing	Portable Melt Crusher	Hours of Operation/year
Emergency Fire Pump Hours of Operation(1)	EFP1	Hours of Operation/Year
Storage Tank Throughputs	Various	Gallons/year

(1) Strictly for the purposes of compliance with 4.1.10(a), only non-emergency hours of operation are required to be monitored. Subpart IIII, however, requires monitoring of all hours of operation.

4.2.4. **Baghouse/Filter Vents**
To determine continuous compliance with the filter/baghouse emission limits given under Section 4.1 of the permit, the permittee shall maintain and operate the control devices according to the requirements given under 4.1.12(a). The permittee shall keep a record of all significant maintenance or repair performed on these control devices (changing out bags, replacing filter material, etc.).

4.2.5. **Coal Fluidized Bed Dryer**
To determine continuous compliance with the maximum temperature requirement given under Table 4.1.3(d) - footnote (1), the permittee shall install and maintain instrumentation in the Coal Fluidized Bed Dryer so as to monitor and record the temperature in the drying zone of the dryer.

4.2.6. **Melting Furnace**

a. **CEMS (IMF01)**
Within 60 days after achieving the maximum design mineral wool production rate at which the facility will be operated, but not later than 180 days after initial startup, the permittee shall, to show continuous compliance with the CO, NO_x, and SO_2 emission limits as given under Table 4.1.4(a), install and operate a Continuous Emissions Monitoring System (CEMS) for monitoring the emissions of CO, NO_x, and SO_2 from IMF01. The CEMS shall be installed, maintained and

operated according to the manufacturers design, specifications, and recommendations, of which a protocol shall be developed by the permittee and approved by the Director prior to operation. The CEMS shall meet the applicable performance specifications required by 40 Part 60, Appendix B, the applicable quality assurance procedures required in 40 CFR Part 60, Appendix F, and the requirements of 40 CFR 60.13. In lieu of the requirements of 40 CFR Part 60, Appendix F, 5.1.1, 5.1.3, and 5.1.4, the permittee may conduct either a Relative Accuracy Audit (RAA) or a Relative Accuracy Test Audit (RATA) on the CEMS at least once every three (3) years. The permittee shall conduct Cylinder Gas Audits (CGA) each calendar quarter during which a RAA or a RATA is not performed. Data recorded by the CEMS shall be kept for a period not less than three (3) years and shall be made available to the Director or his/her representative upon request.

Resin Tracking/N_2O Calculation

b. To determine compliance with the annual CO_2e limit given under Table 4.1.4(a), the permittee shall monitor and record the information given under 4.2.6(a) and (b). The permittee shall then use this information to calculate N_2O emissions (based on an emission factor of 28.05 lb-N_2O/ton-resin solids [14 kg-N_2O/tonne-resin solids]) from the Melting Furnace, and along with established emission CO_2 factors, to determine the annual CO_2e emissions.

(i) Annual amount (based on a rolling twelve month time period) of purchased resin (as solids) based on invoices. The amount may be corrected for binder not used or that is discarded and not applied in the production process; and

(ii) Solid content in Phenolic Resin (PUF) based on vendor data or operator analysis.

4.2.7. **Fleece Application Station**

To determine continuous compliance with the VOC/HAP emission limits and the low-VOC requirement given under 4.1.6(a) and (b), the permittee shall monitor and record the following:

a. The monthly and twelve-month rolling total of the amount (in tons) of VOCs/HAPs used in the fleece application process. The amount shall be based on actual material properties (VOC/HAP contents and material densities) and the amount of material used during the applicable time period. The permittee shall assume a 100% volatilization of all VOCs/HAPs used in the fleece application process with no control percentage applied unless granted approval in writing by the Director to use an alternative calculation methodology. The material properties shall be based on applicable vendor data, MSDS, or Certified Product Data Sheets; and

b. The average monthly as-applied VOC/HAP content (in lb-VOC/lb-coating and lb-HAP/lb-coating) as based on the procedures under 40 CFR 63, Subpart JJJJ, Section §63.3370(a).

4.2.8. **Rockfon Line Coatings/Glue Usage**

To determine continuous compliance with the VOC emission limit and the low-VOC BACT requirements given under 4.1.7(a) and (b), the permittee shall monitor and record the monthly and twelve-month rolling total of the amount (in tons) of VOCs used in the Rockfon coating and gluing process. The amount shall be based on actual material properties (VOC contents and material densities) and the amount of material used during the applicable time period. The permittee shall assume a 100% volatilization of all VOCs used in the Rockfon coating and gluing process with no control percentage applied unless granted approval in writing by the Director to use an alternative calculation methodology. The material properties shall be based on applicable vendor data, MSDS, or Certified Product Data Sheets.

4.2.9. **Ultra Low Sulfur Fuel**
For the purposes of demonstrating continuing compliance with the maximum sulfur content limit under 4.1.10(a), the permittee shall, at a minimum of once per calendar year, obtain from the fuel oil supplier a certification of the sulfur content of the fuel combusted in the Emergency Fire Pump Engine. An alternative means of determining compliance with 4.2.10. will be subject to prior approval from the Director.

4.2.10. **Cooling Tower**
For the purposes of demonstrating initial and continuing compliance with the operational limits set forth in Table 4.1.11(b)(1), the permittee shall, for both cooling towers, within 180 days of startup, take an initial grab sample of the cooling tower circulating water and analyze such to determine the total solids content of the cooling tower circulating water. Thereafter, the permittee shall test for solids content on an annual basis (with no more than 14 months between tests).

4.2.11. **Product Marking**
To determine continuous compliance with the Product Marking (P_MARK) VOC emission limits and given under 4.1.11(c)(3), the permittee shall monitor and record the monthly and twelve-month rolling total of the amount (in tons) of VOCs used in the Product Marking process. The amount shall be based on actual material properties (VOC contents and material densities) and the amount of material used during the applicable time period. The permittee shall assume a 100% volatilization of all VOCs used in the Product Marking process with no control percentage applied unless granted approval in writing by the Director to use an alternative calculation methodology. The material properties shall be based on applicable vendor data, MSDS, or Certified Product Data Sheets.

4.2.12. **Control Device Monitoring**
The permittee shall install, maintain, and operate instrumentation to continuously monitor and record the control device parameters as required under 4.1.12 of this permit including, at a minimum, the following:

Table 4.2.13: Control Device Parameters Monitored/Recorded

Control Device	Control Device ID	Parameter(s)
Melting Furnace Baghouse	IMF01-BH	Pressure Drop
WESP	WESP	Secondary Voltage Secondary Amperage
Curing Oven Afterburner	CO-AB	Firebox Temperature(1)

(1) Pursuant to 40 CFR 63, Subpart DDD, §63.1182.

4.2.13. **Visible Emissions Compliance Demonstrations**
Visible emissions Monitoring, Compliance Demonstration, Recording and Reporting shall be in accordance with the following requirements:

a. **45CSR2**
Upon request by the Secretary, compliance with the visible emission requirements of 3.1 [of 45CSR2] shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 or by using measurements from continuous opacity monitoring systems approved by the Secretary. The Secretary may require the installation, calibration, maintenance and operation of continuous opacity monitoring systems and may establish policies for the evaluation of continuous opacity monitoring results and the determination of compliance with the visible emission requirements

of 3.1 [of 45CSR2]. Continuous opacity monitors shall not be required on fuel burning units which employ wet scrubbing systems for emission control;
[40CSR§2-3.2]

b. **45CSR6**
Compliance with the afterburner opacity requirements given under 4.1.12(f)(2)(i) and (ii) shall be based on the compliance demonstrations required for emission point HE01 as given under 4.2.14(c) and (e);

c. **45CSR7**
At such reasonable time(s) as the Secretary may designate, compliance with the visible emission requirements of 4.1.2(i), 4.1.3(e), 4.1.4(b), 4.1.5(b), and 4.1.7(f) shall be determined in accordance with the procedures outlined under 45CSR7A;

d. **40 CFR 60, Subpart OOO**
The permittee shall meet all applicable visible emissions Monitoring, Compliance Demonstration, Recording and Reporting requirements as given under 40 CFR 60, Subpart OOO, Sections §60.674 through §60.676;

e. **IMF01, HE01, CE01, and IMF05.**
Emission Points IMF01, HE01, CE01, and IMF05 are subject to the following visible emissions monitoring and compliance demonstration requirements:

(1) In order to determine compliance with the opacity limits of 4.1.3(e), 4.1.4(b), 4.1.5(b), and 4.1.7(f) of this permit, the permittee shall conduct visible emission checks and/or opacity monitoring and recordkeeping for Emission Points IMF01, HE01, CE01, and IMF05 in accordance with the following:

(i) The visible emission check shall determine the presence or absence of visible emissions. At a minimum, the observer must be trained and knowledgeable regarding the effects of background contrast, ambient lighting, observer position relative to lighting, wind, and the presence of uncombined water (condensing water vapor) on the visibility of emissions. This training may be obtained from written materials found in the References 1 and 2 from 40CFR Part 60, Appendix A, Method 22 or from the lecture portion of the 40CFR Part 60, Appendix A, Method 9 certification course;

(ii) Visible emission checks shall be conducted at least once per calendar month with a maximum of forty-five (45) days between consecutive readings. These checks shall be performed for a sufficient time interval, but no less than one (1) minute, to determine if any visible emissions are present. Each observation must be recorded as either visible emissions observed or no visible emissions observed. Visible emission checks shall be performed during periods of normal facility operation and appropriate weather conditions;

(iii) If visible emissions are present at a source(s) the permittee shall perform Method 9 readings to confirm that visible emissions are within the limits of 4.1.10 of this permit. Said Method 9 readings shall be taken as soon as practicable, but within seventy-two (72) hours of the Method 22 emission check; and

(iv) If, one year of monthly Method 22 readings show that there are no visible emissions, then the frequency of observations can be reduced to quarterly. If, during quarterly checks, visible emissions are observed, then the frequency of observations shall be returned to monthly.

f. For the purpose of demonstrating compliance with the visible emissions and opacity requirements, the permittee shall maintain records of the visible emission opacity tests and checks. The permittee shall maintain records of all monitoring data required by 4.2.14 documenting the date and time of each visible emission check, the emission point or equipment/ source identification number, the name or means of identification of the observer, the results of the check(s), whether the visible emissions are normal for the process, and, if applicable, all corrective measures taken or planned. The permittee shall also record the general weather conditions (i.e. sunny, approximately 80°F, 6-10 mph NE wind) during the visual emission check(s). Should a visible emission observation be required to be performed per the requirements specified in Method 9, the data records of each observation shall be maintained per the requirements of Method 9. For an emission unit out of service during the evaluation, the record of observation may note "out of service" (O/S) or equivalent; and

g. Any deviation of the allowable visible emission requirement for any emission source discovered during observation using 40CFR Part 60, Appendix A, Method 9 must be reported in writing to the Director of the DAQ as soon as practicable, but within ten (10) calendar days, of the occurrence and shall include, at a minimum, the following information: the results of the visible determination of opacity of emissions, the cause or suspected cause of the violation(s), and any corrective measures taken or planned.

4.2.14. **Baghouse/Fabric Filter Compliance Demonstrations**
Unless specifically requested under 4.3.1. or listed in Table 4.3.2., compliance with all baghouse and fabric filter mass emission limits that have BACT outlet grain loading limits shall be based on vendor information or vendor guarantees that show the maximum outlet grain loading emissions from the baghouse/fabric filter is in compliance with the specific limit.

4.2.15 **Emission Point Map**
The permittee shall prepare and maintain an emission point map of the facility. This map shall consist of a diagram of the location and identification of all emission points at the facility that vent to ambient air. A legend shall be prepared with the map that identifies the emission point type and source(s) contributing to that emission point. This map shall be prepared within 180 days of startup and thereafter be updated as necessary to reflect current facility operations. The map(s) shall be retained on-site and be made available to the Director or his/her duly authorized representative upon request.

4.3. Performance Testing Requirements

4.3.1. At such reasonable time(s) as the Secretary may designate, in accordance with the provisions of 3.3 of this permit, the permittee shall conduct or have conducted test(s) to determine compliance with the emission limitations established in this permit and/or applicable regulations.

4.3.2. **Emissions Point Performance Testing**
Within 60 days after achieving the maximum permitted production rate of the emission unit in question, but not later than 180 days after initial startup of the unit, the permittee shall conduct, or have conducted, in accordance with a protocol submitted pursuant to 3.3.1(c), performance tests on the emission units (as emitted from the listed emission points) to show compliance with the specified pollutants as given in the following table:

Table 4.3.2.: Performance Testing Requirements

Emission Unit(s)	Emission Point	Pollutants	Limit
Melting Furnace	IMF01	All Pollutants under Table 4.1.4(a) with the exception of Mineral Fiber, Total HAPs, and CO_2e.	PPH(2)
Gutter Exhaust, Curing Oven Hoods, Curing Oven, and Spinning Chamber	HE01	All Pollutants under Table 4.1.5(a) with the exception of SO_2, Mineral Fiber, Total HAPs, and CO_2e.	PPH(2)
Rockfon Line	RFNE8	$PM_{2.5(1)}$, $PM_{10(1)}$, PM(1)	PPH g/dscf (PM only)
De-Dusting Baghouse (CE01-BH)	CE01	$PM_{2.5(1)}$, $PM_{10(1)}$, PM(1)	PPH g/dscf
Recycle Building Vent 1	CM10	$PM_{2.5(1)}$, $PM_{10(1)}$, PM(1)	PPH g/dscf

(1) Filterable Only.
(2) Results from the required performance testing used to show compliance with the MACT standards (in lb/ton-melt) may be converted and used for compliance with the PPH limits. Compliance with the MACT standards does not necessarily mean compliance with the limits under Table 4.1.4(a).

4.3.3 With respect to the performance testing required above under Section 4.3.2, the permittee shall, after the initial performance test, periodically conduct additional performance testing on the specified sources according to the following schedule:

Table 4.3.3.: Performance Testing Schedule

Test	Test Results	Retesting Frequency
Initial Baseline	<50% of weight emission standard	Once/3 years
Initial Baseline	between 50% and 80 % of weight emission standard	Once/2 years
Initial Baseline	>80% of weight emission standard	Annual
Annual	after three successive tests indicate mass emission rates <50% of weight emission standard	Once/3 years
Annual	after two successive tests indicate mass emission rates <80 % of weight emission standard	Once/2 years
Annual	any tests indicates a mass emission rate >80% of weight emission standard	Annual
Once/2 years	After two successive tests indicate mass emission rates <50% of weight emission standard	Once/3 years
Once/2 years	any tests indicates a mass emission rate <80 % of weight emission standard	Once/2 years
Once/2 years	any tests indicates a mass emission rate >80% of weight emission standard	Annual

Test	Test Results	Retesting Frequency
Once/3 years	any tests indicates a mass emission rate <50% of weight emission standard	Once/3 years
Once/3 years	any test indicates mass emission rates between 50% and 80 % of weight emission standard	Once/2 years
Once/3 years	any test indicates a mass emission rate >80% of weight emission standard	Annual

4.3.4. Performance testing for pollutants monitored by CEMS (CO, NO_x, and SO_2 emitted from the Melting Furnace) are not subject to the performance testing schedule given under Table 4.3.4 and any performance testing shall, unless at such other reasonable time(s) as the Secretary may designate, be conducted on a schedule consistent with the required RATA testing.

4.3.5. The permittee shall use the test methods specified in Table 4.3.6. unless granted approval in writing by the Director to use an alternative test method in a protocol submitted pursuant to 3.3.1(c).

Table 4.3.5: Performance Test Methods

Pollutant	Test Method(1)
CO	Method 10
NO_x	Method 7E
$PM_{2.5}$ (filterable only)	Method 201A
PM_{10}/PM (filterable only)	Method 5
$PM_{2.5}$/PM_{10} (condensable)	Method 202
SO_2	Method 6C
VOCs	Method 18/25A
COS	Method 15
HF/HCl	Method 26A
Formaldehyde Phenol/ Methanol	Method 318
H_2SO_4	Method 8

(1) All test methods refer to those given under 40 CFR 60, Appendix A

4.3.6. **40 CFR 60, Subpart OOO**
The permittee shall meet all applicable Performance Testing requirements as given under 40 CFR 60, Subpart A, Section §60.8 and Subpart OOO, Section §60.675.

4.3.7. **40 CFR 63, Subpart DDD**
The permittee shall meet all applicable Performance Testing requirements as given under 40 CFR 63, Subpart DDD, Sections §63.1188 through §63.1190.

4.4. Additional Recordkeeping Requirements

4.4.1. **Record of Monitoring.** The permittee shall keep records of monitoring information that include the following:

a. The date, place as defined in this permit and time of sampling or measurements;

b. The date(s) analyses were performed;

c. The company or entity that performed the analyses;

d. The analytical techniques or methods used;

e. The results of the analyses; and

f. The operating conditions existing at the time of sampling or measurement.

4.4.2. **Record of Maintenance of Air Pollution Control Equipment.** For all pollution control equipment listed in Section 1.0, the permittee shall maintain accurate records of all required pollution control equipment inspection and/or preventative maintenance procedures.

4.4.3. **Record of Malfunctions of Air Pollution Control Equipment.** For all air pollution control equipment listed in Section 1.0, the permittee shall maintain records of the occurrence and duration of any malfunction or operational shutdown of the air pollution control equipment during which excess emissions occur. For each such case, the following information shall be recorded:

a. The equipment involved.

b. Steps taken to minimize emissions during the event.

c. The duration of the event.

d. The estimated increase in emissions during the event.

For each such case associated with an equipment malfunction, the additional information shall also be recorded:

e. The cause of the malfunction.

f. Steps taken to correct the malfunction.

g. Any changes or modifications to equipment or procedures that would help prevent future recurrences of the malfunction.

4.5. Additional Reporting Requirements

4.5.1. The permittee shall submit the following information to the DAQ according to the specified schedules:

a. The permittee shall submit reports of all required monitoring on or before September 15 for the reporting period January 1 to June 30 and March 15 for the reporting period July 1 to December 31. All instances of deviation from permit requirements must be clearly identified in such reports; and

b. The permittee shall submit to the Director on or before March 15, a certification of compliance with all requirements of this permit for the previous calendar year ending on December 31. If, during the previous annual period, the permittee had been out of compliance with any part of this permit, it shall be noted along with the following information: 1) the source/equipment/process that was non-compliant and the specific requirement of this permit that was not met, 2) the date the permitted discovered that the source/ equipment/process was out of compliance, 3) the date the Director was notified, 4) the corrective measures to get the source/equipment/process back into compliance, and 5) the date the source began to operate in compliance. The submission of any non-compliance report shall give no enforcement action immunity to episodes of non-compliance contained therein.

CERTIFICATION OF DATA ACCURACY

I, the undersigned, hereby certify that, based on information and belief formed after reasonable inquiry, all information contained in the attached ______________________________, representing the period beginning ______________________ and ending ______________________, and any supporting documents appended hereto, is true, accurate, and complete.

Signature[1] ____________________________________ ____________________
(please use blue ink) Responsible Official or Authorized Representative Date

Name and Title ____________________________________ ____________________
(please print or type) Name Title

Telephone No. ______________________ Fax No. ______________________

---

[1] This form shall be signed by a "Responsible Official." "Responsible Official" means one of the following:

a. For a corporation: The president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either:

   (I) the facilities employ more than 250 persons or have a gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), or

   (ii) the delegation of authority to such representative is approved in advance by the Director;

b. For a partnership or sole proprietorship: a general partner or the proprietor, respectively;

c. For a municipality, State, Federal, or other public entity: either a principal executive officer or ranking elected official. For the purposes of this part, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of USEPA); or

d. The designated representative delegated with such authority and approved in advance by the Director.

ROXUL™

RECEIVED
MAR 16 2018
WV DEP / DIV OF AIR QUALITY

March 15, 2018

Director William F. Durham

West Virginia Department of Environmental Protection
Division of Air Quality
601 57th Street, SE
Charleston, West Virginia, 25304

RE: New Source Review
Prevention of Significant Determination (PSD) Application for Permit to Construct
Class II Visibility Modeling Analysis
Mineral Wool Production Facility – Ranson, West Virginia

Dear Director Durham:

Roxul USA, Inc. (Roxul) submits this Class II Visibility Modeling Analysis to the West Virginia Department of Environmental Protection (WVDEP), Division of Air Quality (WVDAQ), in response to DEP's request.

If you have any questions concerning this permit application, please contact Mr. Grant Morgan of Environmental Resources Management Inc. (ERM) at (304) 757-4777 or by email at grant.morgan@erm.com.

Sincerely,

Mette Drejstel
Group Environmental Manager
Rockwool Group

Entire Document
NON-CONFIDENTIAL

I.D. No. 037-00108 Reg. R14-0037
Company ROXUL
Facility RAN Region
Initials

Enclosures

ROXUL USA, Inc. – Class II Visibility Modeling Analysis – VISCREEN Screening Analysis

BACKGROUND

ROXUL USA, Inc. (Roxul) 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, Roxul 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). Roxul 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[1].

VISCREEN MODEL INPUTS AND LEVEL 1 RESULTS

The attached Table 1 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 1 are based on the approximate line from the Roxul project site to the visitor's center at each area. The closest and furthest point in the area to Roxul was determined along this line. The locations of Roxul and the two areas considered in this analysis is presented in Figure 1. The visitor's centers at each area are clearly shown in the figure.

The attached Table 2 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, Roxul has used VISCREEN Level 2 assumptions as described below.

VISCREEN LEVEL 2

Roxul followed the procedures described in the VISCREEN 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, Roxul relied on the SCRAM formatted surface and mixing height from IAD, available from USEPA. IAD is located approximately 60 km southeast of the Roxul project site, and is the closest airport with observational data suitable for use in PCRAMMET.

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[1] "Workbook for Plume Visual Impact Screening and Analysis (Revised)", USEPA, October 1992, EPA-454/R-92-023

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, were 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. Roxul 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 3. 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.

All electronic files, including the raw meteorological data, PCRAMMET files, VISCREEN Level 2 calculation spreadsheet, and VISCREEN model outputs are being provided to WVDEP along with this submittal.

ROXUL USA, Inc.

CLASS II VISIBILITY ANALYSIS

FIGURES and TABLES

Part of the ROCKWOOL Group

Table 1 - Inputs for VISCREEN Level 1 and Level 2 Analyses

Variable	Input Value		Variable	Input Value	
Particulates	156	tons/yr	Background Ozone	0.04	ppm
NOx (as NO_2)	241	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 2 - 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	1.840	0.05	0.015
SKY	140	124	17.5	45	2	0.564	0.05	-0.013
TERRAIN	10	84	14.9	84	2	1.915	0.05	0.021
TERRAIN	140	84	14.9	84	2	0.308	0.05	0.012

Table 3 - 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	1.498	0.05	0.012
SKY	140	144	14.4	25	2	0.439	0.05	-0.010
TERRAIN	10	84	10.3	84	2	1.798	0.05	0.017
TERRAIN	140	84	10.3	84	2	0.263	0.05	0.008

Figure 1 – Locations of ROXUL USA, Inc. Antietam National Battlefield, and Harper's Ferry National Historical Park

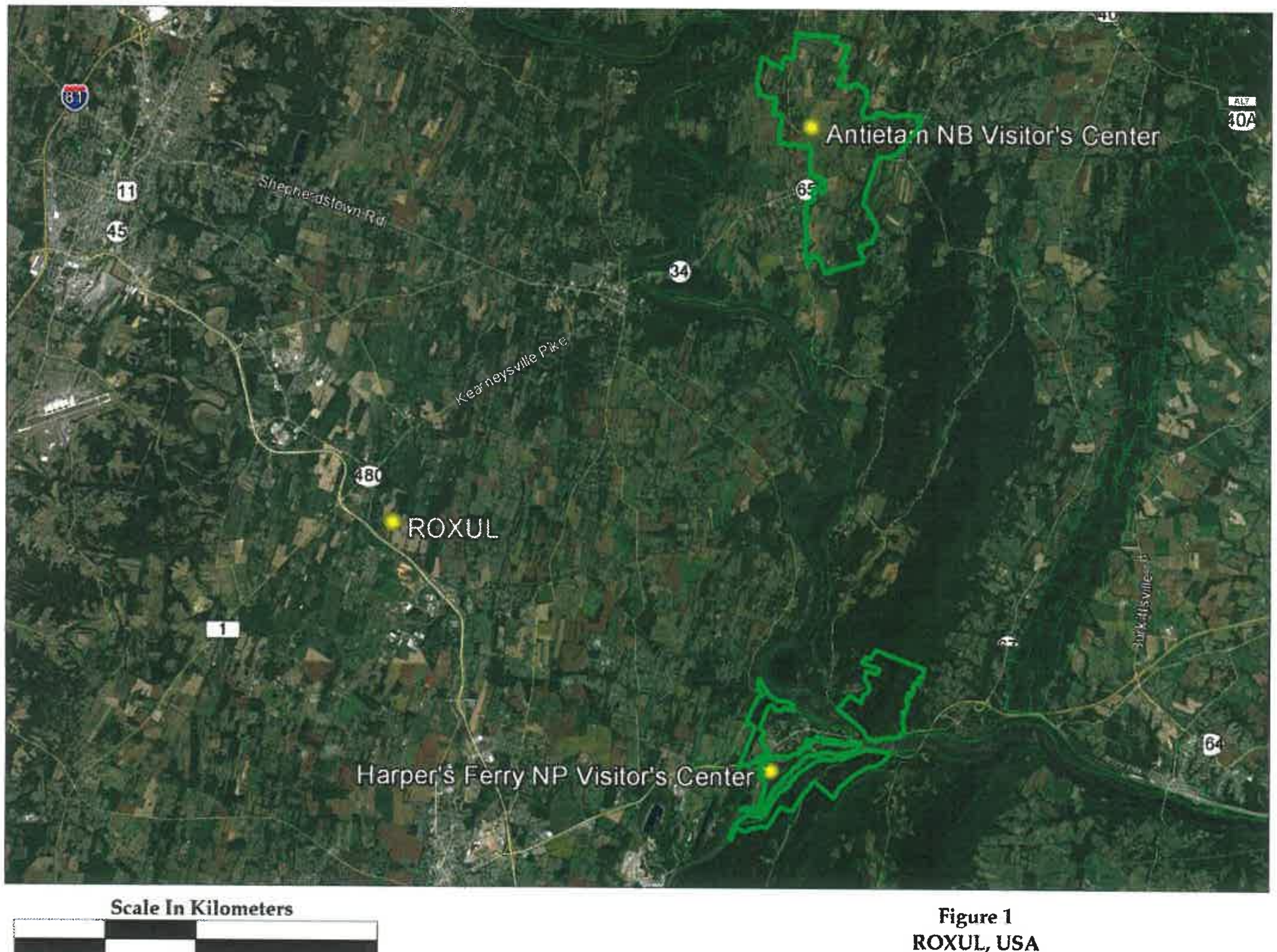

Figure 1
ROXUL, USA
Location of Nearby Parks and Visitor's Centers

Kessler, Joseph R

From: Kessler, Joseph R
Sent: Wednesday, March 7, 2018 5:31 PM
To: 'grant.morgan@erm.com'
Cc: Kessler, Joseph R
Subject: Second Revised Pre-Draft ROXUL R14-0037
Attachments: AttachmentA.pdf; R14-0037_dpm(new).pdf

Grant, attached is the second revised "pre-draft" version of R14-0037. Please provide to interested parties at ROXUL. Also included is a facility-wide emissions inventory of the proposed facility (Attachment A of the draft Fact Sheet).

It is important to note that this pre-draft version of the permit has not yet been approved by my supervisor and therefore all language is subject to change. Further, the review of permit application is ongoing and the access provided to this pre-draft permit does not indicate that a preliminary determination has made regarding the application. ROXUL may be required to subsequently submit, in a timely manner, any additional or corrected information deemed necessary for a final permit determination.

Thanks,

Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x1219
Fax: (304) 926-0478
Joseph.r.kessler@wv.gov

Entire Document
NON-CONFIDENTIAL

I.D. No. 037-00108 Reg. R14-0037
Company Roxul
Facility RAN Region
Initials JRK

West Virginia Department of Environmental Protection
Austin Caperton
Cabinet Secretary

Permit to Construct

R14-0037

This permit is issued in accordance with the West Virginia Air Pollution Control Act (West Virginia Code §§ 22-5-1 et seq.), 45 C.S.R. 13 — Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation, and 45 C.S.R. 14 - Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration. The permittee identified at the facility listed below is authorized to construct the stationary sources of air pollutants identified herein in accordance with all terms and conditions of this permit.

Issued to:
ROXUL USA, Inc.
RAN Facility
037-00108

William F. Durham
Director, Division of Air Quality

Issued: ***DRAFT***

Facility Location:	Ranson, Jefferson County, West Virginia
Mailing Address:	71 Edmond Road, Suite 6
	Kearneysville, WV 25430
Facility Description:	Mineral Wool Manufacturing Facility
SIC/NAICS Code:	3296/327993
UTM Coordinates:	Easting: 252.06 km Northing: 4,362.62 km Zone: 18
Latitude/Longitude:	39.37754, -77.87844
Permit Type:	Major Source Construction
Desc. of Change:	Construction of a new mineral wool manufacturing facility defined as a major stationary source and subject to Prevention of Significant Deterioration (PSD) permitting requirements.

Any person whose interest may be affected, including, but not necessarily limited to, the applicant and any person who participated in the public comment process, by a permit issued, modified or denied by the Secretary may appeal such action of the Secretary to the Air Quality Board pursuant to article one [§§ 22B-1-1 et seq.], Chapter 22B of the Code of West Virginia. West Virginia Code §22-5-14.

As a result of this permit, the source is a major source subject to 45CSR30. The Title V (45CSR30) application will be due within twelve (12) months after the commencement date of any operation authorized by this permit.

Table of Contents

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity(1)	Control Device(2)
Raw Material Handling					
IMF11	IMF11	Conveyor Transfer Point	2018	1,800 scfm (1,137 Nm^3/hr)	IMF11-FF
B215	B215	Raw Material Loading Hopper	2018	716 ton/day (650 tonne/day)	PE
IMF12	IMF12	Conveyor Transfer Point	2018	1,800 scfm (1,137 Nm^3/hr)	IMF12-FF
IMF14	IMF14	Conveyor Transfer Point	2018	1,800 scfm (1,137 Nm^3/hr)	IMF14-FF
IMF15	IMF15	Conveyor Transfer Point	2018	1,800 scfm (1,137 Nm^3/hr)	IMF15-FF
IMF16	IMF16	Conveyor Transfer Point	2018	1,800 scfm (1,137 Nm^3/hr)	IMF16-FF
IMF21	IMF21	Charging Building Vacuum Cleaning Filter	2018	316 scfm (500 Nm^3/hr)	IMF21-FF
RM_REJ	RM_REJ	Raw Material Reject Bin	2018	TBD	PE
S_REJ	S_REJ	Sieve Reject Bin	2018	TBD	PE
B170	B170	Melting Furnace Portable Crusher & Storage	2018	<150 TPH (<136 tonne/hr)	None
B210	B210	Raw Material Storage - Loading	2018	716 ton/day (650 tonne/day)	PE
IMF25	IMF25	Coal Feed Tank	2018	758 scfm (1,200 Nm^3/hr)	IMF25-FF
RMS	RMS	Raw Material Open Storage & Delivery	2018	5,382 ft^2 (500m^2)	PE
IMF17	IMF17	Charging Building Vent 1	2018	n/a	None
IMF18	IMF18	Charging Building Vent 2	2018	n/a	None
Coal Milling					
IMF03A	IMF03A	Coal Storage Silo A	2018	758 scfm (1,200 Nm^3/hr)	IMF03A-FF
IMF03B	IMF03B	Coal Storage Silo B	2018	758 scfm (1,200 Nm^3/hr)	IMF03B-FF
IMF03C	IMF03C	Coal Storage Silo C	2018	758 scfm (1,200 Nm^3/hr)	IMF03C-FF

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity(1)	Control Device(2)
IMF04	IMF04	Conveyor Transfer Point	2018	1,800 scfm (1,137 Nm^3/hr)	IMF04-FF
IMF05	IMF05	Coal Milling Burner & Baghouse	2018	2,873 scfm (4,547 Nm^3/hr)	IMF05-BH
IMF06	IMF06	Coal Milling De-Dusting Baghouse	2018	6,317 scfm (10,000 Nm^3/hr)	IMF06-BH
IMF13	IMF13	Conveyor Transfer Point	2018	1,800 scfm (1,137 Nm^3/hr)	IMF13-FF
B235	B235	Coal Milling Building	2018	93 ton/day (84 tonne/day)	None
B230	B230	Coal Unloading	2018	93 ton/day (84 tonne/day)	PE
B231	B231	Coal Unloading Hopper	2018	93 ton/day (84 tonne/day)	PE
Mineral Wool Line					
IMF01	IMF01	Melting Furnace	2018	21,414 scfm (33,900 Nm^3/hr)	IMF01-BH De-NO_x De-SO_x
IMF02	IMF02	Furnace Cooling Tower	2018	1,321 gpm (300 m^3/hr)	Drift Eliminator
IMF07A	IMF07A	Filter Fines Day Silo	2018	1,250 scfm (790 Nm^3/hr)	IMF07A-FF
IMF07B	IMF07B	Secondary Energy Materials Silo	2018	1,250 scfm (790 Nm^3/hr)	IMF07B-FF
IMF08	IMF08	Sorbent Silo	2018	758 scfm (1,200 Nm^3/hr)	IMF08-FF
IMF09	IMF09	Spent Sorbent Silo	2018	758 scfm (1,200 Nm^3/hr)	IMF09-FF
IMF10	IMF10	Filter Fines Receiving Silo	2018	758 scfm (1,200 Nm^3/hr)	IMF10-FF
IMF24	IMF24	Preheat Burner	2018	5.1 mmBtu/hr (1,500 kW)	None
CO	HE01	Curing Oven	2018	18,950 scfm (30,000 Nm^3/hr)	WESP (HE01) CO-AB
CO-HD	HE01	Curing Oven Hoods	2018	25,267 scfm (40,000 Nm^3/hr)	WESP (HE01)

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity[(1)]	Control Device[(2)]
GUT-EX	HE01	Gutter Exhaust	2018	15,792 scfm (25,000 Nm^3/hr)	WESP (HE01)
SPN	HE01	Spinning Chamber	2018	258,986 scfm (410,000 Nm^3/hr)	WESP (HE01)
CS	HE01	Cooling Section	2018	50,534 scfm (80,000 Nm^3/hr)	WESP (HE01)
HE02	HE02	Gutter Cooling Tower	2018	308 gpm (70 m^3/hr)	Drift Eliminator
CM12	CM12	Fleece Application Vent 1	2018	408 lb/hr (185 kg/hr)	None
CM13	CM13	Fleece Application Vent 2	2018		None
CE01	CE01	De-dusting Baghouse	2018	44,217 scfm (70,000 Nm^3/hr)	CE01-BH
CE02	CE02	Vacuum Cleaning Baghouse	2018	12,633 scfm (20,000 Nm^3/hr)	CE02-BH
DI	DI	Dry Ice Cleaning	2018	165.3 lbs/hour (75 kg/hr)	None
P_MARK	P_MARK	Product Marking	2018	0.40 mmBtu/hr (88 kW)	None
Recycling					
CM08	CM08	Recycle Plant Building Vent 3	2018	1,579 scfm (2,500 Nm^3/hr)	CM08-FF
CM09	CM09	Recycle Plant Building Vent 4	2018	1,579 scfm (2,500 Nm^3/hr)	CM09-FF
CM10	CM10	Recycle Plant Building Vent 1	2018	18,950 scfm (30,000 Nm^3/hr)	CM10-FF
CM11	CM11	Recycle Plant Building Vent 2	2018	18,950 scfm (30,000 Nm^3/hr)	CM11-FF
Rockfon Line					
RFNE1	RFNE1	IR Zone	2018	1,895 scfm (3,000 Nm^3/hr)	None
RFNE2	RFNE2	Hot Press	2018	1,895 scfm (3,000 Nm^3/hr)	None
RFNE3	RFNE3	High Oven A	2018	2.73 mmBtu/hr, 5,053 scfm (800 kW, 8,000 Nm^3/hr)	None

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity(1)	Control Device(2)
RFNE4	RFNE4	Drying Oven 1	2018	2.05 mmBtu/hr, 3.158 scfm (600 kW, 5,000 Nm^3/hr)	RFNE4-FF
RFNE5	RFNE5	Spraying Cabin	2018	6,317 scfm (10,000 Nm^3/hr)	RFNE5-FF
RFNE6	RFNE6	Drying Oven 2 & 3	2018	4.78 mmBtu/hr, 7,580 scfm (1,400 kW, 12,000 Nm^3/hr)	RFNE6-FF
RFNE7	RFNE7	Cooling Zone	2018	15,792 scfm (25,000 Nm^3/hr)	None
RFNE8	RFNE8	Rockfon De-dusting Baghouse	2018	74,419 scfm (117,812 Nm^3/hr)	RFNE8-BH
RFNE9	RFNE9	High Oven B	2018	2.73 mmBtu/hr, 5,053 scfm (800 kW, 8,000 Nm^3/hr)	None
Miscellaneous Emission Units					
CM03	CM03	Natural Gas Boiler 1	2018	5.1 mmBtu/hr (1,500 kW)	None
CM04	CM04	Natural Gas Boiler 2	2018	5.1 mmBtu/hr (1,500 kW)	None
EFP1	EFP1	Emergency Fire Pump Engine	2018	197 hp (147 kw)	None
RFN10	RFN10	Rockfon Building Heater	2018	5.1 mmBtu/hr (1,500 kW)	None
Storage Tanks					
TK-DF	TK-DF	Diesel Fuel Tank	2018	2,642 gallons (10 m^3)	None
TK-UO	TK-UO	Used Oil Tank	2018	581 gallons (2.2 m^3)	None
TK-TO1	TK-TO1	Thermal Oil Expansion Tank - Rockfon	2018	212 gallons (0.8 m^3)	None
TK-TO2	TK-TO2	Thermal Oil Drain Tank - Rockfon	2018	159 gallons (0.6 m^3)	None
TK-TO3	TK-TO3	Thermal Oil Tank - IMF	2018	2,642 gallons (10 m^3)	None

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity[(1)]	Control Device[(2)]
TK-TO4	TK-TO4	Thermal Oil Expansion Tank - IMF	2018	1,321 gallons ($5\ m^3$)	None
TK-DO	TK-DO	De-dust Oil Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS1	TK-RS1	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS2	TK-RS2	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS3	TK-RS3	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS4	TK-RS4	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS5	TK-RS5	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS6	TK-RS6	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS7	TK-RS7	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-CA	TK-CA	Coupling Agent Storage Tank	2018	264 gallons ($1\ m^3$)	None
TK-AD	TK-AD	Additive Storage Tank	2018	53 gallons ($0.2\ m^3$)	None
TK-BM	TK-BM	Binder Mix Tank	2018	2,642 gallons ($10m^3$)	None
TK-BC	TK-BC	Binder Circulation Tank	2018	4,227 gallons ($16\ m^3$)	None
TK-BD	TK-BD	Binder Day Tank	2018	793 gallons ($3\ m^3$)	None
TK-BS1	TK-BS1	Binder Storage Container	2018	264 gallons ($1\ m^3$)	None
TK-BS2	TK-BS2	Binder Storage Container	2018	264 gallons ($1\ m^3$)	None
TK0-BS3	TK-BS3	Binder Storage Container	2018	264 gallons ($1\ m^3$)	None
TK-DOD	TK-DOD	De-dust Oil Day Tank	2018	264 gallons ($1\ m^3$)	None

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity(1)	Control Device(2)
TK-PD	TK-PD	Paint Dilution Storage Tank	2018	793 gallons ($3\ m^3$)	None
TK-PDD	TK-PDD	Paint Dilution Day Tank	2018	397 gallons ($1.5\ m^3$)	None

(1) Where air flow rates are listed, it represents the maximum design capacity of the mechanical flow - if applicable - through the listed particulate matter control device or uncontrolled vent .

(2) AB = Afterburner; BH = Baghouse; FF = Fabric Filter; PE = Partial Enclosure; WESP = Wet Electrostatic Precipitator.

2.0. General Conditions

2.1. Definitions

2.1.1. All references to the "West Virginia Air Pollution Control Act" or the "Air Pollution Control Act" mean those provisions contained in W.Va. Code §§ 22-5-1 to 22-5-18.

2.1.2. The "Clean Air Act" means those provisions contained in 42 U.S.C. §§ 7401 to 7671q, and regulations promulgated thereunder.

2.1.3. "Secretary" means the Secretary of the Department of Environmental Protection or such other person to whom the Secretary has delegated authority or duties pursuant to W.Va. Code §§ 22-1-6 or 22-1-8 (45 CSR § 30-2.12.). The Director of the Division of Air Quality is the Secretary's designated representative for the purposes of this permit.

2.2. Acronyms

CAAA	Clean Air Act Amendments	**NSPS**	New Source Performance Standards
CBI	Confidential Business Information	**PM**	Particulate Matter
CEM	Continuous Emission Monitor	**$PM_{2.5}$**	Particulate Matter less than 2.5µm in diameter
CES	Certified Emission Statement	**PM_{10}**	Particulate Matter less than 10µm in diameter
C.F.R. *or* **CFR**	Code of Federal Regulations	**Ppb**	Pounds per Batch
CO	Carbon Monoxide	**pph**	Pounds per Hour
C.S.R. *or* **CSR**	Codes of State Rules	**ppm**	Parts per Million
DAQ	Division of Air Quality	**Ppmv or ppmv**	Parts per million by volume
DEP	Department of Environmental Protection	**PSD**	Prevention of Significant Deterioration
dscm	Dry Standard Cubic Meter	**psi**	Pounds per Square Inch
FOIA	Freedom of Information Act	**SIC**	Standard Industrial Classification
HAP	Hazardous Air Pollutant	**SIP**	State Implementation Plan
HON	Hazardous Organic NESHAP	**SO_2**	Sulfur Dioxide
HP	Horsepower	**TAP**	Toxic Air Pollutant
lbs/hr	Pounds per Hour	**TPY**	Tons per Year
LDAR	Leak Detection and Repair	**TRS**	Total Reduced Sulfur
M	Thousand	**TSP**	Total Suspended Particulate
MACT	Maximum Achievable Control Technology	**USEPA**	United States Environmental Protection Agency
MDHI	Maximum Design Heat Input	**UTM**	Universal Transverse Mercator
MM	Million	**VEE**	Visual Emissions Evaluation
MMBtu/hr *or* **mmbtu/hr**	Million British Thermal Units per Hour	**VOC**	Volatile Organic Compounds
MMCF/hr *or* **mmcf/hr**	Million Cubic Feet per Hour	**VOL**	Volatile Organic Liquids
NA	Not Applicable		
NAAQS	National Ambient Air Quality Standards		
NESHAPS	National Emissions Standards for Hazardous Air Pollutants		
NO_x	Nitrogen Oxides		

2.3. Authority

This permit is issued in accordance with West Virginia Air Pollution Control Law W.Va. Code §§22-5-1 et seq. and the following Legislative Rules promulgated thereunder:

2.3.1. 45CSR13 – *Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation; and*

2.3.2. *45CSR14 – Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration.*

2.4. Term and Renewal

2.4.1. This permit shall remain valid, continuous and in effect unless it is revised, suspended, revoked or otherwise changed under an applicable provision of 45CSR13 or any applicable legislative rule.

2.5. Duty to Comply

2.5.1. The permitted facility shall be constructed and operated in accordance with the plans and specifications filed in Permit Applications R14-0037 and any modifications, administrative updates, or amendments thereto. The Secretary may suspend or revoke a permit if the plans and specifications upon which the approval was based are not adhered to;
[45CSR§§13-5.11 and 13-10.3]

2.5.2. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the West Virginia Code and the Clean Air Act and is grounds for enforcement action by the Secretary or USEPA;

2.5.3. Violations of any of the conditions contained in this permit, or incorporated herein by reference, may subject the permittee to civil and/or criminal penalties for each violation and further action or remedies as provided by West Virginia Code 22-5-6 and 22-5-7;

2.5.4. Approval of this permit does not relieve the permittee herein of the responsibility to apply for and obtain all other permits, licenses and/or approvals from other agencies; i.e., local, state and federal, which may have jurisdiction over the construction and/or operation of the source(s) and/or facility herein permitted.

2.6. Duty to Provide Information

The permittee shall furnish to the Secretary within a reasonable time any information the Secretary may request in writing to determine whether cause exists for administratively updating, modifying, revoking or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Secretary copies of records to be kept by the permittee. For information claimed to be confidential, the permittee shall furnish such records to the Secretary along with a claim of confidentiality in accordance with 45CSR31. If confidential information is to be sent to USEPA, the permittee shall directly provide such information to USEPA along with a claim of confidentiality in accordance with 40 C.F.R. Part 2.

2.7. Duty to Supplement and Correct Information

Upon becoming aware of a failure to submit any relevant facts or a submittal of incorrect information in any permit application, the permittee shall promptly submit to the Secretary such supplemental facts or corrected information.

2.8. Administrative Update

The permittee may request an administrative update to this permit as defined in and according to the procedures specified in 45CSR13.
[45CSR§13-4]

2.9. Permit Modification

The permittee may request a minor modification to this permit as defined in and according to the procedures specified in 45CSR13.
[45CSR§13-5.4.]

2.10. Major Permit Modification

The permittee may request a major modification as defined in and according to the procedures specified in 45CSR14 or 45CSR19, as appropriate.
[45CSR§13-5.1]

2.11. Inspection and Entry

The permittee shall allow any authorized representative of the Secretary, upon the presentation of credentials and other documents as may be required by law, to perform the following:

a. At all reasonable times (including all times in which the facility is in operation) enter upon the permittee's premises where a source is located or emissions related activity is conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times (including all times in which the facility is in operation) any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit;

d. Sample or monitor at reasonable times substances or parameters to determine compliance with the permit or applicable requirements or ascertain the amounts and types of air pollutants discharged.

2.12. Emergency

2.12.1. An "emergency" means any situation arising from sudden and reasonable unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission

limitation under the permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

2.12.2. Effect of any emergency. An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if the conditions of Section 2.12.3 are met.

2.12.3. The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:

a. An emergency occurred and that the permittee can identify the cause(s) of the emergency;

b. The permitted facility was at the time being properly operated;

c. During the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in the permit; and,

d. The permittee submitted notice of the emergency to the Secretary within one (1) working day of the time when emission limitations were exceeded due to the emergency and made a request for variance, and as applicable rules provide. This notice must contain a detailed description of the emergency, any steps taken to mitigate emission, and corrective actions taken.

2.12.4. In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency has the burden of proof.

2.12.5. The provisions of this section are in addition to any emergency or upset provision contained in any applicable requirement.

2.13. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it should have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. However, nothing in this paragraph shall be construed as precluding consideration of a need to halt or reduce activity as a mitigating factor in determining penalties for noncompliance if the health, safety, or environmental impacts of halting or reducing operations would be more serious than the impacts of continued operations.

2.14. Suspension of Activities

In the event the permittee should deem it necessary to suspend, for a period in excess of sixty (60) consecutive calendar days, the operations authorized by this permit, the permittee shall notify the Secretary, in writing, within two (2) calendar weeks of the passing of the sixtieth (60) day of the suspension period.

2.15. Property Rights

This permit does not convey any property rights of any sort or any exclusive privilege.

2.16. Severability

The provisions of this permit are severable and should any provision(s) be declared by a court of competent jurisdiction to be invalid or unenforceable, all other provisions shall remain in full force and effect.

2.17. Transferability

This permit is transferable in accordance with the requirements outlined in Section 10.1 of 45CSR13.
[45CSR§13-10.1]

2.18. Notification Requirements

The permittee shall notify the Secretary, in writing, no later than thirty (30) calendar days after the actual startup of the operations authorized under this permit.

2.19. Credible Evidence

Nothing in this permit shall alter or affect the ability of any person to establish compliance with, or a violation of, any applicable requirement through the use of credible evidence to the extent authorized by law. Nothing in this permit shall be construed to waive any defense otherwise available to the permittee including, but not limited to, any challenge to the credible evidence rule in the context of any future proceeding.

3.0. Facility-Wide Requirements

3.1. Limitations and Standards

3.1.1. **Open burning.** The open burning of refuse by any person, firm, corporation, association or public agency is prohibited except as noted in 45CSR§6-3.1.
[45CSR§6-3.1.]

3.1.2. **Open burning exemptions.** The exemptions listed in 45CSR§6-3.1 are subject to the following stipulation: Upon notification by the Secretary, no person shall cause, suffer, allow or permit any form of open burning during existing or predicted periods of atmospheric stagnation. Notification shall be made by such means as the Secretary may deem necessary and feasible.
[45CSR§6-3.2.]

3.1.3. **Asbestos.** The permittee is responsible for thoroughly inspecting the facility, or part of the facility, prior to commencement of demolition or renovation for the presence of asbestos and complying with 40 C.F.R. § 61.145, 40 C.F.R. § 61.148, and 40 C.F.R. § 61.150. The permittee, owner, or operator must notify the Secretary at least ten (10) working days prior to the commencement of any asbestos removal on the forms prescribed by the Secretary if the permittee is subject to the notification requirements of 40 C.F.R. § 61.145(b)(3)(i). The USEPA, the Division of Waste Management and the Bureau for Public Health - Environmental Health require a copy of this notice to be sent to them.
[40CFR§61.145(b) and 45CSR§34]

3.1.4. **Odor.** No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public.
[45CSR§4-3.1 State-Enforceable only.]

3.1.5. **Permanent shutdown.** A source which has not operated at least 500 hours in one 12-month period within the previous five (5) year time period may be considered permanently shutdown, unless such source can provide to the Secretary, with reasonable specificity, information to the contrary. All permits may be modified or revoked and/or reapplication or application for new permits may be required for any source determined to be permanently shutdown.
[45CSR§13-10.5.]

3.1.6. **Standby plan for reducing emissions.** When requested by the Secretary, the permittee shall prepare standby plans for reducing the emissions of air pollutants in accordance with the objectives set forth in Tables I, II, and III of 45 C.S.R. 11.
[45CSR§11-5.2.]

3.2. Monitoring Requirements

3.2.1. **Emission Limit Averaging Time.** Unless otherwise specified, compliance with all annual limits shall be based on a rolling twelve month total. A rolling twelve month total shall be the sum of the measured parameter of the previous twelve calendar months. Unless otherwise specified, compliance with all hourly emission limits shall be based on the applicable NAAQS averaging times or, where applicable, as given in any approved performance test method. However, nothing under 3.2.1. requires that continuous performance testing take place for the entire averaging period time frame (e.g., performance testing to show compliance with a PM_{10} emission limit is not necessarily required for 24 consecutive hours). The required length of time of a performance test will be determined by th appropriate test method and compliance procedures as approved under a protocol submitted pursuant to 3.3.1(c).

3.3. Testing Requirements

3.3.1. **Stack testing.** As per provisions set forth in this permit or as otherwise required by the Secretary, in accordance with the West Virginia Code, underlying regulations, permits and orders, the permittee shall conduct test(s) to determine compliance with the emission limitations set forth in this permit and/or established or set forth in underlying documents. The Secretary, or his duly authorized representative, may at his option witness or conduct such test(s). Should the Secretary exercise his option to conduct such test(s), the operator shall provide all necessary sampling connections and sampling ports to be located in such manner as the Secretary may require, power for test equipment and the required safety equipment, such as scaffolding, railings and ladders, to comply with generally accepted good safety practices. Such tests shall be conducted in accordance with the methods and procedures set forth in this permit or as otherwise approved or specified by the Secretary in accordance with the following:

a. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with 40 C.F.R. Parts 60, 61, and 63 in accordance with the Secretary's delegated authority and any established equivalency determination methods which are applicable. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4 or 45CSR§13-5.4 as applicable.

b. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with applicable requirements which do not involve federal delegation. In specifying or approving such alternative testing to the test methods, the Secretary, to the extent possible, shall utilize the same equivalency criteria as would be used in approving such changes under Section 3.3.1.a. of this permit. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4 or -5.4 as applicable.

c. All periodic tests to determine mass emission limits from or air pollutant concentrations in discharge stacks and such other tests as specified in this permit shall be conducted in accordance with an approved test protocol. Unless previously approved, such protocols shall be submitted to the Secretary in writing at least thirty (30) days prior to any testing and shall contain the information set forth by the Secretary. In addition, the permittee shall notify the Secretary at least fifteen (15) days prior to any testing so the Secretary may have the opportunity to observe such tests. This notification shall include the actual date and time during which the test will be conducted and, if appropriate, verification that the tests will fully conform to a referenced protocol previously approved by the Secretary.

d. The permittee shall submit a report of the results of the stack test within sixty (60) days of completion of the test. The test report shall provide the information necessary to document the objectives of the test and to determine whether proper procedures were used to accomplish these objectives. The report shall include the following: the certification described in paragraph 3.5.1.; a statement of compliance status, also signed by a responsible official; and, a summary of conditions which form the basis for the compliance status evaluation. The summary of conditions shall include the following:

1. The permit or rule evaluated, with the citation number and language;
2. The result of the test for each permit or rule condition; and,
3. A statement of compliance or noncompliance with each permit or rule condition.

[WV Code § 22-5-4(a)(14-15) and 45CSR13]

3.4. Recordkeeping Requirements

3.4.1. **Retention of records.** The permittee shall maintain records of all information (including monitoring data, support information, reports and notifications) required by this permit recorded in a form suitable and readily available for expeditious inspection and review. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation. The files shall be maintained for at least five (5) years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. At a minimum, the most recent two (2) years of data shall be maintained on site. The remaining three (3) years of data may be maintained off site, but must remain accessible within a reasonable time. Where appropriate, the permittee may maintain records electronically (on a computer, on computer floppy disks, CDs, DVDs, or magnetic tape disks), on microfilm, or on microfiche.

3.4.2. **Odors.** For the purposes of 45CSR4, the permittee shall maintain a record of all odor complaints received, any investigation performed in response to such a complaint, and any responsive action(s) taken.
[45CSR§4. *State-Enforceable only.*]

3.5. Reporting Requirements

3.5.1. **Responsible official.** Any application form, report, or compliance certification required by this permit to be submitted to the DAQ and/or USEPA shall contain a certification by the responsible official that states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate and complete.

3.5.2. **Confidential information.** A permittee may request confidential treatment for the submission of reporting required by this permit pursuant to the limitations and procedures of W.Va. Code § 22-5-10 and 45CSR31.

3.5.3. **Correspondence.** All notices, requests, demands, submissions and other communications required or permitted to be made to the Secretary of DEP and/or USEPA shall be made in writing and shall be deemed to have been duly given when delivered by hand, or mailed first class or by private carrier with postage prepaid to the address(es), or submitted in electronic format by email as set forth below or to such other person or address as the Secretary of the Department of Environmental Protection may designate:

Table 3.5.3.: Correspondence Addresses

If to the DAQ:	**If to the US EPA:**
Director WVDEP Division of Air Quality 601 57th Street, SE Charleston, WV 25304-2345 **DAQ Compliance and Enforcement[1]:** **DEPAirQualityReports@wv.gov**	Associate Director Office of Air Enforcement and Compliance Assistance - (3AP20) U. S. Environmental Protection Agency Region III 1650 Arch Street Philadelphia, PA 19103-2029

[1] For all self-monitoring reports (MACT, GACT, NSPS, etc.), stack tests and protocols, notice of Compliance Status Reports, Initial Notifications, etc.

3.5.4. **Operating Fee.**

3.5.4.1. In accordance with 45CSR30 – Operating Permit Program, the permittee shall submit a Certified Emissions Statement (CES) and pay fees on an annual basis in accordance with the submittal requirements of the Division of Air Quality. A receipt for the appropriate fee shall be maintained on the premises for which the receipt has been issued, and shall be made immediately available for inspection by the Secretary or his/her duly authorized representative.

3.5.4.2. In accordance with 45CSR30 – Operating Permit Program, enclosed with this permit is a Certified Emissions Statement (CES) Invoice, from the date of initial startup through the following June 30. Said invoice and the appropriate fee shall be submitted to this office no later than 30 days prior to the date of initial startup. For any startup date other than July 1, the permittee shall pay a fee or prorated fee in accordance with the Section 4.5 of 45CSR22. A copy of this schedule may be found attached to the Certified Emissions Statement (CES) Invoice.

3.5.5. **Emission inventory.** At such time(s) as the Secretary may designate, the permittee herein shall prepare and submit an emission inventory for the previous year, addressing the emissions from the facility and/or process(es) authorized herein, in accordance with the emission inventory submittal requirements of the Division of Air Quality. After the initial submittal, the Secretary may, based upon the type and quantity of the pollutants emitted, establish a frequency other than on an annual basis.

4.0. Source-Specific Requirements

4.1. Limitations and Standards

4.1.1. Only those emission units/sources as identified in Table 1.0, with the exception of any *de minimis* sources as identified under Table 45-13B of 45CSR13, are authorized at the permitted facility by this permit. In accordance with the information filed in Permit Application R14-0037, the emission units/sources identified under Table 1.0 of this permit shall be installed, maintained, and operated so as to minimize any fugitive escape of pollutants, shall not exceed the listed maximum design capacities, shall use the specified control devices, and comply with any other information provided under Table 1.0.

4.1.2. **Material Handling Operations**
The handling of raw materials used in the production of mineral wool (including but not limited to igneous rocks, slags, dolomite/limestone, and mineral additives), coal milling material handling operations, recycling operations, and all other operations involved in the handling or processing of friable materials with a potential of producing particulate matter emissions, shall be in accordance with the following requirements:

a. The permittee shall not exceed the specified maximum design capacities of the following operations:

Table 4.1.2(a): Maximum Design Capacities

Parameter	Limit	Units
Raw Materials(1)	716(2) (650)	Ton/Day (Tonne/Day)
Lump Coal/Pet Coke	93(3) (84)	Ton/Day (Tonne/Day)
Portable Melt Crushing	<150 (<136)	TPH (Tonne/Hour)

(1) Rock, Slag, and Minerals
(2) As based on the Charging Building (B220) Conveyer Belt.
(3) As based on the Coal Mill Feed Conveyer Belt.

b. The permittee shall not exceed the specified maximum annual throughputs or hours of operation of the following operations:

Table 4.1.2(b): Maximum Annual Throughputs

Parameter	Limit	Units
Portable Melt Crushing	540	Hours of Operation

c. The permittee shall not exceed the maximum emission limits for the specified emission points given in the following tables:

(1) **British Units**

Table 4.1.2(c)(1): Material Handling Operations Stack Emission Limits in British Units

Emission Point ID	Source Description	Filter Outlet (gr/dscf)(1)	Pollutant(2)	PPH(3)	TPY
IMF03A	Coal Storage Silo 1	0.001	$PM_{2.5}$	0.006	0.03
		0.002	PM/PM_{10}	0.013	0.06
IMF03B	Coal Storage Silo 2	0.001	$PM_{2.5}$	0.006	0.03
		0.002	PM/PM_{10}	0.013	0.06
IMF03C	Coal Storage Silo 3	0.001	$PM_{2.5}$	0.006	0.03
		0.002	PM/PM_{10}	0.013	0.06
IMF04	Conveyer TP (B231 to B235)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.019	0.09
IMF06	Coal Milling Building (B235) De-Dusting Baghouse(4)	0.002	$PM_{2.5}$	0.108	0.47
		0.004	PM/PM_{10}	0.217	0.95
IMF07A	Filter Fines Day Silo	0.001	$PM_{2.5}$	0.007	0.03
		0.002	PM/PM_{10}	0.014	0.06
IMF07B	Secondary Energy Materials Silo	0.001	$PM_{2.5}$	0.007	0.03
		0.002	PM/PM_{10}	0.014	0.06
IMF08	Sorbent Silo	0.001	$PM_{2.5}$	0.006	0.03
		0.002	PM/PM_{10}	0.013	0.06
IMF09	Spent Sorbent Silo	0.001	$PM_{2.5}$	0.006	0.03
		0.002	PM/PM_{10}	0.013	0.06
IMF10	Filter Fines Receiving Silo	0.001	$PM_{2.5}$	0.006	0.03
		0.002	PM/PM_{10}	0.013	0.06
IMF11	Conveyer TP (B215 to B220)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.019	0.09
IMF12	Conveyer TP (B210 to B220)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.019	0.09
IMF13	Bin-Conveyer TP (B231 to Conveyer)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.019	0.09

Emission Point ID	Source Description	Filter Outlet (gr/dscf)(1)	Pollutant(2)	PPH(3)	TPY
IMF14	Conveyer TP (B220 No. 1)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.019	0.09
IMF15	Conveyer TP (B220 No. 2)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.019	0.09
IMF16	Conveyer TP (B220 to B300)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.019	0.09
IMF17	Charging Building Vent 1	n/a(5)	$PM_{2.5}$	0.009	0.04
			PM/PM_{10}	0.019	0.08
IMF18	Charging Building Vent 2	n/a(5)	$PM_{2.5}$	0.009	0.04
			PM/PM_{10}	0.019	0.08
IMF21	Charging Building Vacuum Cleaning	0.001	$PM_{2.5}$	0.003	0.01
		0.002	PM/PM_{10}	0.005	0.02
IMF25	Coal Feed Tank	0.001	$PM_{2.5}$	0.006	0.03
		0.002	PM/PM_{10}	0.013	0.06
B235	Coal Milling Building	n/a(5)	$PM_{2.5}$	0.005	0.02
			PM/PM_{10}	0.009	0.04
CE01	De-Dusting Baghouse	0.0020	$PM_{10}/PM_{2.5}$	0.770	3.38
		0.0041	PM	1.540	6.76
		n/a	Mineral Fiber	0.770	3.38
CE02	Vacuum Cleaning Baghouse	0.0020	$PM_{10}/PM_{2.5}$	0.220	0.97
		0.0041	PM	0.440	1.93
		n/a	Mineral Fiber	0.220	0.97
CM08	Recycle Building Vent 3	0.002	$PM_{2.5}$	0.027	0.12
		0.004	PM/PM_{10}	0.054	0.24
CM09	Recycle Building Vent 4	0.002	$PM_{2.5}$	0.027	0.12
		0.004	PM/PM_{10}	0.054	0.24

Emission Point ID	Source Description	Filter Outlet (gr/dscf)(1)	Pollutant(2)	PPH(3)	TPY
CM10	Recycle Building Vent 1	0.002	$PM_{2.5}$	0.330	1.45
		0.004	PM/PM_{10}	0.660	2.90
CM11	Recycle Building Vent 2	0.002	$PM_{2.5}$	0.330	1.45
		0.004	PM/PM_{10}	0.660	2.90

(1) gr/dscf = grains/dry standard cubic feet. Where applicable, the filter is the **BACT** technology and the outlet loading is PM/PM_{10} **BACT** limit for the specified emission points. Where a limit is not specified, **BACT** is the PPH limit.
(2) Particulate Matter limits are filterable only. With the exception of CE01 and CE02, PM/PM_{10} limits are the same.
(3) Hourly emission limits are based on a 24-hour average.
(4) This baghouse is optional and not required but if installed will be subject to the given emission limits.
(5) This is an uncontrolled building opening.

(2) <u>**Metric Units**</u>

Table 4.1.2(c)(2): Material Handling Operations Stack Emission Limits in Metric Units

Emission Point ID	Source Description	Filter Outlet (mg/Nm^3)(1)	Pollutant(2)	kg/hr(3)	tonne/yr
IMF03A	Coal Storage Silo 1	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF03B	Coal Storage Silo 2	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF03C	Coal Storage Silo 3	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF04	Conveyer TP (B231 to B235)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF06	Coal Milling Building (B235) De-Dusting Baghouse(4)	5	$PM_{2.5}$	0.050	0.44
		10	PM/PM_{10}	0.100	0.88
IMF07A	Filter Fines Day Silo	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF07B	Secondary Energy Materials Silo	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05

Emission Point ID	Source Description	Filter Outlet (mg/Nm^3)(1)	Pollutant(2)	kg/hr(3)	tonne/yr
IMF08	Sorbent Silo	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF09	Spent Sorbent Silo	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF10	Filter Fines Receiving Silo	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF11	Conveyer TP (B215 to B220)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF12	Conveyer TP (B210 to B220)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF13	Bin-Conveyer TP (B231 to Conveyer)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF14	Conveyer TP (B220 No. 1)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF15	Conveyer TP (B220 No. 2)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF16	Conveyer TP (B220 to B300)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF17	Charging Building Vent 1	n/a(5)	$PM_{2.5}$	0.004	0.04
			PM/PM_{10}	0.010	0.08
IMF18	Charging Building Vent 2	n/a(5)	$PM_{2.5}$	0.004	0.04
			PM/PM_{10}	0.010	0.08
IMF21	Charging Building Vacuum Cleaning	2.5	$PM_{2.5}$	0.001	0.01
		5	PM/PM_{10}	0.003	0.02
IMF25	Coal Feed Tank	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
B235	Coal Milling Building	n/a(5)	$PM_{2.5}$	0.005	0.02
			PM/PM_{10}	0.009	0.04

Emission Point ID	Source Description	Filter Outlet (mg/Nm^3)(1)	Pollutant(2)	kg/hr(3)	tonne/yr
CE01	De-Dusting Baghouse	5	$PM_{10}/PM_{2.5}$	0.350	3.07
		10	PM	0.700	6.13
		n/a	Mineral Fiber	0.350	3.07
CE02	Vacuum Cleaning Baghouse	5	$PM_{10}/PM_{2.5}$	0.350	3.07
		10	PM	0.200	1.75
		n/a	Mineral Fiber	0.350	3.07
CM08	Recycle Building Vent 3	5	$PM_{2.5}$	0.010	0.11
		10	PM/PM_{10}	0.030	0.22
CM09	Recycle Building Vent 4	5	$PM_{2.5}$	0.010	0.11
		10	PM/PM_{10}	0.030	0.22
CM10	Recycle Building Vent 1	5	$PM_{2.5}$	0.150	1.31
		10	PM/PM_{10}	0.300	2.63
CM11	Recycle Building Vent 2	5	$PM_{2.5}$	0.150	1.31
		10	PM/PM_{10}	0.300	2.63

(1) mg/Nm^3 = milligrams/cubic meter. Where applicable, the filter is the **BACT** technology and the outlet loading is PM/PM_{10} **BACT** limit for the specified emission points. Where a limit is not specified, **BACT** is the kg/hr limit.
(2) Particulate Matter limits are filterable only. With the exception of CE01 and CE02, PM/PM_{10} limits are the same.
(3) Hourly emission limits are based on a 24-hour average.
(4) This baghouse is optional and not required but if installed will be subject to the given emission limits.
(5) This is an uncontrolled building opening.

d. The permittee shall not exceed the maximum emission limits and shall utilize the control methods for the specified fugitive emission sources given in the following tables:

(1) **British Units**

Table 4.1.2(d)(1): Material Handling Operations Fugitive Emission Limits in British Units

Emission Unit ID	Source Description	Control Technology	Pollutant(1)	PPH(2)	TPY
B215	Drop into Raw Material Loading Hopper	3-sided enclosure w/cover	$PM_{2.5}$	9.20e-04	4.03e-03
			PM_{10}	6.85e-03	3.00e-02
			PM	1.37e-02	6.00e-02

Emission Unit ID	Source Description	Control Technology	Pollutant(1)	PPH(2)	TPY
RMS	Drop onto Raw Material Stockpile	3-sided enclosure	$PM_{2.5}$	2.47e-04	1.08e-03
			PM_{10}	1.63e-03	7.14e-03
			PM	4.57e-03	2.00e-02
	Stockpile Erosion		$PM_{2.5}$	1.55e-03	1.00e-02
			PM_{10}	1.00e-02	4.00e-02
			PM	2.00e-02	9.00e-02
RM_REJ	Drop into Raw Material Reject Collection Bin	4-sided rubber drop guard	$PM_{2.5}$	1.84e-05	8.05e-05
			PM_{10}	1.21e-04	5.32e-04
			PM	2.56e-04	1.12e-03
S_REJ	Drop into Sieve Reject Collection Bin	4-sided rubber drop guard	$PM_{2.5}$	1.84e-05	8.05e-05
			PM_{10}	1.21e-04	5.32e-04
			PM	2.56e-04	1.12e-03
B170	Drop from Portable Crusher into Pit Waste Storage Pile	3-sided enclosure	$PM_{2.5}$	1.18e-02	3.18e-03
			PM_{10}	7.41e-02	2.00e-02
			PM	1.48e-01	4.00e-02
	Stockpile Erosion		$PM_{2.5}$	1.00e-02	2.00e-02
			PM_{10}	3.00e-02	1.50e-01
			PM	7.00e-02	3.30e-01
B210	Drop into B210	3-sided enclosure w/cover	$PM_{2.5}$	1.49e-02	4.03e-03
			PM_{10}	1.11e-01	3.00e-02
			PM	2.22e-01	6.00e-02
	Truck or FEL Drop into B210	None	$PM_{2.5}$	7.41e-02	2.00e-02
			PM_{10}	4.07e-01	1.10e-01
			PM	8.15e-01	2.20e-01
B230	Truck Dump to Coal Bunker	3-sided enclosure w/cover	$PM_{2.5}$	2.03e-04	5.49e-05
			PM_{10}	1.34e-03	3.63e-04
			PM	2.84e-03	7.67e-04

Emission Unit ID	Source Description	Control Technology	Pollutant(1)	PPH(2)	TPY
B231	Drop into Coal Unloading Hopper	3-sided enclosure w/cover	$PM_{2.5}$	2.03e-04	5.49e-05
			PM_{10}	1.34e-03	3.63e-04
			PM	2.84e-03	7.67e-04

(1) Particulate Matter limits are filterable only.
(2) Hourly emission limits are based on a 24-hour average and are the **BACT** limits for the listed fugitive emission sources.

(2) **Metric Units**

Table 4.1.2(d)(2): Material Handling Operations Fugitive Emission Limits in Metric Units

Emission Unit ID	Source Description	Control Technology	Pollutant(1)	kg/hr(2)	tonne/yr
B215	Drop into Raw Material Loading Hopper	3-sided enclosure w/cover	$PM_{2.5}$	4.17e-04	3.65e-03
			PM_{10}	2.28e-03	2.00e-02
			PM	5.71e-03	5.00e-02
RMS	Drop onto Raw Material Stockpile	3-sided enclosure	$PM_{2.5}$	1.12e-04	9.81e-04
			PM_{10}	7.40e-04	6.48e-03
			PM	1.14e-03	1.00e-02
	Stockpile Erosion		$PM_{2.5}$	7.03e-04	1.00e-02
			PM_{10}	4.40e-03	4.00e-02
			PM	1.00e-02	8.00e-02
RM_REJ	Drop into Raw Material Reject Collection Bin	4-sided rubber drop guard	$PM_{2.5}$	8.57e-06	7.51e-05
			PM_{10}	5.51e-05	4.83e-04
			PM	1.16e-04	1.02e-03
S_REJ	Drop into Sieve Reject Collection Bin	4-sided rubber drop guard	$PM_{2.5}$	8.34e-06	7.31e-05
			PM_{10}	5.51e-05	4.83e-04
			PM	1.16e-04	1.02e-03
B170	Drop from Portable Crusher into Pit Waste Storage Pile	3-sided enclosure	$PM_{2.5}$	3.29e-04	2.88e-03
			PM_{10}	2.28e-03	2.00e-02
			PM	4.57e-03	4.00e-02
	Stockpile Erosion		$PM_{2.5}$	2.53e-03	2.00e-02
			PM_{10}	2.00e-02	1.40e-01
			PM	3.00e-02	3.00e-01

Emission Unit ID	Source Description	Control Technology	Pollutant(1)	kg/hr(2)	tonne/yr
B210	Drop into B210	3-sided enclosure w/cover	$PM_{2.5}$	4.17e-04	3.65e-03
			PM_{10}	2.28e-03	2.00e-02
			PM	5.71e-03	5.00e-02
	Truck or FEL Drop into B210	None	$PM_{2.5}$	1.14e-03	1.00e-02
			PM_{10}	1.14e-02	1.00e-01
			PM	2.28e-02	2.00e-01
B230	Truck Dump to Coal Bunker	3-sided roofed enclosure w/ closeable bay door	$PM_{2.5}$	5.68e-06	4.98e-05
			PM_{10}	3.76e-05	3.29e-04
			PM	7.95e-05	6.96e-04
B231	Drop into Covered Coal Unloading Hopper	3-sided enclosure w/cover	$PM_{2.5}$	5.68e-06	4.98e-05
			PM_{10}	3.76e-05	3.29e-04
			PM	7.95e-05	6.96e-04

(1) Particulate Matter limits are filterable only.
(2) Hourly emission limits are based on a 24-hour average and are the **BACT** limits for the listed fugitive emission sources.

e. **Melting Furnace Portable Crusher**
Emissions from the Melting Furnace Portable Crusher (not including associated storage pile or pit waste drop) shall not exceed the limits given in the following table:

Table 4.1.2(e): Melting Furnace Portable Crusher Emission Limits

Pollutant(1)	PPH(2) (kg/hr)	TPY (tonne/yr)
$PM_{2.5}$	0.12 (0.05)	0.03 (0.03)
PM_{10}	0.36 (0.16)	0.10 (0.09
PM	0.81 (0.37)	0.22 (0.20)

(1) Particulate Matter limits are filterable only.
(2) Hourly emission limits are the **BACT** limits.

f. In addition to the particulate matter controls as required in the Emission Units Table 1.0, the raw material mixer and crusher located in the Charging Building (B220) and the coal conveyer transfer point located inside the Coal Milling Building (B235) shall be equipped with fabric filters to control particulate matter emissions from these sources. The maximum outlet grain loading concentration for each of these fabric filters shall not exceed 0.002 gr/dscf (5 mg/Nm^3)) of filterable PM/PM_{10} and 0.001 gr/dscf (2.5 mg/Nm^3) filterable $PM_{2.5}$;.

g. **Outdoor Material Storage Areas**
All outdoor raw material, coal, waste, or recycled material storage shall be in accordance with the following:

(1) The permittee is authorized to operate one (1) raw material stockpile (RMS) that shall not exceed a base of 5,382 ft^2 (500 m^2) and shall utilize 3-sided enclosures to minimize the potential fugitive emissions of particulate matter from wind erosion and pile activity;

(2) The permittee is authorized to operate Building 210 and 211 for raw material storage. These buildings shall utilize 3-sided enclosures and a roof to minimize the potential fugitive emissions of particulate matter from wind erosion and pile activity;

(3) The permittee is authorized to operate one (1) coal bunker (B230) that shall utilize a 3-sided enclosure, a roof, and a closeable bay door (or equivalent design) to minimize the potential fugitive emissions of particulate matter from wind erosion and pile activity;

(4) The permittee is authorized to operate one (1) recycled material stockpile. The material in this storage area is limited to the slag-like material tapped from the Melting Furnace that is of such a physical nature so as to limit any significant generation of fugitive matter from wind erosion and pile activity;

(5) The permittee is authorized to operate one (1) pit waste (crushed recycled material) storage area (B170) that shall not exceed a base of 19,375 ft^2 (1,800 m^2) and shall utilize a 3-sided enclosure to minimize the potential fugitive emissions of particulate matter from wind erosion and pile activity;

(6) For all storage piles, the permittee shall manage on-pile activity so as to minimize the release of emissions; and

(7) All storage area enclosures shall be reasonably maintained and any significant holes shall be repaired immediately.

h. **Haulroads and Mobile Work Areas**
Fugitive particulate emissions resulting from use of haulroads and mobile work areas shall be minimized by the following:

(1) The permittee shall pave, and maintain such pavement, on all haulroads and mobile work areas (including a reasonable shoulder area) within the plant boundary;

(2) The permittee shall maintain access to a vacuum sweeper truck in good operating condition, and shall utilize same as needed to remove excess dirt and dust from all haulroads and mobile work areas. The haulroads and mobile work areas shall be flushed with water immediately prior to each vacuum sweeping (flushing may be part of vacuum sweeper truck); and

(3) The permittee shall collect, in a timely fashion, material spilled on haulroads that could become airborne if it dried or were subject to vehicle traffic.

i. **45CSR7**
The handling of raw materials used in the production of mineral wool and coal milling material handling operations shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) No person shall cause, suffer, allow or permit any manufacturing process or storage structure generating fugitive particulate matter to operate that is not equipped with a system, which may include, but not be limited to, process equipment design, control equipment design or operation and maintenance procedures, to minimize the emissions of fugitive particulate matter. To minimize means such system shall be installed, maintained and operated to ensure the lowest fugitive particulate matter emissions reasonably achievable.
[45CSR§7-5.1]

j. **40 CFR 60, Subpart OOO**
The non-metallic mineral handling operations (see Table 4-1 of Permit Application R14-0037 for a complete list of affected sources) prior to the furnace building (B300) are subject to the applicable limitations and standards under 40 CFR 60, Subpart OOO including, but not limited to, the following:

(1) Affected facilities must meet the stack emission limits and compliance requirements in Table 2 of Subpart OOO within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup as required under §60.8. The requirements in Table 2 of Subpart OOO apply for affected facilities with capture systems used to capture and transport particulate matter to a control device.
[40 CFR §60.672(a)]

(2) Affected facilities must meet the fugitive emission limits and compliance requirements in Table 3 of Subpart OOO within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup as required under §60.11. The requirements in Table 3 of Subpart OOO apply for fugitive emissions from affected facilities without capture systems and for fugitive emissions escaping capture systems.
[40 CFR §60.672(b)]

(3) Truck dumping of nonmetallic minerals into any screening operation, feed hopper, or crusher is exempt from the requirements of this section.
[40 CFR §60.672(d)]

(4) If any transfer point on a conveyor belt or any other affected facility is enclosed in a building, then each enclosed affected facility must comply with the emission limits in 40 CFR §60.672(a) and (b), or the building enclosing the affected facility or facilities must comply with the following emission limits:

(1) Fugitive emissions from the building openings (except for vents as defined in §60.671) must not exceed 7 percent opacity; and

(2) Vents (as defined in §60.671) in the building must meet the applicable stack emission limits and compliance requirements in Table 2 of Subpart OOO.
[40 CFR §60.672(e)]

(5) Any baghouse that controls emissions from only an individual, enclosed storage bin is exempt from the applicable stack PM concentration limit (and associated performance testing) in Table 2 of Subpart OOO but must meet the applicable stack opacity limit and compliance requirements in Table 2 of Subpart OOO. This exemption from the stack PM concentration limit does not apply for multiple storage bins with combined stack emissions.
[40 CFR §60.672(f)]

4.1.3. Coal Mill Burner and Fluidized Bed Dryer

The Coal Mill Burner and Fluidized Bed Dryer, identified as IMF05, shall meet the following requirements:

a. The Coal Mill Burner shall not exceed an MDHI of 6.00 mmBtu/hr (1,757 kW) shall only be fired by pipeline-quality natural gas (PNG);

b. The Fluidized Bed Dryer shall have a design capacity not to exceed 200 tons per day;

c. The combined exhaust from the Coal Mill Burner and Fluidized Bed Dryer shall be vented to first a separator and then to a baghouse (IMF05-BH) for control of filterable particulate matter;

d. The combined exhaust of the Coal Mill Burner and Fluidized Bed Dryer shall not exceed the emission limits, and shall utilize the specified BACT Technology, as given in the following table:

Table 4.1.3(d): Coal Mill Burner and Fluidized Bed Dryer Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/ year)
CO	n/a	n/a	0.49 (0.22)	2.15 (1.95)
NO_x	60 ppmvd @ 3% O_2	LNB, Temperature Control(1)	0.42 (0.19)	1.86 (1.68)
$PM_{2.5(2)}$	PPH	Baghouse	0.26 (0.12)	1.06 (0.96)
$PM_{10(2)}$			0.32 (0.14)	1.33 (1.20)

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/ year)
PM(3)	0.005 gr/dscf (12.3 mg/Nm^3)	Baghouse	0.12 (0.06)	0.54 (0.49)
SO_2	PPH	Use of Natural Gas	3.51e-03 (1.59e-03)	0.02 (0.01)
VOCs		Good Combustion Practices(4)	0.41 (0.18)	1.65 (1.50)
CO_2e	TPY	Use of Natural Gas, Good Combustion Practices(4)	--	3,080 (2,793)

(1) Drying in the Fluidized Bed Dryer shall take place at a temperature of less than 180 degrees Fahrenheit so as to prevent any combustion of the coal.
(2) Includes condensables.
(3) Filterable only.
(4) Good Combustion Practices shall mean activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.

e. **45CSR7**
The Coal Mill Burner and Fluidized Bed Dryer shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

4.1.4. **Melting Furnace**
The Melting Furnace, identified as IMF01, shall meet the following requirements:

a. The Melting Furnace shall not exceed the emission limits, and shall utilize the specified **BACT** Technology, as given in the following table:

Table 4.1.4(a): Melting Furnace Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
CO	n/a	n/a	11.21[1] (5.09)	49.10 (44.54)
NO_x	PPH	Integrated SNCR, Oxy-Fired Burners[2]	37.37[1] (16.95)	163.67 (148.48)
$PM_{2.5(3)}$	PPH	Baghouse	7.47 (3.39)	32.73 (29.10)
$PM_{10(3)}$	PPH	Baghouse	8.22 (3.73)	36.01 (32.67)
PM[4]	0.013 gr/dscf 31 mg/Nm^3	Baghouse	2.32 (1.05)	10.15 (9.21)
SO_2	PPH	Sorbent Injection in the Baghouse	33.63[1] (15.26)	147.31 (33.63)
VOCs	PPH	Good Combustion Practices[5]	11.66 (5.29)	51.07 (46.34)
H_2SO_4	PPH	Sorbent Injection in the Baghouse	3.74 (1.70)	16.37 (14.85)
Mineral Fiber	n/a	n/a	2.32 (1.05)	10.15 (9.21)
HF	n/a	n/a	0.37 (0.17)	1.62 (1.47)
HCl	n/a	n/a	0.29 (0.13)	1.29 (1.17)
COS	n/a	n/a	0.37 (0.17)	1.64 (1.48)
Total HAPs	n/a	n/a	3.43 (1.56)	15.04 (13.64)
CO_2e	TPY	Energy Efficiency[6]	--	95,547 (86,679)

(1) Compliance based on a 30-day rolling average.
(2) Integrated SNCR system utilizes ammonia injection to promote a de-NOx reaction to occur. The oxy-fuel burners are specially designed to fire with O_2 instead of ambient air.
(3) Includes condensables.
(4) Filterable only.
(5) Good combustion practices include, but are not limited to the following: (1) maintaining a proper oxidizing atmosphere to control VOC emissions through proper combustion tuning, temperature, and air/fuel mixing and (2) activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.
(6) Energy Efficiency measures listed in Table D-9-2 (pp. 554) of the permit application.

b. **45CSR7**
The Melting Furnace shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) Mineral acids shall not be released from any type source operation or duplicate source operation or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity given in Table 45-7B found at the end of this rule.
[45CSR§7-4.2]

c. **45CSR10**
The Melting Furnace shall comply with all applicable requirements of 45CSR10 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit the emission into the open air from any source operation an in-stack sulfur dioxide concentration exceeding 2,000 parts per million by volume from existing source operations, except as provided in subdivisions 4.1.a through 4.1.e.
[45CSR§10-3.1]

d. **40 CFR 63, Subpart DDD**
The Melting Furnace shall comply with all applicable requirements of 40 CFR 63, Subpart DDD including, but not limited to, the following:

(1) **§63.1178 For cupolas, what standards must I meet?**

(i) You must control emissions from each cupola as specified in Table 2 to this subpart.
[40 CFR§63.1178(a)]

Table 2 to Subpart DDD of Part 63—Emissions Limits and Compliance Dates

If your source is a:	And you commenced construction:	Your emission limits are:[1]	And you must comply by:[2]
2. Cupola	After May 8, 1997	0.10 lb PM per ton of melt	June 1, 1999
8. Open-top cupola	After November 25, 2011	3.2 lb of COS per ton melt	July 29, 2015[4]
10. Cupola using slag as a raw material	After November 25, 2011	0.015 lb of HF per ton melt 0.012 lb of HCl per ton melt.	July 29, 2015[4]

(1) The numeric emissions limits do not apply during startup and shutdown.
(2) Existing sources must demonstrate compliance by the compliance dates specified in this table. New sources have 180 days after the applicable compliance date to demonstrate compliance.
(4) Or upon initial startup, whichever is later.

(ii) You must meet the following operating limits for each cupola:
[40 CFR§63.1178(b)]

(A) Begin within one hour after the alarm on a bag leak detection system sounds, and complete in a timely manner, corrective actions as specified in your operations, maintenance, and monitoring plan required by §63.1187 of this subpart.
[40 CFR§63.1178(b)(1)]

(B) When the alarm on a bag leak detection system sounds for more than five percent of the total operating time in a six-month reporting period, develop and implement a written quality improvement plan (QIP) consistent with the compliance assurance monitoring requirements of §64.8(b)-(d) of 40 CFR part 64.
[40 CFR§63.1178(b)(2)]

(C) Additionally, on or after the applicable compliance date for each new or reconstructed cupola, you must either:
[40 CFR§63.1178(b)(3)]

(I) Maintain the operating temperature of the incinerator so that the average operating temperature for each three-hour block period never falls below the average temperature established during the performance test, or
[40 CFR§63.1178(b)(3)(I)]

(II) Maintain the percent excess oxygen in the cupola at or above the level established during the performance test. You must determine the percent excess oxygen using the following equation:
[40 CFR§63.1178(b)(3)(II)]

Percent excess oxygen = ((Oxygen available/Fuel demand for oxygen) - 1) * 100

Where:

Percent excess oxygen = Percentage of excess oxygen present above the stoichiometric balance of 1.00, (%).

1.00 = Ratio of oxygen in a cupola combustion chamber divided by the stoichiometric quantity of oxygen required to obtain complete combustion of fuel.

Oxygen available = Quantity of oxygen introduced into the cupola combustion zone.
Fuel demand for oxygen = Required quantity of oxygen for stoichiometric combustion of the quantity of fuel present.

4.1.5. Gutter Exhaust, Spinning Chamber, Curing Oven Hoods, Curing Oven, and Cooling Section

The Gutter Exhaust (GUT-EX), Spinning Chamber (SPN), Curing Oven Hoods (CO-HD), Curing Oven (CO), and Cooling Section (CS) shall meet the following requirements:

a. The Gutter Exhaust, Spinning Chamber, Curing Oven Hoods, Curing Oven, and Cooling Section shall not exceed the aggregate emission limits (as emitted from the Wet Electrostatic Precipitator (WESP) stack (HE01)), and each shall utilize the specified BACT Technology as given in the following table:

Table 4.1.5(a): Gutter Exhaust, Spinning Chamber, Curing Oven Hoods, Curing Oven, and Cooling Section Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
CO	n/a	n/a	1.82 (0.82)	7.97 (7.23)
NO_x	PPH	LNB, Good Combustion Practices(1)	14.55 (6.60)	63.73 (57.82)
$PM_{2.5}$(2)		WESP	19.22 (8.72)	84.20 (76.39)
PM_{10}(2)			21.21 (9.62)	92.89 (84.27)
PM(3)			21.21 (9.62)	92.89 (84.27)
SO_2		Use of Natural Gas	0.01 (4.89e-03)	0.05 (0.04)
VOCs		Afterburner Good Combustion Practices Subpart DDD Compliance(4)	78.02 (35.39)	341.73 (309.99)
Phenol	n/a	n/a(5)	19.37 (8.79)	84.84 (76.98)
Formaldehyde			12.79 (5.80)	56.02 (50.81)
Methanol			23.70 (10.75)	103.80 (94.17)
Mineral Fiber			21.21 (9.62)	92.89 (84.27)
Total HAPs			77.07 (34.96)	337.56 (306.23)

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
CO_2e	TPY	Use of Natural Gas, Good Combustion Practices(1)	--	35,644 (32,336)

(1) Good combustion practices include, but are not limited to the following: Proper combustion tuning, temperature, and air/fuel mixing and activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.
(2) Includes condensables.
(3) Filterable only.
(4) BACT Technology: Gutter Exhaust - Subpart DDD Compliance, Curing Oven - Afterburner/Good Combustion Practices, Spinning Chamber - Subpart DDD Compliance, Curing Oven Hoods - Subpart DDD Compliance.
(5) While the Afterburner is required as a control on Phenol, Formaldehyde, and Methanol, as these pollutants are not subject to PSD, the Afterburner is not listed here as it is not a BACT technology for these pollutants.

b. **45CSR7**
The Gutter Exhaust, Curing Oven Hoods, Curing Oven, and Spinning Chamber shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) Mineral acids shall not be released from any type source operation or duplicate source operation or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity given in Table 45-7B found at the end of this rule.
[45CSR§7-4.2]

c. **40 CFR 63, Subpart DDD**
The Gutter Exhaust, Curing Oven Hoods, Curing Oven, and Spinning Chamber shall comply with all applicable requirements of 40 CFR 63, Subpart DDD including, but not limited to, the following:

(1) **§63.1179 For curing ovens or combined collection/curing operations, what standards must I meet?**

(i) You must control emissions from each curing oven or combined collection/curing operations as specified in Table 2 to this subpart.
[43 CFR§60.1179(a)]

Table 2 to Subpart DDD of Part 63—Emissions Limits and Compliance Dates

If your source is a:	And you commenced construction:	Your emission limits are:[1]	And you must comply by:[2]
24. Combined vertical collection/curing operation	After November 25, 2011	2.4 lb of formaldehyde per ton melt 0.92 lb of methanol per ton melt. 0.71 lb of phenol per ton melt.	July 29, 2015[4]

(1) The numeric emissions limits do not apply during startup and shutdown.
(2) Existing sources must demonstrate compliance by the compliance dates specified in this table. New sources have 180 days after the applicable compliance date to demonstrate compliance.
(4) Or upon initial startup, whichever is later.

4.1.6. Fleece Application

The Fleece Application operations shall meet the following requirements:

a. The maximum emissions of VOCs and HAPs from the Fleece Application operations each shall not exceed of 7.14 tons per month (6.48 tonnes/month) and a **BACT** limit (BACT limit is VOCs only) of 28.58 TPY (23.21 tonnes/year);

b. The BACT Technology for the Fleece Application operations is the use of low-VOC coatings and the utilization of Good Work Practices. "Low-VOC coatings" shall mean the monthly average of all coating materials used during fleece application operations shall not exceed 0.016 lb-VOC/lb-coating (0.016 kg-VOC/kg-coating) material as-applied on a monthly average basis. "Good Work Practices" shall mean storing VOC-containing materials in closed tanks or containers, cleaning up spills, and minimizing cleaning with VOC-containing cleaners; and

c. **40 CFR 63, Subpart JJJJ**
The fleece application operations shall comply with all applicable requirements of 40 CFR 63, Subpart JJJJ including, but not limited to, the following:

What emission standards must I meet?

(1) If you own or operate any affected source that is subject to the requirements of this subpart, you must comply with these requirements on and after the compliance dates as specified in §63.3330.
[40 CFR§63.3320(a)]

(2) You must limit organic HAP emissions to the level specified in paragraph (b)(1), (2), (3), or (4) of this section.
[40 CFR§63.3320(b)]

(i) No more than 5 percent of the organic HAP applied for each month (95 percent reduction) at existing affected sources, and no more than 2 percent of the organic HAP applied for each month (98 percent reduction) at new affected sources; or
[40 CFR§63.3320(b)(1)]

(ii) No more than 4 percent of the mass of coating materials applied for each month at existing affected sources, and no more than 1.6 percent of the mass of coating materials applied for each month at new affected sources; or
[40 CFR§63.3320(b)(2)]

(iii) No more than 20 percent of the mass of coating solids applied for each month at existing affected sources, and no more than 8 percent of the coating solids applied for each month at new affected sources.
[40 CFR§63.3320(b)(3)]

(iv) If you use an oxidizer to control organic HAP emissions, operate the oxidizer such that an outlet organic HAP concentration of no greater than 20 parts per million by volume (ppmv) by compound on a dry basis is achieved and the efficiency of the capture system is 100 percent.
[40 CFR§63.3320(b)(4)]

(3) You must demonstrate compliance with this subpart by following the procedures in §63.3370.
[40 CFR§63.3320(c)]

4.1.7. **Rockfon Line**
The Rockfon Line shall meet the following requirements:

a. The maximum aggregate VOC emissions from the application of glue and coatings in the Rockfon line shall not exceed 8.98 tons/month (8.15 tonne/month) and a **BACT** limit of 35.93 TPY (32.60 tonne/yr);

b. The **BACT** Technology for the application of glue and coatings in the Rockfon Line is the use of low-VOC materials and the utilization of Good Work Practices. "Low-VOC materials" shall mean the use of glue is limited to containing (**BACT** Limit) of a maximum VOC content of 0.57 lb-VOC/gallon-glue (70 g-VOC/L-material) and the use of coatings are limited to containing (**BACT** Limit) a maximum VOC content of 0.67 lb-VOC/gallon-material (80 g-VOC/L-material). No HAP-containing glues or coatings shall be used in the Rockfon Line. "Good Work Practices" shall mean storing VOC-containing materials in closed tanks or containers, cleaning up spills, and minimizing cleaning with VOC-containing cleaners;

c. The ovens used in the Rockfon line shall only combust PNG and each not exceed the aggregate MDHI (of all burners) specified in the following table:

Table 4.1.7(c): Rockfon Line Ovens Maximum MDHI

Oven ID	MDHI
RFN-E3	2.73 mmBtu/hr (800 kW)
RFN-E4	2.05 mmBtu/hr (600 kW)
RFN-E6	4.78 mmBtu/hr (1,400 kW)
RFN-E9	2.73 mmBtu/hr (800 kW)

d. The Rockfon Line shall not exceed the emission limits, and each shall utilize the specified **BACT** Technology as given in the following tables:

(1) **British Units**

Table 4.1.7(d)(1): Rockfon Line Emission Limits in British Units

Pollutant	BACT Limit	BACT Technology	PPH	TPY
RFN-E1: IR Zone				
$PM_{2.5(1)}$	PPH	Low-Particulate Emitting Process	0.01	0.06
$PM_{10(1)}$			0.02	0.08
PM(2)			0.01	0.04
Phenol	n/a	n/a	0.01	0.03
Formaldehyde			0.01	0.03
Mineral Fiber			0.01	0.04
Total HAPs			0.02	0.10
RFN-E2: Hot Press				
$PM_{2.5(1)}$	PPH	Low-Particulate Emitting Process	0.01	0.06
$PM_{10(1)}$			0.02	0.08
PM(2)			0.01	0.04
Phenol	n/a	n/a	0.01	0.03
Formaldehyde			0.01	0.03
Mineral Fiber			0.01	0.04
Total HAPs			0.02	0.10
RFN-E3: High Oven A				
CO	n/a	n/a	0.22	0.98
NO_x	0.10 lb/mmBtu	Good Combustion Practices(3)	0.27	1.17
$PM_{2.5(1)}$	PPH	Use of Natural Gas, Good Combustion Practices(3)	0.09	0.38
$PM_{10(1)}$			0.12	0.51
PM(2)			0.06	0.25
SO_2	PPH	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	0.06

Pollutant	BACT Limit	BACT Technology	PPH	TPY
Phenol	n/a	n/a	0.02	0.08
Formaldehyde			0.02	0.08
Mineral Fiber			0.06	0.25
Total HAPs			0.10	0.43
CO_2e	TPY	Use of Natural Gas, Good Combustion Practices(3)	--	1,400
RFN-E4: Drying Oven 1				
CO	n/a	n/a	0.17	0.73
NO_x	0.10 lb/mmBtu	Good Combustion Practices(3)	0.20	0.87
$PM_{2.5(1)}$	PPH	Use of Natural Gas, Good Combustion Practices(3), Fabric Filter (RFNE4-FF)	0.06	0.27
$PM_{10(1)}$			0.08	0.36
PM(2)	0.0015 g/dscf		0.04	0.18
SO_2	PPH	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	0.05
Phenol	n/a	n/a	0.01	0.05
Formaldehyde			0.02	0.10
Mineral Fiber			0.04	0.18
Total HAPs			0.08	0.34
CO_2e	TPY	Use of Natural Gas, Good Combustion Practices(3)	--	1,050
RFN-E5: Spray Paint Cabin				
$PM_{2.5(1)}$	PPH	Fabric Filter (RFNE5-FF)	0.66	2.90
$PM_{10(1)}$			0.88	3.86
PM(2)	0.0081 g/dscf		0.44	1.93
Phenol	n/a	n/a	0.06	0.24
Formaldehyde			0.02	0.10
Mineral Fiber			0.44	1.93
Total HAPs			0.52	2.27

Pollutant	BACT Limit	BACT Technology	PPH	TPY
RFN-E6: Drying Oven 2/3				
CO	n/a	n/a	0.39	1.71
NO_x	0.10 lb/mmBtu	Good Combustion Practices(3)	0.47	2.04
$PM_{2.5(1)}$	PPH	Use of Natural Gas, Good Combustion Practices(3), Fabric Filter (RFNE6-FF)	0.09	0.41
$PM_{10(1)}$			0.13	0.55
PM(2)	0.001 g/dscf		0.06	0.28
SO_2	PPH	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.03	0.11
Phenol	n/a	n/a	0.03	0.12
Formaldehyde			0.05	0.23
Mineral Fiber			0.06	0.28
Total HAPs			0.15	0.66
CO_2e	TPY	Use of Natural Gas, Good Combustion Practices(3)	--	2,450
RFN-E7: Cooling Zone				
$PM_{2.5(1)}$	PPH	Low-Emitting Process	0.14	0.63
$PM_{10(1)}$			0.19	0.84
PM(2)			0.10	0.42
Phenol	n/a	n/a	0.06	0.24
Formaldehyde			0.06	0.24
Mineral Fiber			0.10	0.42
Total HAPs			0.21	0.91
RFN-E8: De-Dusting Baghouse				
$PM_{2.5(2)}$	PPH	Fabric Filter (RFNE8-FF)	0.17	0.75
$PM_{10(2)}$			0.34	1.49
PM(2)	0.00053 g/dscf		0.34	1.49
Mineral Fiber	n/a	n/a	0.34	1.49
Total HAPs			0.34	1.49

Pollutant	BACT Limit	BACT Technology	PPH	TPY
RFN-E9: High Oven B				
CO	n/a	n/a	0.22	0.98
NO_x	0.10 lb/mmBtu	Good Combustion Practices(3)	0.27	1.17
$PM_{2.5(1)}$	PPH	Use of Natural Gas, Good Combustion Practices(3)	0.09	0.38
$PM_{10(1)}$			0.12	0.51
PM(2)			0.06	0.25
SO_2	PPH	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	0.06
Phenol	n/a	n/a	0.02	0.08
Formaldehyde			0.02	0.08
Mineral Fiber			0.06	0.25
Total HAPs			0.10	0.43
CO_2e	TPY	Use of Natural Gas, Good Combustion Practices(3)	--	1,400

(1) Includes Condensables.
(2) Filterable Only.
(3) Good Combustion Practices shall mean activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.

(2) **Metric Units**

Table 4.1.7(d)(2): Rockfon Line Emission Limits in Metric Units

Pollutant	BACT Limit	BACT Technology	kg/hr	tonne/yr
RFN-E1: IR Zone				
$PM_{2.5(1)}$	kg/hr	Low-Particulate Emitting Process	6.30e-03	0.06
$PM_{10(1)}$			1.00e-02	0.07
PM(2)			4.20e-03	0.04
Phenol	n/a	n/a	3.00e-03	0.03
Formaldehyde			3.00e-03	0.03
Mineral Fiber			4.20e-03	0.04
Total HAPs			1.00e-02	0.09

Pollutant	BACT Limit	BACT Technology	kg/hr	tonne/yr
RFN-E2: Hot Press				
$PM_{2.5(1)}$	kg/hr	Low-Particulate Emitting Process	6.30e-03	0.06
$PM_{10(1)}$			1.00e-02	0.07
PM(2)			4.20e-03	0.04
Phenol	n/a	n/a	3.00e-03	0.03
Formaldehyde			3.00e-03	0.03
Mineral Fiber			4.20e-03	0.04
Total HAPs			1.00e-02	0.09
RFN-E3: High Oven A				
CO	n/a	n/a	0.10	0.89
NO_x	1,602 kg/mmsm^3	Good Combustion Practices(3)	0.12	1.06
$PM_{2.5(1)}$	kg/hr	Use of Natural Gas, Good Combustion Practices(3)	0.04	0.35
$PM_{10(1)}$			0.05	0.46
PM(2)			0.03	0.23
SO_2	kg/hr	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	0.05
Phenol	n/a	n/a	0.01	0.07
Formaldehyde			0.01	0.07
Mineral Fiber			0.03	0.23
Total HAPs			0.04	0.39
CO_2e	tonne/yr	Use of Natural Gas, Good Combustion Practices(3)	--	1,270
RFN-E4: Drying Oven 1				
CO	n/a	n/a	0.08	0.67
NO_x	1,602 kg/mmsm^3	Good Combustion Practices(3)	0.09	0.79
$PM_{2.5(1)}$	kg/hr	Use of Natural Gas, Good Combustion Practices(3), Fabric Filter (RFNE4-FF)	0.03	0.24
$PM_{10(1)}$			0.04	0.32
PM(2)	3.70 mg/Nm^3		0.02	0.16

Pollutant	BACT Limit	BACT Technology	kg/hr	tonne/yr
SO_2	kg/hr	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	0.04
Phenol	n/a	n/a	0.01	0.04
Formaldehyde			0.01	0.09
Mineral Fiber			0.02	0.16
Total HAPs			0.04	0.31
CO_2e	tonne/yr	Use of Natural Gas, Good Combustion Practices(3)	--	953
RFN-E5: Spray Paint Cabin				
$PM_{2.5(1)}$	kg/hr	Fabric Filter (RFNE5-FF)	0.30	2.63
$PM_{10(1)}$			0.40	3.50
PM(2)	20 mg/Nm^3		0.20	1.75
Phenol	n/a	n/a	0.03	0.22
Formaldehyde			0.01	0.09
Mineral Fiber			0.20	1.75
Total HAPs			0.23	2.06
RFN-E6: Drying Oven 2/3				
CO	n/a	n/a	0.18	1.55
NO_x	1,602 kg/mmsm^3	Good Combustion Practices(3)	0.02	1.86
$PM_{2.5(1)}$	kg/hr	Use of Natural Gas, Good Combustion Practices(3), Fabric Filter (RFNE6-FF)	0.04	0.38
$PM_{10(1)}$			0.06	0.50
PM(2)	2.38 mg/Nm^3		0.03	0.25
SO_2	kg/hr	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	0.05
Phenol	n/a	n/a	0.01	0.11
Formaldehyde			0.02	0.21
Mineral Fiber			0.03	0.25
Total HAPs			0.07	0.60

Pollutant	BACT Limit	BACT Technology	kg/hr	tonne/yr
CO_2e	tonne/yr	Use of Natural Gas, Good Combustion Practices(3)	--	2,223
RFN-E7: Cooling Zone				
$PM_{2.5(1)}$	kg/hr	Low-Emitting Process	0.07	0.57
$PM_{10(1)}$			0.09	0.77
$PM^{(2)}$			0.04	0.38
Phenol	n/a	n/a	0.03	0.22
Formaldehyde			0.03	0.22
Mineral Fiber			0.04	0.38
Total HAPs			0.09	0.82
RFN-E8: De-Dusting Baghouse				
$PM_{2.5(2)}$	kg/hr	Fabric Filter (RFNE8-FF)	0.08	0.68
$PM_{10(2)}$			0.15	1.35
$PM^{(2)}$	1.30 mg/Nm^3		0.15	1.35
Mineral Fiber	n/a	n/a	0.15	1.35
Total HAPs			0.15	1.35
RFN-E9: High Oven B				
CO	n/a	n/a	0.10	0.89
NO_x	1,602 kg/mmsm^3	Good Combustion Practices(3)	0.12	1.06
$PM_{2.5(1)}$	kg/hr	Use of Natural Gas, Good Combustion Practices(3)	0.04	0.35
$PM_{10(1)}$			0.05	0.46
$PM^{(2)}$			0.03	0.23
SO_2		Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	0.05
Phenol	n/a	n/a	0.01	0.07
Formaldehyde			0.01	0.07
Mineral Fiber			0.03	0.23
Total HAPs			0.04	0.39

Pollutant	BACT Limit	BACT Technology	kg/hr	tonne/yr
CO_2e	tonne/yr	Use of Natural Gas, Good Combustion Practices(3)	--	1,270

(1) Includes Condensables.
(2) Filterable Only.
(3) Good Combustion Practices shall mean activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.

e. As the annual emission limits of RFN-E3, RFN-E4, RFN-E6, and RFN-E9 listed under Table 4.1.7(d) are based on 8,760 hours of operation, there is no annual limit on hours of operation or natural gas combusted on an annual basis for these units.

f. **45CSR7**
The Rockfon Line shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) Mineral acids shall not be released from any type source operation or duplicate source operation or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity given in Table 45-7B found at the end of this rule.
[45CSR§7-4.2]

4.1.8. **Fuel Burning Units**
The Fuel Burning Units, identified as IMF24, CM03, CM04, and RFN10, shall meet the following requirements:

a. The units shall only combust PNG and each not exceed an aggregate MDHI (of all burners) of 5.1 mmBtu/hr (1,500 kW) for each permitted emission:

b. The units shall not exceed the emission limits given in the following table:

Table 4.1.8(b): Per-Fuel Burning Unit Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
CO	n/a	n/a	0.42 (0.19)	1.84 (1.67)
NO_x	30 ppm_vd @ 3% O_2	LNB, Good Combustion Practices(1)	0.18 (0.08)	0.79 (0.40)
NO_x (IMF24 Only)	60 ppm_vd @ 3% O_2	LNB, Good Combustion Practices(1)	0.36 (0.16)	1.58 (1.44)
$PM_{2.5}$(2)	PPH	Use of Natural Gas, Good Combustion Practices(1)	0.04 (0.02)	0.17 (0.15)
PM_{10}(2)				
PM(3)			0.01 (4.30e-03)	0.04 (0.04)
SO_2		Use of Natural Gas	3.00e-03 (1.36e-03)	0.01 (0.01)
VOCs		Good Combustion Practices(1)	0.03 (0.01)	0.12 (0.11)
CO_2e	TPY	Use of Natural Gas, Good Combustion Practices(1)	--	2,627 (2,384)

(1) LNB = Low-NO_x Burning Technology. Good Combustion Practices shall mean activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.
(2) Includes Condensables.
(3) Filterable Only.

c. As all the annual emissions of the units listed under Table 4.1.8(b) are based on 8,760 hours of operation, there is no annual limit on hours of operation or natural gas combusted on an annual basis for those units; and

d. **45CSR2**
No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any fuel burning unit which is greater than ten (10) percent opacity based on a six minute block average.
[40CSR§2-3.1]

4.1.9. **Storage Tanks**
Use of the volatile organic liquid (VOL) storage tanks shall be in accordance with the following:

a. Tank size shall be limited as specified under Table 1.0 of this permit;

b. The aggregate emissions of VOCs from all storage shall not exceed a **BACT** Limit of 0.19 tons/year (0.17 tonnes/yr); and

c. Material stored shall be as specified and the aggregate annual storage tank throughputs shall not exceed those given in the following table:

Table 4.1.9(c): Storage Tanks Throughput Limits

Tank ID	Material Stored	Gallons
TK-DF	Diesel	20,000
TK-UO	Used Motor and Gear Oil	15,000
TK-TO1	Thermal Oil	681
TK-TO2	Thermal Oil	681
TK-TO3	Thermal Oil	2,642
TK-TO4	Thermal Oil	2,642
TK-DO	De-Dust Oil	200,000
TK-RS1 through TK-RS7	Resin	8,400,000(1)
TK-CA	Coupling Agent Solution	16,000
TK-AD	Binder Additive	65,000
TK-BM	Binder Solution(2)	24,000,000
TK-BC	Binder Solution(2)	24,000,000
TK-BD	Binder Solution(2)	24,000,000
TK-BS1 through TK-BS3	Fleece Coating	1,479,999(1)
TK-DOD	De-Dust Oil	200,000
TK-PD	Diluted Water-Based Paint	1,008,701
TK-PDD	Diluted Water-Based Paint	1,008,701

(1) This number represents the aggregate limit for all specified storage tanks.
(2) May refer to any type of Binder Solution that has an average vapor pressure less than 0.76 psia (5.24 kPa) at 60 degrees Fahrenheit (15.6°C).

d. For **BACT** purposes, the permittee shall utilize good operating practices in the operation of the storage tanks. Good operating practices shall mean maintaining and operating the storage tanks according to manufacturers recommendations and regularly inspecting the tanks for areas of disrepair or failure that would allow the escape of VOC-containing vapors.

4.1.10. **Emergency Fire Pump Engine**

The Emergency Fire Pump Engine, identified as EFP1, shall meet the following requirements:

a. The unit shall not exceed 197 horsepower (150 kW), shall be fired only with Ultra-Low Sulfur Diesel (with a maximum sulfur content not to exceed 0.0015%), and shall not operate in excess of 100 hours per year nor 0.5 hours in any 24-hour period during times not defined as emergencies;

b. The maximum emissions from the Emergency Generator shall not exceed the limits given in the following table:

Table 4.1.10(b): Emergency Fire Pump Engine Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
CO	n/a	n/a	1.13 (0.51)	0.28 (0.26)
NO_x	4.0 g/kw-hr	Subpart IIII Certification, Annual Hrs of Op Limit	1.30 (0.59)	0.32 (0.29)
$PM_{2.5(1)}$ $PM_{10(1)}$	PPH		0.08 (0.03)	0.02 (0.02)
$PM^{(2)}$	0.20 g/kw-hr		0.06 (0.03)	0.02 (0.01)
SO_2	PPH	ULSD Fuel Annual Hrs of Op$^{(3)}$ Limit	2.14e-03 (9.72e-04)	5.36e-04 (4.86e-04)
VOCs		Subpart IIII Certification, Annual Hrs of Op$^{(3)}$ Limit	0.19 (0.09)	0.05 (0.04)
CO_2e	TPY	Annual Hrs of Op$^{(3)}$ Limit	--	56 (51)

(1) Includes Condensables.
(2) Filterable Only.
(3) Non-emergency hours of operation.

c. **40 CFR 60, Subpart IIII**
The Emergency Fire Pump Engine shall meet all applicable requirements under 40 CFR 60, Subpart IIII including the following:

(1) Owners and operators of fire pump engines with a displacement of less than 30 liters per cylinder must comply with the emission standards in table 4 to this subpart, for all pollutants. **[40 CFR §60.4205(c)]**

(2) As stated in §§60.4202(d) and 60.4205(c), you must comply with the following emission standards for stationary fire pump engines:

Table 4 to Subpart IIII of Part 60—Emission Standards for Stationary Fire Pump Engines

Maximum Engine Power	Model year(s)	NMHC + NOX	CO	PM
130≤KW<225 (175≤HP<300)	2009+(3)	4.0(3.0)	3.5(2.6)	0.20(0.15)

(3) In model years 2009-2011, manufacturers of fire pump stationary CI ICE in this engine power category with a rated speed of greater than 2,650 rpm may comply with the emission limitations for 2008 model year engines.

d. **40 CFR 63, Subpart ZZZZ**
An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part.
[40 CFR §63.6590(c)]

4.1.11. Miscellaneous Operations/Processes

a. **Dry Ice Cleaning**
The maximum input design capacity of the dry ice production unit (DI) shall not exceed 4.37 tons/day (3.97 tonne/day), and the emissions of CO_2 from the use dry ice cleaning shall not exceed (**BACT** limit) 363.76 PPH (165 kg/hr) or 1,594 TPY (1,446 tonne/year).

b. **Cooling Towers**
The Cooling Towers shall operate in accordance with the following requirements:

(1) The Cooling Tower shall use the control device specified under Section 1.0 at all times in operation and not exceed the specified maximum design and operational limits in the following table:

Table 4.1.11(b)(1): Cooling Tower Specifications

ID No.	Max Design Capacity Water Circulation Pump (gal/min)	Total Dissolved Solids (ppm)	Mist Eliminator Max Drift Rate (%)(1)
IMF02	1,321 (300 m^3/hr)	1,500	0.001
HE02	308 (70 m^3/hr)	1,500	0.001

(1) As based on manufacturer or vendor guarantee or applicable product literature.

(2) The maximum emissions from the Cooling Towers shall not exceed the limits given in the following table:

Table 4.1.11(b)(2): Cooling Tower Emission Limits[1]

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
IMF02				
$PM_{2.5(1)}$	PPH	High Efficiency Drift Eliminator (@ 0.001% Drift)	4.96e-03 (2.25e-03)	0.02 (0.02)
$PM_{10(1)}$			0.01 (4.50e-03)	0.04 (0.04)
$PM^{(2)}$				
HE02				
$PM_{2.5(1)}$	PPH	High Efficiency Drift Eliminator (@ 0.001% Drift)	1.16e-03 (5.25e-03)	0.01 (4.60e-03)
$PM_{10(1)}$			2.31e-03 (1.05e-03)	0.01 (9.19e-03)
PM				

c. **Product Marking**
The Product Marking Operations, identified as P_MARK, shall operate in accordance with the following requirements:

(1) The MDHI of the burners used with the branding wheels used in Product Marking shall not exceed 0.40 mmBtu/hr (120 kW) and shall only be fired with PNG. Combustion exhaust from the burners shall not exceed the following emissions:

Table 4.1.11(c)(1): Product Marking Burners Combustion Exhaust Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
CO	n/a	n/a	0.03 (0.01)	0.14 (0.13)
NO_x	PPH	Use of Natural Gas	0.04 (0.02)	0.17 (0.15)
$PM_{2.5(1)}$			2.96e-03 (1.34e-03)	0.01 (1.18e-03)
$PM_{10(1)}$				
$PM^{(2)}$			7.41e-04 (3.36e-04)	0.01 (2.94e-03)
SO_2			2.34e-04 (1.06e-04)	1.06e-04 (9.29e-04)
VOCs			2.14e-03 (9.73e-04)	9.39e-03 (8.52e-03)
CO_2e	TPY		--	205 (186)

(1) Includes Condensables.
(2) Filterable Only.

(2) As all the annual emissions listed under Table 4.1.11(c)(1) are based on 8,760 hours of operation, there is no annual limit on hours of operation or natural gas combusted on an annual basis for the unit; and

(3) The **BACT** Technology for the use of ink and cleaners during Product Marking Operations is the utilization of Good Work Practices. "Good Work Practices" shall mean storing VOC-containing materials in closed tanks or containers, cleaning up spills, and minimizing cleaning with VOC-containing cleaners. VOC emissions from the use of ink and cleaners during Product Marking operations shall not exceed 2.37 tons/month (2.15 tonne/month) and a **BACT** limit of 9.47 TPY (8.59 tonne/yr) and no HAP-containing inks or cleaners shall be used during Product Marking Operations.

4.1.12. Control Devices

a. **Operation and Maintenance of Air Pollution Control Equipment.** The permittee shall, to the extent practicable, install, maintain, and operate all pollution control equipment listed in Section 1.0 and associated monitoring equipment in a manner consistent with safety and good air pollution control practices for minimizing emissions, or comply with any more stringent limits set forth in this permit or as set forth by any State rule, Federal regulation, or alternative control plan approved by the Secretary.
[45CSR§13-5.11.]

b. **Inherent SNCR De-NO_x System**
The permittee shall design and operate the Melting Furnace so as to promote the inherent removal of NO_x from the exhaust gas stream. The permittee shall maintain a proper temperature profile for NO_x removal and inject aqueous ammonia as necessary to facilitate the SNCR process. Compliance with 4.1.12(b) shall be determined by showing compliance with the NO_x emission limits given under Table 4.1.4(a) using the CEMS as required under 4.2.6.

c. **Sorbent Injection**
The permittee shall utilize dry sorbent injection in conjunction with Baghouse IMF-01 so as to reduce the emissions of SO_2, H_2SO_4, HF, and HCl from the Melting Furnace. Compliance with 4.1.12(c) shall be determined by showing compliance with the SO_2 emission limits given under Table 4.1.4(a) using the CEMS as required under 4.2.6.

d. **Baghouse IMF01-BH**
Use of Baghouse IMF01-BH shall be in accordance with the following requirements:

(1) The permittee shall monitor the differential pressure drop of IMF01-BH so as to ensure proper continuous operation of the baghouse. The monitoring system shall include an alarm to notify the control room if the differential pressure drop indicates abnormal performance of the unit. The appropriate alarm set-point(s) shall be determined as given under 4.1.12(g).

(2) **40 CFR 63, Subpart DDD**
How do I comply with the particulate matter standards for existing, new, and reconstructed cupolas? To comply with the PM standards, you must meet all of the following:
[40 CFR §63.1181]

(i) Install, adjust, maintain, and continuously operate a bag leak detection system for each fabric filter.
[40 CFR §63.1181(a)]

(ii) Do a performance test as specified in §63.1188 of this subpart and show compliance with the PM emission limits while the bag leak detection system is installed, operational, and properly adjusted.
[40 CFR §63.1181(b)]

(iii) Begin corrective actions specified in your operations, maintenance, and monitoring plan required by §63.1187 of this subpart within one hour after the alarm on a bag leak detection system sounds. Complete the corrective actions in a timely manner.
[40 CFR §63.1181(c)]

(iv) Develop and implement a written QIP consistent with compliance assurance monitoring requirements of 40 CFR 64.8(b) through (d) when the alarm on a bag leak detection system sounds for more than five percent of the total operating time in a six-month reporting period.
[40 CFR §63.1181(d)]

e. **Wet Electrostatic Precipitator (WESP)**
The operation of the WESP shall be in accordance with the following requirements:

(1) The permittee shall utilize a WESP, identified as HE01, so as to reduce the particulate matter emissions from the Gutter Exhaust, Spinning Chamber, Curing Oven Hoods, the Afterburner, and the Cooling Section at all times Melting, Spinning, Curing and Cooling operations are ongoing; and

(2) The permittee shall monitor the secondary voltage and secondary amperage range of the WESP for optimum mitigation of particulate matter emissions from the sources listed under 4.1.12(e)(1). The monitoring system shall include an alarm to notify the control room if the secondary voltage or amperage indicates abnormal performance of the unit. The appropriate alarm set-point(s) shall be determined as given under 4.1.12(g).

f. **Curing Oven Afterburner**
The Curing Oven Afterburner, CO-AB, shall operate according to the following requirements:

(1) The Curing Oven Afterburner shall not exceed a burner capacity of 6.83 mmBtu/hr (2,000 kW) and shall be in operation at all times when the Curing Oven is in operation and is venting VOC-containing vapors;

(2) **45CSR6**
The Curing Oven Afterburner is subject to 45CSR6. The requirements of 45CSR6 include but are not limited to the following:

(i) The permittee shall not cause, suffer, allow or permit particulate matter to be discharged from the flares into the open air in excess of the quantity determined by use of the following formula:

Emissions (lb/hr) = F x Incinerator Capacity (tons/hr)

Where, the factor, F, is as indicated in Table I below:

Table I: Factor, F, for Determining Maximum Allowable Particulate Emissions

Incinerator Capacity	Factor F

A. Less than 15,000 lbs/hr	5.43
B. 15,000 lbs/hr or greater	2.72

[45CSR§6-4.1]

(ii) No person shall cause, suffer, allow or permit emission of smoke into the atmosphere from any incinerator which is twenty (20%) percent opacity or greater.
[45CSR6 §4.3]

(iii) The provisions of paragraph (i) shall not apply to smoke which is less than forty (40%) percent opacity, for a period or periods aggregating no more than eight (8) minutes per start-up.
[45CSR6 §4.4]

(iv) No person shall cause or allow the emission of particles of unburned or partially burned refuse or ash from any incinerator which are large enough to be individually distinguished in the open air.
[45CSR6 §4.5]

(v) Incinerators, including all associated equipment and grounds, shall be designed, operated and maintained so as to prevent the emission of objectionable odors.
[45CSR6 §4.6]

(vi) Due to unavoidable malfunction of equipment, emissions exceeding those provided for in this rule may be permitted by the Director for periods not to exceed five (5) days upon specific application to the Director. Such application shall be made within twenty-four (24) hours of the malfunction. In cases of major equipment failure, additional time periods may be granted by the Director provided a corrective program has been submitted by the owner or operator and approved by the Director.
[45CSR6 §8.2]

(3) **40 CFR 63, Subpart DDD**

(i) How do I comply with the formaldehyde, phenol, and methanol standards for existing, new, and reconstructed combined collection/curing operations? To comply with the formaldehyde, phenol, and methanol standards, you must meet all of the following:
[40 CFR §63.1183]

(A) Install, calibrate, maintain, and operate a device that continuously measures the operating temperature in the firebox of each thermal incinerator.
[40 CFR §63.1183(a)]

(B) Conduct a performance test as specified in §63.1188 while manufacturing the product that requires a binder formulation made with the resin containing the highest free-formaldehyde content specification range. Show compliance with the formaldehyde, phenol, and methanol emissions limits, specified in Table 2 to this subpart, while the device for measuring the control device operating parameter is installed, operational, and properly calibrated. Establish the average operating parameter based on the performance test as specified in §63.1185(a).
[40 CFR §63.1183(b)]

(C) During the performance test that uses the binder formulation made with the resin containing the highest free-formaldehyde content specification range, record the free-formaldehyde content specification range of the resin used, and the formulation of the binder used, including the formaldehyde content and binder specification.
[40 CFR §63.1183(c)]

(D) Following the performance test, monitor and record the free-formaldehyde content of each resin lot and the formulation of each batch of binder used, including the formaldehyde, phenol, and methanol content.
[40 CFR §63.1183(d)]

(E) Maintain the free-formaldehyde content of each resin lot and the formaldehyde content of each binder formulation at or below the specification ranges established during the performance test.
[40 CFR §63.1183(e)]

(F) Following the performance test, measure and record the average operating temperature of the incinerator as specified in §63.1185(b) of this subpart.
[40 CFR §63.1183(f)]

(G) Maintain the operating temperature of the incinerator so that the average operating temperature for each three-hour block period never falls below the average temperature established during the performance test.
[40 CFR §63.1183(g)]

(H) Operate and maintain the incinerator as specified in your operations, maintenance, and monitoring plan required by §63.1187 of this subpart.
[40 CFR §63.1183(h)]

g. Where statutory requirements (MACT, NSPS) do not specify such points, the determination of appropriate alarm set-points under this section shall be based on data obtained from performance testing, manufacturing recommendations, or operational experience. The permittee shall maintain on-site, and update as necessary, a certified report listing the set-points and the basis for their selection. Any changes to the set-points shall be accompanied by the date of the change and reason for the change. The permittee shall, to the extent reasonably possible, operate the control devices within the operating ranges at all times the associated emission units are in operation and venting emissions. If an alarm occurs, the permittee shall attempt to immediately correct the problem and follow the record-keeping procedures under 4.4.3.

4.1.13. **Stack Parameters**
The emission point stack parameters (Inner Diameter, Emission Point Elevation, and UTM Coordinates) of each source identified under the Emission Units Table 1.0 shall be in accordance with the specifications as given on the Emission Points Data Sheet in the most updated version of Permit Application R14-0037.

4.1.14. **General Rule Applicability**
The permittee shall meet all applicable requirements, including those not specified above, as given under 45CSR2, 45CSR6, 45CSR7, 45CSR10, 40 CFR 60, Subparts OOO and IIII, and 40 CFR 63, Subparts DDD, JJJ, ZZZZ, and DDDDD. Any final revisions made to the above rules will, where applicable, supercede those specifically cited in this permit.

4.2. Monitoring, Compliance Demonstration, Recording and Reporting Requirements

4.2.1. **Maximum Design Capacity Compliance**
Compliance with the maximum design capacity limitations as given under 4.1. shall be based on a clear and visible boilerplate rating or on product literature, manufacturer's data, or equivalent documentation that shows that the specific emission unit(s) or processing line in question is limited by design to a throughput or production rate that does not exceed the specified value under 4.1.

4.2.2. **Maximum Design Heat Input Compliance**
Compliance with the various combustion unit MDHI limitations as given under 4.1. shall be based on a clear and visible boilerplate rating or on product literature, manufacturer's data, or equivalent documentation that shows that the specific emission unit(s) in question is limited by design to an MDHI that does not exceed the specified value under 4.1.

4.2.3. **Material/Production Throughputs**
To determine continuous compliance with maximum production, throughputs, and combustion limits given under in 4.1 of the permit, the permittee shall monitor and record the following:

Table 4.2.3: Facility Quantities Monitored/Recorded

Quantity Monitored/Recorded	Emission Unit(s)	Measured Units
Portable Melt Crushing	Portable Melt Crusher	Hours of Operation/year
Emergency Fire Pump Hours of Operation(1)	EFP1	Hours of Operation/Year
Storage Tank Throughputs	Various	Gallons/year

(1) Strictly for the purposes of compliance with 4.1.10(a), only non-emergency hours of operation are required to be monitored. Subpart IIII, however, requires monitoring of all hours of operation.

4.2.4. **Baghouse/Filter Vents**
To determine continuous compliance with the filter/baghouse emission limits given under Section 4.1 of the permit, the permittee shall maintain and operate the control devices according to the requirements given under 4.1.12(a). The permittee shall keep a record of all significant maintenance or repair performed on these control devices (changing out bags, replacing filter material, etc.).

4.2.5. **Coal Fluidized Bed Dryer**
To determine continuous compliance with the maximum temperature requirement given under Table 4.1.3(d) - footnote (1), the permittee shall install and maintain instrumentation in the Coal Fluidized Bed Dryer so as to monitor and record the temperature in the drying zone of the dryer.

4.2.6. **Melting Furnace**

a. **CEMS (IMF01)**
Within 60 days after achieving the maximum design mineral wool production rate at which the facility will be operated, but not later than 180 days after initial startup, the permittee shall, to show continuous compliance with the CO, NO_x, and SO_2 emission limits as given under Table 4.1.4(a), install and operate a Continuous Emissions Monitoring System (CEMS) for monitoring the emissions of CO, NO_x, and SO_2 from IMF01. The CEMS shall be installed, maintained and

operated according to the manufacturers design, specifications, and recommendations, of which a protocol shall be developed by the permittee and approved by the Director prior to operation. The CEMS shall meet the applicable performance specifications required by 40 Part 60, Appendix B, the applicable quality assurance procedures required in 40 CFR Part 60, Appendix F, and the requirements of 40 CFR 60.13. In lieu of the requirements of 40 CFR Part 60, Appendix F, 5.1.1, 5.1.3, and 5.1.4, the permittee may conduct either a Relative Accuracy Audit (RAA) or a Relative Accuracy Test Audit (RATA) on the CEMS at least once every three (3) years. The permittee shall conduct Cylinder Gas Audits (CGA) each calendar quarter during which a RAA or a RATA is not performed. Data recorded by the CEMS shall be kept for a period not less than three (3) years and shall be made available to the Director or his/her representative upon request.

Resin Tracking/N_2O Calculation

b. To determine compliance with the annual CO_2e limit given under Table 4.1.4(a), the permittee shall monitor and record the information given under 4.2.6(a) and (b). The permittee shall then use this information to calculate N_2O emissions (based on an emission factor of 28.05 lb-N_2O/ton-resin solids [14 kg-N_2O/tonne-resin solids]) from the Melting Furnace, and along with established emission CO_2 factors, to determine the annual CO_2e emissions.

(i) Annual amount (based on a rolling twelve month time period) of purchased resin (as solids) based on invoices. The amount may be corrected for binder not used or that is discarded and not applied in the production process; and

(ii) Solid content in Phenolic Resin (PUF) based on vendor data or operator analysis.

4.2.7. **Fleece Application Station**

To determine continuous compliance with the VOC/HAP emission limits and the low-VOC requirement given under 4.1.6(a) and (b), the permittee shall monitor and record the following:

a. The monthly and twelve-month rolling total of the amount (in tons) of VOCs/HAPs used in the fleece application process. The amount shall be based on actual material properties (VOC/HAP contents and material densities) and the amount of material used during the applicable time period. The permittee shall assume a 100% volatilization of all VOCs/HAPs used in the fleece application process with no control percentage applied unless granted approval in writing by the Director to use an alternative calculation methodology. The material properties shall be based on applicable vendor data, MSDS, or Certified Product Data Sheets; and

b. The average monthly as-applied VOC/HAP content (in lb-VOC/lb-coating and lb-HAP/lb-coating) as based on the procedures under 40 CFR 63, Subpart JJJJ, Section §63.3370(a).

4.2.8. **Rockfon Line Coatings/Glue Usage**

To determine continuous compliance with the VOC emission limit and the low-VOC BACT requirements given under 4.1.7(a) and (b), the permittee shall monitor and record the monthly and twelve-month rolling total of the amount (in tons) of VOCs used in the Rockfon coating and gluing process. The amount shall be based on actual material properties (VOC contents and material densities) and the amount of material used during the applicable time period. The permittee shall assume a 100% volatilization of all VOCs used in the Rockfon coating and gluing process with no control percentage applied unless granted approval in writing by the Director to use an alternative calculation methodology. The material properties shall be based on applicable vendor data, MSDS, or Certified Product Data Sheets.

4.2.9. **Ultra Low Sulfur Fuel**
For the purposes of demonstrating continuing compliance with the maximum sulfur content limit under 4.1.10(a), the permittee shall, at a minimum of once per calendar year, obtain from the fuel oil supplier a certification of the sulfur content of the fuel combusted in the Emergency Fire Pump Engine. An alternative means of determining compliance with 4.2.10. will be subject to prior approval from the Director.

4.2.10. **Cooling Tower**
For the purposes of demonstrating initial and continuing compliance with the operational limits set forth in Table 4.1.11(b)(1), the permittee shall, for both cooling towers, within 180 days of startup, take an initial grab sample of the cooling tower circulating water and analyze such to determine the total solids content of the cooling tower circulating water. Thereafter, the permittee shall test for solids content on an annual basis (with no more than 14 months between tests).

4.2.11. **Product Marking**
To determine continuous compliance with the Product Marking (P_MARK) VOC emission limits and given under 4.1.11(c)(3), the permittee shall monitor and record the monthly and twelve-month rolling total of the amount (in tons) of VOCs used in the Product Marking process. The amount shall be based on actual material properties (VOC contents and material densities) and the amount of material used during the applicable time period. The permittee shall assume a 100% volatilization of all VOCs used in the Product Marking process with no control percentage applied unless granted approval in writing by the Director to use an alternative calculation methodology. The material properties shall be based on applicable vendor data, MSDS, or Certified Product Data Sheets.

4.2.12. **Control Device Monitoring**
The permittee shall install, maintain, and operate instrumentation to continuously monitor and record the control device parameters as required under 4.1.12 of this permit including, at a minimum, the following:

Table 4.2.13: Control Device Parameters Monitored/Recorded

Control Device	Control Device ID	Parameter(s)
Melting Furnace Baghouse	IMF01-BH	Pressure Drop
WESP	WESP	Secondary Voltage Secondary Amperage
Curing Oven Afterburner	CO-AB	Firebox Temperature(1)

(1) Pursuant to 40 CFR 63, Subpart DDD, §63.1182.

4.2.13. **Visible Emissions Compliance Demonstrations**
Visible emissions Monitoring, Compliance Demonstration, Recording and Reporting shall be in accordance with the following requirements:

a. **45CSR2**
Upon request by the Secretary, compliance with the visible emission requirements of 3.1 [of 45CSR2] shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 or by using measurements from continuous opacity monitoring systems approved by the Secretary. The Secretary may require the installation, calibration, maintenance and operation of continuous opacity monitoring systems and may establish policies for the evaluation of continuous opacity monitoring results and the determination of compliance with the visible emission requirements

of 3.1 [of 45CSR2]. Continuous opacity monitors shall not be required on fuel burning units which employ wet scrubbing systems for emission control;
[40CSR§2-3.2]

b. **45CSR6**
Compliance with the afterburner opacity requirements given under 4.1.12(f)(2)(i) and (ii) shall be based on the compliance demonstrations required for emission point HE01 as given under 4.2.14(c) and (e);

c. **45CSR7**
At such reasonable time(s) as the Secretary may designate, compliance with the visible emission requirements of 4.1.2(i), 4.1.3(e), 4.1.4(b), 4.1.5(b), and 4.1.7(f) shall be determined in accordance with the procedures outlined under 45CSR7A;

d. **40 CFR 60, Subpart OOO**
The permittee shall meet all applicable visible emissions Monitoring, Compliance Demonstration, Recording and Reporting requirements as given under 40 CFR 60, Subpart OOO, Sections §60.674 through §60.676;

e. **IMF01, HE01, CE01, and IMF05.**
Emission Points IMF01, HE01, CE01, and IMF05 are subject to the following visible emissions monitoring and compliance demonstration requirements:

(1) In order to determine compliance with the opacity limits of 4.1.3(e), 4.1.4(b), 4.1.5(b), and 4.1.7(f) of this permit, the permittee shall conduct visible emission checks and/or opacity monitoring and recordkeeping for Emission Points IMF01, HE01, CE01, and IMF05 in accordance with the following:

(i) The visible emission check shall determine the presence or absence of visible emissions. At a minimum, the observer must be trained and knowledgeable regarding the effects of background contrast, ambient lighting, observer position relative to lighting, wind, and the presence of uncombined water (condensing water vapor) on the visibility of emissions. This training may be obtained from written materials found in the References 1 and 2 from 40CFR Part 60, Appendix A, Method 22 or from the lecture portion of the 40CFR Part 60, Appendix A, Method 9 certification course;

(ii) Visible emission checks shall be conducted at least once per calendar month with a maximum of forty-five (45) days between consecutive readings. These checks shall be performed for a sufficient time interval, but no less than one (1) minute, to determine if any visible emissions are present. Each observation must be recorded as either visible emissions observed or no visible emissions observed. Visible emission checks shall be performed during periods of normal facility operation and appropriate weather conditions;

(iii) If visible emissions are present at a source(s) the permittee shall perform Method 9 readings to confirm that visible emissions are within the limits of 4.1.10 of this permit. Said Method 9 readings shall be taken as soon as practicable, but within seventy-two (72) hours of the Method 22 emission check; and

(iv) If, one year of monthly Method 22 readings show that there are no visible emissions, then the frequency of observations can be reduced to quarterly. If, during quarterly checks, visible emissions are observed, then the frequency of observations shall be returned to monthly.

f. For the purpose of demonstrating compliance with the visible emissions and opacity requirements, the permittee shall maintain records of the visible emission opacity tests and checks. The permittee shall maintain records of all monitoring data required by 4.2.14 documenting the date and time of each visible emission check, the emission point or equipment/ source identification number, the name or means of identification of the observer, the results of the check(s), whether the visible emissions are normal for the process, and, if applicable, all corrective measures taken or planned. The permittee shall also record the general weather conditions (i.e. sunny, approximately 80°F, 6-10 mph NE wind) during the visual emission check(s). Should a visible emission observation be required to be performed per the requirements specified in Method 9, the data records of each observation shall be maintained per the requirements of Method 9. For an emission unit out of service during the evaluation, the record of observation may note "out of service" (O/S) or equivalent; and

g. Any deviation of the allowable visible emission requirement for any emission source discovered during observation using 40CFR Part 60, Appendix A, Method 9 must be reported in writing to the Director of the DAQ as soon as practicable, but within ten (10) calendar days, of the occurrence and shall include, at a minimum, the following information: the results of the visible determination of opacity of emissions, the cause or suspected cause of the violation(s), and any corrective measures taken or planned.

4.2.14. **Baghouse/Fabric Filter Compliance Demonstrations**
Unless specifically requested under 4.3.1. or listed in Table 4.3.2., compliance with all baghouse and fabric filter mass emission limits that have BACT outlet grain loading limits shall be based on vendor information or vendor guarantees that show the maximum outlet grain loading emissions from the baghouse/fabric filter is in compliance with the specific limit.

4.2.15 **Emission Point Map**
The permittee shall prepare and maintain an emission point map of the facility. This map shall consist of a diagram of the location and identification of all emission points at the facility that vent to ambient air. A legend shall be prepared with the map that identifies the emission point type and source(s) contributing to that emission point. This map shall be prepared within 180 days of startup and thereafter be updated as necessary to reflect current facility operations. The map(s) shall be retained on-site and be made available to the Director or his/her duly authorized representative upon request.

4.3. Performance Testing Requirements

4.3.1. At such reasonable time(s) as the Secretary may designate, in accordance with the provisions of 3.3 of this permit, the permittee shall conduct or have conducted test(s) to determine compliance with the emission limitations established in this permit and/or applicable regulations.

4.3.2. **Emissions Point Performance Testing**
Within 60 days after achieving the maximum permitted production rate of the emission unit in question, but not later than 180 days after initial startup of the unit, the permittee shall conduct, or have conducted, in accordance with a protocol submitted pursuant to 3.3.1(c), performance tests on the emission units (as emitted from the listed emission points) to show compliance with the specified pollutants as given in the following table:

Table 4.3.2.: Performance Testing Requirements

Emission Unit(s)	Emission Point	Pollutants	Limit
Melting Furnace	IMF01	All Pollutants under Table 4.1.4(a) with the exception of Mineral Fiber, Total HAPs, and CO_2e.	PPH(2)
Gutter Exhaust, Curing Oven Hoods, Curing Oven, and Spinning Chamber	HE01	All Pollutants under Table 4.1.5(a) with the exception of SO_2, Mineral Fiber, Total HAPs, and CO_2e.	PPH(2)
Rockfon Line	RFNE8	$PM_{2.5(1)}$, $PM_{10(1)}$, PM(1)	PPH g/dscf (PM only)
De-Dusting Baghouse (CE01-BH)	CE01	$PM_{2.5(1)}$, $PM_{10(1)}$, PM(1)	PPH g/dscf
Recycle Building Vent 1	CM10	$PM_{2.5(1)}$, $PM_{10(1)}$, PM(1)	PPH g/dscf

(1) Filterable Only.

(2) Results from the required performance testing used to show compliance with the MACT standards (in lb/ton-melt) may be converted and used for compliance with the PPH limits. Compliance with the MACT standards does not necessarily mean compliance with the limits under Table 4.1.4(a).

4.3.3 With respect to the performance testing required above under Section 4.3.2, the permittee shall, after the initial performance test, periodically conduct additional performance testing on the specified sources according to the following schedule:

Table 4.3.3.: Performance Testing Schedule

Test	Test Results	Retesting Frequency
Initial Baseline	<50% of weight emission standard	Once/3 years
Initial Baseline	between 50% and 80 % of weight emission standard	Once/2 years
Initial Baseline	>80% of weight emission standard	Annual
Annual	after three successive tests indicate mass emission rates <50% of weight emission standard	Once/3 years
Annual	after two successive tests indicate mass emission rates <80 % of weight emission standard	Once/2 years
Annual	any tests indicates a mass emission rate >80% of weight emission standard	Annual
Once/2 years	After two successive tests indicate mass emission rates <50% of weight emission standard	Once/3 years
Once/2 years	any tests indicates a mass emission rate <80 % of weight emission standard	Once/2 years
Once/2 years	any tests indicates a mass emission rate >80% of weight emission standard	Annual

Test	Test Results	Retesting Frequency
Once/3 years	any tests indicates a mass emission rate <50% of weight emission standard	Once/3 years
Once/3 years	any test indicates mass emission rates between 50% and 80 % of weight emission standard	Once/2 years
Once/3 years	any test indicates a mass emission rate >80% of weight emission standard	Annual

4.3.4. Performance testing for pollutants monitored by CEMS (CO, NO_x, and SO_2 emitted from the Melting Furnace) are not subject to the performance testing schedule given under Table 4.3.4 and any performance testing shall, unless at such other reasonable time(s) as the Secretary may designate, be conducted on a schedule consistent with the required RATA testing.

4.3.5. The permittee shall use the test methods specified in Table 4.3.6. unless granted approval in writing by the Director to use an alternative test method in a protocol submitted pursuant to 3.3.1(c).

Table 4.3.5: Performance Test Methods

Pollutant	Test Method(1)
CO	Method 10
NO_x	Method 7E
$PM_{2.5}$ (filterable only)	Method 201A
PM_{10}/PM (filterable only)	Method 5
$PM_{2.5}/PM_{10}$ (condensable)	Method 202
SO_2	Method 6C
VOCs	Method 18/25A
COS	Method 15
HF/HCl	Method 26A
Formaldehyde Phenol/ Methanol	Method 318
H_2SO_4	Method 8

(1) All test methods refer to those given under 40 CFR 60, Appendix A

4.3.6. **40 CFR 60, Subpart OOO**
The permittee shall meet all applicable Performance Testing requirements as given under 40 CFR 60, Subpart A, Section §60.8 and Subpart OOO, Section §60.675.

4.3.7. **40 CFR 63, Subpart DDD**
The permittee shall meet all applicable Performance Testing requirements as given under 40 CFR 63, Subpart DDD, Sections §63.1188 through §63.1190.

4.4. Additional Recordkeeping Requirements

4.4.1. **Record of Monitoring.** The permittee shall keep records of monitoring information that include the following:

a. The date, place as defined in this permit and time of sampling or measurements;

b. The date(s) analyses were performed;

c. The company or entity that performed the analyses;

d. The analytical techniques or methods used;

e. The results of the analyses; and

f. The operating conditions existing at the time of sampling or measurement.

4.4.2. **Record of Maintenance of Air Pollution Control Equipment.** For all pollution control equipment listed in Section 1.0, the permittee shall maintain accurate records of all required pollution control equipment inspection and/or preventative maintenance procedures.

4.4.3. **Record of Malfunctions of Air Pollution Control Equipment.** For all air pollution control equipment listed in Section 1.0, the permittee shall maintain records of the occurrence and duration of any malfunction or operational shutdown of the air pollution control equipment during which excess emissions occur. For each such case, the following information shall be recorded:

a. The equipment involved.

b. Steps taken to minimize emissions during the event.

c. The duration of the event.

d. The estimated increase in emissions during the event.

For each such case associated with an equipment malfunction, the additional information shall also be recorded:

e. The cause of the malfunction.

f. Steps taken to correct the malfunction.

g. Any changes or modifications to equipment or procedures that would help prevent future recurrences of the malfunction.

4.5. Additional Reporting Requirements

4.5.1. The permittee shall submit the following information to the DAQ according to the specified schedules:

a. The permittee shall submit reports of all required monitoring on or before September 15 for the reporting period January 1 to June 30 and March 15 for the reporting period July 1 to December 31. All instances of deviation from permit requirements must be clearly identified in such reports; and

b. The permittee shall submit to the Director on or before March 15, a certification of compliance with all requirements of this permit for the previous calendar year ending on December 31. If, during the previous annual period, the permittee had been out of compliance with any part of this permit, it shall be noted along with the following information: 1) the source/equipment/process that was non-compliant and the specific requirement of this permit that was not met, 2) the date the permitted discovered that the source/ equipment/process was out of compliance, 3) the date the Director was notified, 4) the corrective measures to get the source/equipment/process back into compliance, and 5) the date the source began to operate in compliance. The submission of any non-compliance report shall give no enforcement action immunity to episodes of non-compliance contained therein.

CERTIFICATION OF DATA ACCURACY

I, the undersigned, hereby certify that, based on information and belief formed after reasonable inquiry, all information contained in the attached ____________________, representing the period beginning ________________ and ending ________________, and any supporting documents appended hereto, is true, accurate, and complete.

Signature[1] ________________________ ____________
(please use blue ink) Responsible Official or Authorized Representative Date

Name and Title ________________________ ____________
(please print or type) Name Title

Telephone No. ________________ Fax No. ________________

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1 This form shall be signed by a "Responsible Official." "Responsible Official" means one of the following:

a. For a corporation: The president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either:

   (I) the facilities employ more than 250 persons or have a gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), or

   (ii) the delegation of authority to such representative is approved in advance by the Director;

b. For a partnership or sole proprietorship: a general partner or the proprietor, respectively;

c. For a municipality, State, Federal, or other public entity: either a principal executive officer or ranking elected official. For the purposes of this part, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of USEPA); or

d. The designated representative delegated with such authority and approved in advance by the Director.

Attachment A: Facility-Wide PTE

ROXUL USA, Inc.: RAN Facility

Permit Number R14-0037: Facility ID 037-00108

Emission Unit	EP ID	CO		NO_x		$PM_{2.5}$ [1]		PM_{10} [1]		PM [1]		SO_x		VOCs		HAPs		CO_2e	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
Melting Furnace	IMF01	11.21	49.10	37.37	163.67	7.47	32.73	8.22	36.01	9.79	42.88	33.63	147.31	11.66	51.08	3.43	15.04	21,814	95,547
WESP[2]	HE01	1.82	7.97	14.55	63.73	19.22	84.20	21.21	92.89	40.43	177.10	0.01	0.05	78.02	341.71	77.07	337.57	8,138	35,644
Gutter Cooling Tower	HE02	0.00	0.00	0.00	0.00	1.16e-03	0.01	2.31e-03	0.01	2.31e-03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Furnace Cooling Tower	IMF02	0.00	0.00	0.00	0.00	4.96e-03	0.02	1.00e-02	0.04	1.00e-02	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Coal Storage Silo A	IMF03A	0.00	0.00	0.00	0.00	6.00e-03	0.03	1.30e-02	0.06	1.30e-02	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Coal Storage Silo B	IMF03B	0.00	0.00	0.00	0.00	6.00e-03	0.03	1.30e-02	0.06	1.30e-02	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Coal Storage Silo C	IMF03C	0.00	0.00	0.00	0.00	6.00e-03	0.03	1.30e-02	0.06	1.30e-02	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Conveyor Transfer Point	IMF04	0.00	0.00	0.00	0.00	1.00e-02	0.04	1.90e-02	0.09	1.90e-02	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Coal Milling Burner	IMF05	0.49	2.15	0.42	1.86	0.26	1.06	0.32	1.33	0.30	1.33	3.51e-03	0.02	0.41	1.65	0.01	0.05	703	3,079
CM De-Dusting Baghouse	IMF06	0.00	0.00	0.00	0.00	0.11	0.48	0.22	0.97	0.22	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Filter Fines Day Silo	IMF07A	0.00	0.00	0.00	0.00	6.89e-03	0.03	0.01	0.06	0.01	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Secondary Energy Silo	IMF07B	0.00	0.00	0.00	0.00	6.89e-03	0.03	0.01	0.06	0.01	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Sorbent Silo	IMF08	0.00	0.00	0.00	0.00	6.61e-03	0.03	0.01	0.06	0.01	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Spent Sorbent Silo	IMF09	0.00	0.00	0.00	0.00	6.61e-03	0.03	0.01	0.06	0.01	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Filter Fines Receiving Silo	IMF10	0.00	0.00	0.00	0.00	6.61e-03	0.03	0.01	0.06	0.01	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Conveyor Transfer Point	IMF11	0.00	0.00	0.00	0.00	1.00e-02	0.04	1.90e-02	0.09	1.90e-02	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Conveyor Transfer Point	IMF12	0.00	0.00	0.00	0.00	1.00e-02	0.04	1.90e-02	0.09	1.90e-02	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Conveyor Transfer Point	IMF13	0.00	0.00	0.00	0.00	1.00e-02	0.04	1.90e-02	0.09	1.90e-02	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Conveyor Transfer Point	IMF14	0.00	0.00	0.00	0.00	1.00e-02	0.04	1.90e-02	0.09	1.90e-02	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Conveyor Transfer Point	IMF15	0.00	0.00	0.00	0.00	1.00e-02	0.04	1.90e-02	0.09	1.90e-02	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Conveyor Transfer Point	IMF16	0.00	0.00	0.00	0.00	1.00e-02	0.04	1.90e-02	0.09	1.90e-02	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Charging Building Vent 1	IMF17	0.00	0.00	0.00	0.00	0.01	0.04	0.02	0.08	0.02	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Charging Building Vent 2	IMF18	0.00	0.00	0.00	0.00	0.01	0.04	0.02	0.08	0.02	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Vacuum Cleaning Filter	IMF21	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0	0

Emission Unit	EP ID	CO		NO$_x$		PM$_{2.5}$[1]		PM$_{10}$[2]		PM[2]		SO$_x$		VOCs		HAPs		CO$_2$e	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
Preheat Burner	IMF24	0.42	1.84	0.36	1.58	0.04	0.17	0.04	0.17	0.04	0.17	0.00	0.01	0.03	0.12	~0.00	~0.00	600	2,627
Coal Feed Tank	IMF25	0.00	0.00	0.00	0.00	6.61e-03	0.03	0.01	0.06	0.01	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Portable Crusher[3]	B170	0.00	0.00	0.00	0.00	0.22	0.06	1.00	0.27	2.19	0.59	0.00	0.00	0.00	0.00	0.00	0.00	0	0
RMS - Loading	B210	0.00	0.00	0.00	0.00	7.41e-02	2.00e-02	4.81e-01	1.30e-01	1.04e+00	2.80e-01	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Raw Material Loading	B215	0.00	0.00	0.00	0.00	9.08e-04	3.98e-03	6.00e-03	2.63e-02	1.27e-02	5.55e-02	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Coal Unloading	B230	0.00	0.00	0.00	0.00	2.03e-04	5.49e-05	1.34e-03	3.63e-04	2.84e-03	7.67e-04	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Coal Unloading Hopper	B231	0.00	0.00	0.00	0.00	2.03e-04	5.49e-05	1.34e-03	3.63e-04	2.84e-03	7.67e-04	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Coal Milling Building	B235	0.00	0.00	0.00	0.00	5.00e-03	2.00e-02	9.00e-03	4.00e-02	9.00e-03	4.00e-02	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Reject Bin	RM_REJ	0.00	0.00	0.00	0.00	8.57e-06	7.51e-05	5.51e-05	4.83e-04	1.16e-04	1.02e-03	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Reject Bin	S_REJ	0.00	0.00	0.00	0.00	8.34e-06	7.31e-05	5.51e-05	4.83e-04	1.16e-04	1.02e-03	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Raw Material Storage[4]	RMS	0.00	0.00	0.00	0.00	1.80e-03	7.87e-03	2.05e-02	9.00e-02	2.51e-02	1.10e-01	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Natural Gas Boiler 1	CM03	0.42	1.84	0.18	0.79	0.04	0.17	0.04	0.17	0.04	0.17	0.00	0.01	0.03	0.12	~0.00	~0.00	600	2,627
Natural Gas Boiler 2	CM04	0.42	1.84	0.18	0.79	0.04	0.17	0.04	0.17	0.04	0.17	0.00	0.01	0.03	0.12	~0.00	~0.00	600	2,627
Recycle Building Vent 1	CM08	0.00	0.00	0.00	0.00	0.03	0.12	0.06	0.24	0.06	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Recycle Building Vent 2	CM09	0.00	0.00	0.00	0.00	0.03	0.12	0.06	0.24	0.06	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Recycle Building Vent 3	CM10	0.00	0.00	0.00	0.00	0.33	1.45	0.66	2.90	0.66	2.90	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Recycle Building Vent 4	CM11	0.00	0.00	0.00	0.00	0.33	1.45	0.66	2.90	0.66	2.90	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Fleece Application Vent 1	CM12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.53	28.58	6.53	28.58	0	0
Fleece Application Vent 2	CM13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0	0
De-dusting Baghouse	CE01	0.00	0.00	0.00	0.00	0.77	3.38	0.77	3.38	1.54	6.76	0.00	0.00	0.00	0.00	0.22	0.97	0	0
Vacuum Baghouse	CE02	0.00	0.00	0.00	0.00	0.22	0.97	0.22	0.97	0.44	1.93	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Dry Ice Cleaning	DI	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	364	1,594
P_MARK Combustion	P_MARK	0.03	0.14	0.04	0.17	2.96e-03	0.01	2.96e-03	0.01	2.96e-03	0.01	2.34e-03	1.06e-04	2.14e-03	9.39e-03	~0.00	~0.00	47	205
P_MARK Inks/Coatings		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.16	9.49	0.00	0.00	0	0
IR Zone	RFNE1	0.00	0.00	0.00	0.00	0.01	0.06	0.02	0.08	0.02	0.08	0.00	0.00	0.02	0.06	0.02	0.10	0	0

Emission Unit	EP ID	CO		NO_x		$PM_{2.5}$ [1]		PM_{10} [1]		PM [1]		SO_x		VOCs		HAPs		CO_2e	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
Hot Press	RFNE2	0.00	0.00	0.00	0.00	0.01	0.06	0.02	0.08	0.02	0.08	0.00	0.00	0.02	0.06	0.02	0.10	0	0
High Oven A	RFNE3	0.22	0.98	0.27	1.17	0.09	0.38	0.12	0.51	0.12	0.51	0.01	0.01	0.01	0.06	0.10	0.43	320	1,400
Drying Oven 1	RFNE4	0.17	0.73	0.20	0.87	0.06	0.27	0.08	0.36	0.08	0.36	0.01	0.01	0.01	0.05	0.08	0.34	240	1,050
Spraying Cabin	RFNE5	0.00	0.00	0.00	0.00	0.66	2.90	0.88	3.86	0.88	3.86	0.00	0.00	0.08	0.34	0.52	2.27	0	0
Drying Oven 2 & 3	RFNE6	0.39	1.71	0.47	2.04	0.09	0.41	0.13	0.55	0.13	0.55	0.01	0.01	0.03	0.01	0.15	0.66	559	2,450
Cooling Zone	RFNE7	0.00	0.00	0.00	0.00	0.14	0.63	0.19	0.84	0.19	0.84	0.00	0.00	0.12	0.48	0.21	0.91	0	0
De-Dusting Baghouse	RFNE8	0.00	0.00	0.00	0.00	0.17	0.75	0.34	1.49	0.34	1.49	0.00	0.00	0.00	0.00	0.34	1.49	0	0
Rockfon Glue & Coatings	Various	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.20	35.93	0.00	0.00	0	0
High Oven B	RFNE9	0.22	0.98	0.27	1.17	0.09	0.38	0.12	0.51	0.12	0.51	0.01	0.01	0.01	0.06	0.10	0.43	320	1,400
Building Heater	RFN10	0.42	1.84	0.18	0.79	0.04	0.17	0.04	0.17	0.04	0.17	0.00	0.01	0.03	0.12	~0.00	~0.00	600	2,627
Storage Tanks	Various	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.19	0.03	0.12	0	0
Emergency Fire Pump	EFP1	1.13	0.28	1.30	0.32	0.08	0.02	0.08	0.02	0.08	0.02	2.14e-03	5.36e-04	0.19	0.05	~0.00	~0.00	1,120	56
Paved Haul Roads	n/a	0.00	0.00	0.00	0.00		0.10		0.43		2.18	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Facility-Wide Total [6] →		*17.36*	*71.40*	*55.79*	*238.95*	*30.79*	*133.39*	*36.35*	*153.21*	*59.87*	*250.90*	*33.70*	*147.46*	*107.64*	*470.27*	*88.82*	*389.06*	*36,023*	*152,933*

(1) Includes condensables.
(2) WESP is the control device for the following sources venting to it: Gutter Exhaust, Spinning Chamber, Curing Oven Hoods, Curing Oven, Cooling Section, and the Afterburner.
(3) Includes emissions from drop from crusher to pit stockpile and erosion from stockpile.
(4) Includes both emission from delivery to stockpile as well as stockpile erosion.
(5) Does not include emissions from glue and coating application.
(6) The small differences in facility-wide totals from the tables in the Permit Application are primarily due to rounding differences.

Kessler, Joseph R

From: Grant Morgan <Grant.Morgan@erm.com>
Sent: Wednesday, March 7, 2018 12:09 PM
To: Kessler, Joseph R
Subject: RE: Revised Pre-Draft ROXUL R14-0037

Joe,

Please find this comment as it relates to N2O generation.

In the curing process N_2O is formed from the combustion of Phenolic resin (PUF) resin in binder due to nitrogen components.

ROCKWOOL International has established a correlation between the N_2O emission and binder usage based on emission measurements and actual binder applied.

N_2O emission is calculated as binder consumption multiplied with factor for kg (metric) N_2O per ton of resin solids = 14 kg N2O/ton (metric) resin solids.

We propose to collect below listed data for compliance on a rolling 12-month basis:

- Amount of purchased resin as solids based on invoices. The amount could be corrected for not used binder that is discarded and not applied in the production process.
- Solid content in PUF resin based on vendor data or operator analysis.

Thank you,

Grant Morgan, P.E.
ERM | 204 Chase Drive | Hurricane, WV | 25526
voice: 304.757.4777 ext. 109 | mobile: 304.590.6160
mail: grant.morgan@erm.com | www.erm.com

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I.D. No. 037-00108 Reg. R14-0037
Company Roxul
Facility RAN Region
Initials JM

From: Grant Morgan
Sent: Wednesday, March 07, 2018 9:45 AM
To: 'Kessler, Joseph R' <Joseph.R.Kessler@wv.gov>
Subject: RE: Revised Pre-Draft ROXUL R14-0037

Joe,

Please find this comment as it relates to the binder storage tanks.

Roxul has evaluated the binder material as it was used to file for the PSD permit application. NSPS JJJJ regulates coating materials to a limit of 0.016 kg OHAP/kg coating materials and the binder material is subject to the requirements of NSPS JJJJ. As discussed, Roxul will utilize a number of binder variations, all of which will comply with the NSPS. We have evaluated a binder mixture with a vapor pressure of 0.77 psia @ 60 F to be both protective of the emissions from the binder storage tank operations and provide the ability to utilize different binder mixtures without restricting operations on these small VOC sources.

Thank you,

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voice: 304.757.4777 ext. 109 | mobile: 304.590.6160
mail: grant.morgan@erm.com | www.erm.com

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From: Grant Morgan
Sent: Monday, March 05, 2018 9:26 AM
To: 'Kessler, Joseph R' <Joseph.R.Kessler@wv.gov>
Subject: Revised Pre-Draft ROXUL R14-0037

Joe,

Thank you for providing the pre-draft for review and commenting. Upon Roxul's review of the pre-draft permit, we have generated a list of comments for your review below. Please reach out if there are questions/comments on the below.

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4. Table 4.1.11(b)(1) states the mist eliminator max drift rate (%) to be "0.0010". Suggested update to "0.001".
5. Condition 4.1.11(a) states "the maximum design capacity of the dry ice production unit (DI) shall not exceed 4.37 tons/day ....." Given the loss associated with the production of dry ice, Roxul suggests updated language to states the "maximum input design capacity" to note that output production will not equate to the unit rating.
6. Condition 4.2.3 states Roxul must monitor the non-emergency hours of operation. Per IIII, the operator must monitor all hours of operation, but is restricted to 100 hours of non-emergency operation. This could impact the footnote to Table 4.1.10(b) as well.
7. Citation 4.1.5(d)(1) cites the cupola standards of the MACT. Requested update to reflect the collection/curing section of the MACT.
8. Condition 4.1.12(g), requested added clarification that this applies to non-MACT sources, or "where other standards do not apply".
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11. Table 4.3.2 – The MACT compliance testing is conducted on a lb/ton melt basis. Roxul requests the MACT testing units be reflected for the MACT testing constituents.
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a. General

i. PM10/PM – Method 5 or Method 201A (as you know M5 wont measure PM10; we have proposed in test protocols for Roxul to combine the filterable fraction from M201A to get total filterable PM.)

ii. SO2 – we actually used 6C (analyzer method). I would think its acceptable alternative/equivalent to M6.

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i. Form/Phenol/Methanol not listed (M318). Note for MAR M318 (use of FTIR) wasn't feasible for measuring phenol from spinning. We petitioned EPA for an alternative which was granted (an NCASI method w/some site-specific conditions). The same alt. method was used for Spinning and Curing and for phenol/form/methanol.

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Total IR Zone/Press VOC (glue VOC + minor process HAP)	7.48	Short ton per yea
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Total Paint-related VOC from Ovens/Spray Cabin/Cooling	**28.78**	Tpy (28.78-1.62-
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Also, as discussed on our call last week, Roxul is working to provide data on the N2O binder relationship and the Tanks vapor pressure data. We are pushing that hard currently and hope to provide an update on that shortly.

Thank you,

Grant Morgan, P.E.
ERM I 204 Chase Drive I Hurricane, WV I 25526
voice: 304.757.4777 ext. 109 I mobile: 304.590.6160
mail: grant.morgan@erm.com I www.erm.com

The business of sustainability

From: Kessler, Joseph R [mailto:Joseph.R.Kessler@wv.gov]
Sent: Friday, March 02, 2018 3:56 PM
To: Grant Morgan <Grant.Morgan@erm.com>
Subject: Revised Pre-Draft ROXUL R14-0037

Grant, attached is a revised "pre-draft" version of R14-0037. Please provide to interested parties at ROXUL.

It is important to note that this pre-draft version of the permit has not yet been approved by my supervisor and therefore all language is subject to change. Further, the review of permit application is ongoing and the access provided to this pre-draft permit does not indicate that a preliminary determination has made regarding the application. ROXUL may be required to subsequently submit, in a timely manner, any additional or corrected information deemed necessary for a final permit determination.

Thanks,

Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x1219
Fax: (304) 926-0478
Joseph.r.kessler@wv.gov

Kessler, Joseph R

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Sent: Wednesday, March 7, 2018 9:45 AM
To: Kessler, Joseph R
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I.D. No. 037-00108 Reg. R14-0037
Company Roxul
Facility RAN Region
Initials JM

Entire Document
NON-CONFIDENTIAL

From: Grant Morgan
Sent: Monday, March 05, 2018 9:26 AM
To: 'Kessler, Joseph R' <Joseph.R.Kessler@wv.gov>
Subject: Revised Pre-Draft ROXUL R14-0037

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The business of sustainability

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Thanks,

Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x1219
Fax: (304) 926-0478
Joseph.r.kessler@wv.gov

Kessler, Joseph R

From: Mette Drejstel <Mette.Drejstel@rockwool.com>
Sent: Monday, March 5, 2018 2:11 PM
To: Kessler, Joseph R
Cc: Grant Morgan (Grant.Morgan@erm.com); Mette Drejstel
Subject: CBI Amendment
Attachments: ROXUL CBI Amendment 03 05 18.pdf

Dear Joe,

Please find letter amending CBI information for the permit application for Rockwool project Shuttle.

Best regards,

Mette Meldahl Drejstel
Group Environmental Manager
Group Operations & Technology, SHEQ Dept

ROCKWOOL Group
ROCKWOOL International A/S
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I.D. No. 037-00108 Reg. R14-0037
Company Roxul
Facility RAN Region
Initials

ROCKWOOL

March 5, 2018

Mr. William F. Durham, Director
West Virginia Division of Air Quality
601- 57th Street
Charleston, West Virginia 25304-2943

Company Name:	Roxul USA, Inc.	**Authorized Representative:**	Ken Cammarato
Company Address:	71 Edmond Road 6 Kearneysville, WV 25430-2781	**Title:**	Vice President and General Legal Counsel
Person/Title: Submitting Confidential Information:	Mette Drejstel Roxul Group Environmental Manager	**Confidential Name: Information Title:**	Grant Morgan Client Project Manager
		Address:	204 Chase Drive Hurricane, WV 25526
		WV Designee Phone:	304-757-4777
		State of WV Fax:	304-757-4799

Document Name: **Roxul PSD New Source Review Permit Application**

Reason for Submittal: **Amendment to Confidential Business Information**

Dear Director Durham:

This letter is being submitted in connection with ROXUL USA Inc.'s (d/b/a ROCKWOOL) submission on January 31, 2018 (the "January 31 Designation") regarding its designation of certain information submitted in connection with the above referenced PSD New Source Review Permit Application (the "Application") as confidential business information ("CBI").

Specifically, based on further evaluation, ROCKWOOL has decided to amend its January 31 Designation and no longer designate the following information as CBI:

1. The total process weight rate related to material handling for raw materials, total lump coal/pet coke and total portable melt crushing; and
2. Amount of binder used.

Please let me know if you have any questions regarding this amendment to the January 31 Designation for CBI.

ROXUL USA Inc. d/b/a ROCKWOOL 4594 Cayce Road, Byhalia, Mississippi 38611
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Very truly yours,

Kenneth J. Cammarato
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I.D. No. 037-00108 Reg. R14-0037
Company Roxul
Facility RAN Region
Initials JRK

Kessler, Joseph R

From: Grant Morgan <Grant.Morgan@erm.com>
Sent: Monday, March 5, 2018 9:26 AM
To: Kessler, Joseph R
Subject: Revised Pre-Draft ROXUL R14-0037

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Joe,

Thank you for providing the pre-draft for review and commenting. Upon Roxul's review of the pre-draft permit, we have generated a list of comments for your review below. Please reach out if there are questions/comments on the below.

1. Table 4.1.2(d) describes B230 as a 3-sided enclosure w/ cover. Can an update be made to be consistent with permit condition 4.1.2(g)(3) to note the closeable bay door or equivalent design.
2. Section 4.1.2(e) includes a footnote that states "Hourly emission limits are based on a 24-hour average and are the BACT limits". The permit application takes an operational restriction on the portable crusher to operate 12 hours per day. To keep this footnote, an update to the PPH number to multiple by 0.5 is required.
3. Condition 4.1.8(a) states "The units shall only combust PNG and each not exceed an aggregate MDHI (of all burners) of 5.1 mmBtu/hr (1,500 kW)". It is somewhat unclear if all units aggregated must be less than 5.1 or that the aggregate of the burners with each source shall be less than 5.1. Suggested update to language to include "for each permitted emission unit" at the end of this statement.
4. Table 4.1.11(b)(1) states the mist eliminator max drift rate (%) to be "0.0010". Suggested update to "0.001".
5. Condition 4.1.11(a) states "the maximum design capacity of the dry ice production unit (DI) shall not exceed 4.37 tons/day ….." Given the loss associated with the production of dry ice, Roxul suggests updated language to states the "maximum input design capacity" to note that output production will not equate to the unit rating.
6. Condition 4.2.3 states Roxul must monitor the non-emergency hours of operation. Per IIII, the operator must monitor all hours of operation, but is restricted to 100 hours of non-emergency operation. This could impact the footnote to Table 4.1.10(b) as well.
7. Citation 4.1.5(d)(1) cites the cupola standards of the MACT. Requested update to reflect the collection/curing section of the MACT.
8. Condition 4.1.12(g), requested added clarification that this applies to non-MACT sources, or "where other standards do not apply".
9. Condition 4.2.7(2), requested update to the citation from 63.3370(a)(2) to 63.3370(a) to allow for alternative methods of compliance under the MACT.
10. Condition 4.3.2 states "within 60 days of achieving the maximum mineral wool production rate". Since Rockfon startup is not directly tied to mineral wool line startup, suggest just maximum production rate.
11. Table 4.3.2 – The MACT compliance testing is conducted on a lb/ton melt basis. Roxul requests the MACT testing units be reflected for the MACT testing constituents.
12. Stack Testing methods
    a. General
        i. PM10/PM – Method 5 or Method 201A (as you know M5 wont measure PM10; we have proposed in test protocols for Roxul to combine the filterable fraction from M201A to get total filterable PM.)
        ii. SO2 – we actually used 6C (analyzer method). I would think its acceptable alternative/equivalent to M6.
    b. MACT related
        i. Form/Phenol/Methanol not listed (M318). Note for MAR M318 (use of FTIR) wasn't feasible for measuring phenol from spinning. We petitioned EPA for an alternative which was granted (an NCASI method w/some site-specific conditions). The same alt. method was used for Spinning and Curing and for phenol/form/methanol.

ii. COS (M318)
iii. HF/HCL (M26A)
iv. For WESP stack, at MAR we observed "saturated gas stream conditions which exhibited visible water droplets" and used EPA Method 5. This is discussed in M201A, Section 1.5 (Limitations). We didn't propose a split for PM10/PM2.5, but ended up reporting everything measured for PM was in the 2.5 size fraction (we had engineering data to support).

13. Calculation related to Rockfon paint and glue

Total IR Zone/Press VOC (glue VOC + minor process HAP)	7.48	Short ton per ye
IR Zone/Press Minor Process HAP	0.12	tpy
Total Glue-related VOC from IR/Press	**7.36**	Tpy (7.48-0.12)
Total Ovens/Spray Cabin/Cooling VOC (paint VOC + minor process HAP + oven combustion VOC)	30.69	tpy
Ovens/Spray Cabin/Cooling - Minor Process HAP	1.62	Tpy
Oven Combustion VOC	0.29	Tpy
Total Paint-related VOC from Ovens/Spray Cabin/Cooling	**28.78**	Tpy (28.78-1.62
Annual Total Glue/Paint-related VOC	**36.14**	Tpy (7.36+28.7
Monthly Total Glue/Paint-related VOC	**9.04**	ton/mth (36.14 /

Also, as discussed on our call last week, Roxul is working to provide data on the N2O binder relationship and the Tanks vapor pressure data. We are pushing that hard currently and hope to provide an update on that shortly.

Thank you,

Grant Morgan, P.E.
ERM I 204 Chase Drive I Hurricane, WV I 25526
voice: 304.757.4777 ext. 109 I mobile: 304.590.6160
mail: grant.morgan@erm.com I www.erm.com

The business of sustainability

From: Kessler, Joseph R [mailto:Joseph.R.Kessler@wv.gov]
Sent: Friday, March 02, 2018 3:56 PM
To: Grant Morgan <Grant.Morgan@erm.com>
Subject: Revised Pre-Draft ROXUL R14-0037

Grant, attached is a revised "pre-draft" version of R14-0037. Please provide to interested parties at ROXUL.

It is important to note that this pre-draft version of the permit has not yet been approved by my supervisor and therefore all language is subject to change. Further, the review of permit application is ongoing and the access provided to this pre-draft permit does not indicate that a preliminary determination has made regarding the application. ROXUL may be required to subsequently submit, in a timely manner, any additional or corrected information deemed necessary for a final permit determination.

Thanks,

Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x1219

Fax: (304) 926-0478
Joseph.r.kessler@wv.gov

Kessler, Joseph R

From:	McClung, Jon D
Sent:	Friday, March 2, 2018 10:04 AM
To:	Kessler, Joseph R
Cc:	Crowder, Laura M; McKeone, Beverly D; Andrews, Edward S; Pursley, Steven R; Yuchniuk, Lee
Subject:	Roxul USA, Inc. R14-0037 Air Quality Impact Analysis Review
Attachments:	FINAL_ROXUL_Modeling_Memo_Compiled_2018-03-01.pdf

Joe,

Attached is the Air Quality Impact Analysis Review Memo for Roxul USA, Inc. for PSD Application R14-0037.

Regards,
Jon.

I.D. No. 037-00108 Reg. R14-0037
Company Roxul
Facility RAN Region
Initials JM

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MEMO

To: Joe Kessler
From: Jon McClung JDM
CC: Laura Crowder, Bev McKeone, Ed Andrews, Steve Pursley, Lee Yuchniuk
Date: March 2, 2018
Re: Air Quality Impact Analysis Review - Roxul USA, Inc.
PSD Application R14-0037 - Facility ID# 037-00108

I have completed my review and replication of the air quality impact analysis submitted by Roxul USA Inc. (Roxul) in support of the PSD permit application (R14-0037) for the proposed construction of a new mineral wool production facility to be located in Ranson, West Virginia, within Jefferson County. Review and replication of components of the modeling analysis were also performed by Ed Andrews, Joe Kessler, Steve Pursley, and Lee Yuchniuk. The protocol for the modeling analysis was submitted by Roxul on September 8, 2017, revised on November 2, 2017, and approved by West Virginia Division of Air Quality (DAQ) on November 3, 2017. The PSD permit application was received in November 2017 (dated November 20, 2017). A modeling report was submitted on December 21, 2017. This dispersion modeling analysis is required pursuant to §45-14-9 (Requirements Relating to the Source's Impact on Air Quality).

As part of the review process, an applicant for a PSD permit performs the air quality impact analysis and submits the results to the DAQ. The DAQ then reviews and replicates the modeling runs to confirm the modeling inputs, procedures, and results. This memo contains a synopsis of the modeling analysis. For a complete technical description of the modeling analysis, please consult the protocol and modeling analysis report submitted by the applicant.

This review is for the Class II area surrounding the proposed project site. Class I areas within 300 km of the project site are: Dolly Sods Wilderness (WV), Otter Creek Wilderness (WV), James River Face Wilderness (Virginia), and Shenandoah National Park (Virginia). The Federal Land Managers (FLMs) responsible for evaluating potential affects on Air Quality Related Values (AQRVs) for federally protected Class I areas were consulted. Based on the emissions from the proposed project and the distances to the Class I areas the National Park Service and U.S. Forest Service have stated a Class I analysis relating to Shenandoah National Park for this project is not required. Attachment A contains the communications by the Federal Land Managers.

Roxul proposes to construct a mineral wool insulation manufacturing facility (Project) to produce building insulation, customized solutions for industrial applications, acoustic ceilings, and other applications. The emission sources associated with the Project are:

- One Mineral Wool Line including:
    - Raw Material Handling Sources (e.g. material unloading, storage silos, conveyor transfer points, portable crusher)

- One Melting Furnace, Spinning Chamber, Curing Oven, and Cooling Zone,
- Dust control baghouses, and
- Storage tanks

- Coal Milling operations;

- One Rockfon Line including paint application, drying ovens, and dust control baghouse.

Attachment B contains flow diagrams with emission points for the Mineral Wool Line, Rockfon line, and coal milling.

Jefferson County, WV is in attainment or unclassifiable/attainment status for all criteria pollutants. Pollutants emitted in excess of the significant emission rate are subject to PSD review in unclassifiable/attainment areas. The criteria pollutants that exceed the SER associated with the proposed project are in Table 1 (highlighted in bold).

Table 1. Project Emission Rates

Pollutant	Project Emissions (tons/yr)	PSD Significant Emission Rate (tons/yr)
NO_x	**238.96**	40
CO	71.40	100
VOC	**471.41**	40
SO_2	**147.45**	40
PM_{10}	**153.19**	15
$PM_{2.5}$	133.41	Primary $PM_{2.5}$: 10 NO_x: 40 SO_2: 40
O_3	**NO_x: 238.96** **VOC: 471.41**	NO_x: 40 VOC: 40

Dispersion modeling was conducted for NO_x, SO_2, PM_{10}, and $PM_{2.5}$. Secondary formation of $PM_{2.5}$ as a result of NO_x and SO_2 emissions was addressed by Roxul and is discussed below. Also, formation of ozone from NO_x and VOC emissions was addressed by the applicant and is discussed below. Attachment C contains modeled Project source parameters and emission rates.

Table 2 presents a summary of the air quality standards that were addressed for SO_2, NO_2, PM_{10}, and $PM_{2.5}$. The pollutants, averaging times, increments, significant impact levels (SILs) and

National Ambient Air Quality Standards (NAAQS) are listed. The SILs for 1-hour SO_2 and 1-hour NO_2 represent the values the Division of Air Quality has implemented as described in the memorandum included in Attachment D.

Table 2. Ambient Air Quality Standards, SILs, and PSD Increments (All concentrations in µg/m3)

Pollutant	Averaging Period	SIL	PSD Increments	NAAQS
SO_2	1-Hour	7.8	-	196
	3-Hour	25	512	1300
	24-Hour	5	91	365
	Annual	1	20	80
NO_2	1-Hour	7.5	-	188
	Annual	1	25	100
PM_{10}	24-Hour	5	30	150
	Annual	1	17	-
$PM_{2.5}$	24-Hour	1.2	9	35
	Annual	0.2	4	12

An air quality impact analysis, as a part of the PSD review process, is a two tiered process. First, a proposed facility is modeled by itself, on a pollutant-by-pollutant and averaging-time basis, to determine if ambient air concentrations predicted by the model exceed the significant impact level (SIL). If ambient impacts are below the SIL then the proposed source is deemed to not have a significant impact and no further modeling is needed. If ambient impacts exceed the SIL then the modeling analysis proceeds to the second tier of cumulative modeling. The cumulative modeling analysis consists of modeling the proposed facility with existing off-site sources and adding representative background concentrations and comparing the results to PSD increments (increment consuming and expanding sources only, no background concentration) and NAAQS. In order to receive a PSD permit, the proposed source must not cause or contribute to an exceedance of the NAAQS or PSD increments. In cases where the PSD increments or NAAQS are predicted to be exceeded in the cumulative analysis, the proposed source would not be considered to cause or contribute to the exceedance if the project-only impacts are less than the SIL.

On January 22, 2013, the U.S. Court of Appeals for the District of Columbia Circuit vacated two provisions in EPA's PSD regulations containing SILs for $PM_{2.5}$. The court granted the EPA's request to remand and vacate the SIL provisions in Sections 51.166(k)(2) and 52.21(k)(2) of the regulations so that EPA could address corrections. EPA's position remains that the court decision does not preclude the use of SILs for $PM_{2.5}$ but special care should be taken in applying the SILs for $PM_{2.5}$. This special care involves ensuring that the difference between the NAAQS and the representative measured background concentration is greater than the SIL. If this difference is greater than the SIL, then it is appropriate to use the SIL as a screening tool to inform the decision as to whether to require a cumulative air quality impact analysis. As shown in Table 3, for both the 24-hr and annual averaging time for $PM_{2.5}$, this difference is greater than the SIL and it is appropriate to use the SIL as a screening tool. Included in Attachment E are the WV $PM_{2.5}$ Design Values, Final and Certified.

Table 3. $PM_{2.5}$ NAAQS, Monitor Design Values, and Significant Impact Levels (All concentrations in μg/m³)

$PM_{2.5}$ Averaging Period	NAAQS	Martinsburg Monitor Design Value (54-003-0003)	Difference between NAAQS and Monitored Design Value	Significant Impact Level (SIL)
		2014-2016		
24-hr	35	27	8	1.2
Annual	12	9.9	2.1	0.2

Modeling Basis

The modeling system used conforms to 40 CFR 51 Appendix W, applicable guidance, and the approved protocol and is summarized below:

- Roxul used the latest version of the regulatory dispersion model and supporting programs: AERMOD (version 16216r), AERMET (version 16216), AERMINUTE (version 15272), AERMAP (version 11103), AERSURFACE (version 13016), and BPIPPRM (version 04274). The AERMOD modeling system (AERMOD, AERMET, AERMAP) is the regulatory default modeling system for near-field (<50km) regulatory dispersion modeling.
- AERMET was used to process five years of surface meteorological data from the EMV Regional Airport (ICAO code: KMRB; WBAN Station ID 13734). Upper air data from Dulles Airport, MD (WBAN Station ID 93743) were used.
- AERSURFACE was used to develop appropriate surface characteristic (albedo, Bowen ratio, surface roughness) inputs to AERMET.
- A nested receptor grid was developed and AERMAP was used to determine terrain heights and hill height scales for use by AERMOD and to determine maximum modeled concentrations.
- Background NO_2 monitoring data for the cumulative analysis for the 1-hr and

annual NO_2 standards are from a monitor in Washington County, PA (ID #42-125-0005).

- Background 24-hour and annual $PM_{2.5}$ monitoring data were obtained from the Clarksburg, WV monitor (54-033-0003).
- Background concentrations for the 24-hour PM_{10} standard are from a monitor in Washington County, PA (ID #42-125-0005).
- The Plume Volume Molar Ratio Method (PVMRM) option in AERMOD was used to characterize NO_2 from modeled concentrations of NO_x.
- The surface friction velocity adjustment (ADJ_U*) option was utilized in AERMET.

Ozone Analysis and Secondary Formation of $PM_{2.5}$

In December 2016, EPA released a draft guidance memorandum[1] (MERP Memorandum) that describes how modeled emission rates of precursors (MERPs) could be calculated as part of a Tier 1 ozone and secondary $PM_{2.5}$ formation analysis to assess a project's emissions of precursor pollutants. The MERPs may be used to describe an emission rate of a precursor that is expected to result in ambient ozone (O_3) or fine particulate matter ($PM_{2.5}$) that would be less than a specific air quality concentration threshold for O_3 or $PM_{2.5}$ that a permitting authority chooses to use to determine whether an impact causes or contributes to a violation of the NAAQS for O_3 or $PM_{2.5}$. Based on this guidance, Roxul has calculated a MERP for ozone and quantified the potential secondary formation of $PM_{2.5}$.

The MERP Memorandum defines a MERP as:

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

For ozone, EPA has proposed a Significant Impact Level (SIL) of 1 ppb and this value can be used to represent the critical air quality threshold. Using EPA Source 8 located in Southern Pennsylvania, approximately 75 km northeast of the project, from the MERP Memo results in a NO_X MERP of 301 tpy and a VOC MERP of 3125 tpy. Roxul's potential emissions from the Project are 238.96 tpy NO_X and 471.41 tpy VOC, both below the respective MERP for each precursor. The precursors can be cumulatively evaluated showing the Project cumulative MERP consumption. A cumulative MERP consumption less than 100% indicates that a project would not cause an ozone concentration exceeding the SIL.

The cumulative consumption for the Roxul Project can be calculated as:

(Roxul NO_X emissions (238.96 tpy)/ NO_X MERP (301 tpy) + (Roxul VOC emissions

[1]Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program (12/02/16)

(471.4 tpy) / VOC MERP (3125 tpy)) * 100 = 94%.

Where project sources emit both primary $PM_{2.5}$ and precursors of secondary $PM_{2.5}$, EPA guidance indicates that applicants need to combine primary and secondary impacts to determine total $PM_{2.5}$ impacts as part of the PSD compliance demonstration. The Roxul Project proposed sources will emit both primary $PM_{2.5}$ and precursors of secondary $PM_{2.5}$. The primary $PM_{2.5}$ impacts have been evaluated by Roxul through dispersion modeling using AERMOD. The secondary formation of $PM_{2.5}$ from the precursor emissions of NO_X and SO_2 have been evaluated by Roxul using the relationships between emissions and impacts provided by EPA using photochemical modeling in the MERP Memorandum. The total secondary $PM_{2.5}$ (24-hr) impact from the project is 0.064 $\mu g/m^3$. The total secondary $PM_{2.5}$ (annual) impact from the project is 0.0034 $\mu g/m^3$. These concentrations represent a very small fraction of the SIL values - approximately 5.4% of the 24-hour SIL and 1.7% of the annual SIL. Based on this analysis, Roxul's impacts from secondarily formed $PM_{2.5}$ are considered insignificant and further analyis is not required.

Modeling Operating Scenarios

Roxul uses mineral wool production technology processes that have 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 - higher loads generate higher emission rates. The flow rate of gases through the furnace is maintained at constant airflow and temperature regardless of the load. Roxul modeled maximum emissions at maximum load with constant, consistent, stack parameters to determine maximum ambient concentrations. Transient operations for the Roxul production processes, such as startup and shutdown, occur infrequently and for short periods of time and are not separately modeled.

The Emergency Fire Water Pump assumes 100 hours of operation per year for testing and readiness purposes and is an intermittent emissions scenario source. EPA guidance provides for the exclusion of intermittent emissions scenario sources from 1-hr NO_2 modeling since the brief periods of emissions from these units would be unlikely to significantly contribute to NAAQS exceedances considering the probabilistic form of the 1-hr NO_2 standard.

For the 24-hr $PM_{10}/PM_{2.5}$ analyses, the Emergency Fire Water Pump was modeled assuming maximum potential emission rates for (½) one-half hour per day.

SIL Analysis Results (Tier I)

The results of the Significant Impact Analysis for the Roxul Project sources are included in Table 4. All pollutant modeled concentrations except for 3-hr, 24-hr, Annual SO_2 exceed their respective SIL and a cumulative analysis is required for these pollutants. No further modeling analysis is necessary for 3-hr, 24-hr, or Annual SO_2.

Table 4. SIL Analysis Results

Pollutant	Avg. Period	Maximum Modeled Conc. ($\mu g/m^3$)	Significant Impact Level (SIL) ($\mu g/m^3$)
NO_2	1-hour	31.63	7.5
	Annual	1.5	1
$PM_{2.5}$ (NAAQS)	24-hour	8.44	1.2
	Annual	1.58	0.2
$PM_{2.5}$ (PSDI)*	24-hour	9.75	1.2
	Annual	1.77	0.2
PM_{10}	24-hour	23.82	5
	Annual	4.04	1
SO_2	1-hour	26.79	7.8
	3-hour	17.52	25
	24-hour	4.57	5
	Annual	0.53	1

*PSDI: PSD Increment

Cumulative Analysis Results (Tier II)

The cumulative analysis includes the modeled impacts from the Roxul Project sources, off-site existing sources, and representative background concentrations. For off-site existing sources, the impacts represent maximum hourly potential emissions, as determined from applicable permits. The background concentration data is as summarized above with detailed information in the applicant's modeling report.

The cumulative analysis evaluated impacts at all receptors above the SIL in the SIL analysis. The SIL analysis is based on the highest-first-high concentration. The cumulative analysis is based on the form of the 1-hr NO_2 standard, which is the 98th percentile of the yearly distribution of 1-hour daily maximum concentrations, which is equivalent to the 8th highest rank of daily maximum concentrations. Table 5 shows the maximum total concentrations for all the receptors modeled in the cumulative analysis. For all modeled exceedances of the 1-hour SO_2 NAAQS, Roxul does not cause or contribute to the modeled exceedances.

Table 5. NAAQS Analysis Results - Maximum Total Concentrations

Pollutant	Averaging Period	Modeled Concentration ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
NO_2	1-hour	93.95	33.20	127	188
	Annual	2.5	9.40	12	100
$PM_{2.5}$	24-hour	8.53	14.3	23	35
	Annual	1.79	5.7	7	12
PM_{10}	24-hour	31.77	24	56	150
SO_2	1-hour	204.66	39.5	244	196

Table 6 shows the maximum total Class II Increment concentrations, which include maximum modeled concentrations from increment consuming sources and. An increment analysis was not performed for 1-hr NO_2 since an increment level has not been established.

Table 6. Class II Increment Analysis Results

Pollutant	Averaging Period	Modeled Concentration ($\mu g/m^3$)	PSD Increment ($\mu g/m^3$)
NO_2	Annual	1.5	25
$PM_{2.5}$	24-hour	8.7	9
	Annual	1.83	4
PM_{10}	24-hour	21.5	30
	Annual	4.1	17

<u>Summary</u>

The air quality impact analysis prepared and submitted by Roxul to the DAQ has been reviewed and replicated and conforms to 40 CFR 51 Appendix W, applicable guidance, and the modeling protocol. The cumulative modeling analysis demonstrates that no modeled exceedances of the Class II Increments are predicted. Roxul does not cause or contribute to the modeled exceedances of the 1-hour SO_2 NAAQS.

ATTACHMENT A

Federal Land Manager AQRV Determinations

McClung, Jon D

From: Stacy, Andrea <andrea_stacy@nps.gov>
Sent: Thursday, January 18, 2018 12:33 PM
To: Kessler, Joseph R
Cc: Jalyn Cummings (jalyn_cummings@nps.gov); Holly Salazer (holly_salazer@nps.gov); Jackson, Bill -FS (bjackson02@fs.fed.us); Pitrolo, Melanie -FS (mpitrolo@fs.fed.us); Ash, Jeremy - FS; McClung, Jon D; McKeone, Beverly D; Don Shepherd
Subject: Re: WV PSD Application Notification (R14-0037 ROXUL USA, Inc.)

Thanks for the quick response Joe.

I want to confirm that a Class I analysis will not be necessary for Shenandoah NP, as it is unlikely this facility would result in any adverse impacts in the Park. Thank you for notifying the NPS of the proposed ROXUL, US facility. Please feel free to contact me if you have any questions.

Regards,
Andrea

On Wed, Jan 17, 2018 at 1:23 PM, Kessler, Joseph R <Joseph.R.Kessler@wv.gov> wrote:

OK, let me attempt to clarify. The hourly and annual emissions I put on the form are not the hourly or annual emissions that were used as the basis for calculating the Q/D. As I send out the notification as soon as I can after receiving the app, I grab the given facility-wide PTE (and if they include a facility-wide hourly emission number I use that as well) and put it into the form. As there was no facility-wide hourly emission number given, I just calculated the hourly emissions for the form based on 8,760 hours of operation. But, for this facility, as most annual PTE were calculated at 8,760, the numbers should be pretty close to those used for the Q/D calculation (and, in fact, the PTE on the form gives a q/d of 9.26 as opposed to the official q/d of 9.40).

As for IMF01 and HE01, the PTE and the annual emissions used for Q/D calculation are the same. They are both based on the maximum hourly emissions and the unit operation 8,760 hrs/year. These short-term limits are given in the application on page 65.

I will see if I can get a copy of the excel spreadsheet, but I think the only formula in it will be the summing of the pollutants.

Let me know if you have any other questions or need further clarification.

Thanks,

Joe Kessler, PE

Engineer

West Virginia Division of Air Quality

601-57th St., SE

Charleston, WV 25304

Phone: (304) 926-0499 x1219

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Joseph.r.kessler@wv.gov

From: Stacy, Andrea [mailto:andrea_stacy@nps.gov]
Sent: Wednesday, January 17, 2018 2:23 PM
To: Kessler, Joseph R <Joseph.R.Kessler@wv.gov>
Cc: Jalyn Cummings (jalyn_cummings@nps.gov) <jalyn_cummings@nps.gov>; Holly Salazer (holly_salazer@nps.gov) <holly_salazer@nps.gov>; Jackson, Bill -FS (bjackson02@fs.fed.us) <bjackson02@fs.fed.us>; Pitrolo, Melanie -FS (mpitrolo@fs.fed.us) <mpitrolo@fs.fed.us>; Ash, Jeremy - FS <jash@fs.fed.us>; McClung, Jon D <Jon.D.McClung@wv.gov>; McKeone, Beverly D <Beverly.D.Mckeone@wv.gov>; Don Shepherd <don_shepherd@nps.gov>
Subject: Re: WV PSD Application Notification (R14-0037 ROXUL USA, Inc.)

Hi Joe,

I wanted to follow up with this permit & ensure I understand how the Q/d was calculated, particularly for the facility's larger sources such as the melting furnace (source ID IMF01). In your email you note that "the maximum facility-wide hourly emissions given in the FLM Information Form ***are calculated from the annual emissions and averaged over 8,760 hours***. This method was used as there was no aggregate facility-wide hourly emission numbers given in the permit application."

The attached pdf of the emissions spreadsheet indicates that there is "no difference in maximum 24-hr and annual for TPY basis" for the melting furnace. Can we have a copy of the excel version of this pdf spreadsheet?

Also, I understand that not all sources at the facility will have short-term limits, which is why facility-wide annual limits for Q were calculated in this way, however, can you please clarify what the maximum short-term emissions (in lb/hr) for emission sources IMF01 and HE01 are likely to be?

Thanks!

On Wed, Nov 29, 2017 at 9:43 AM, Kessler, Joseph R <Joseph.R.Kessler@wv.gov> wrote:

Attached is the FLM Notification Form for the following PSD Permit Application submitted on November 21, 2017:

Permit Number:	**R14-0037**
Applicant:	**ROXUL USA, Inc.**
Facility:	**Ran Facility**
Location:	**Ranson, Jefferson County, WV**
Facility ID Number:	**037-00108**

The permit application is available online at:
http://dep.wv.gov/daq/Documents/November%202017%20Applications/037-00108_APPL_R14-0037.pdf

The WV DAQ is providing notification that a PSD application has been filed for construction of a new major source in Jefferson County, WV. The proposed facility is a stone wool manufacturing facility. The application was submitted on November 21, 2017 and has not yet been deemed complete. The applicant has stated the highest Q/D (based on Shenandoah NP) has been calculated to be 9.6. In Appendix A of the permit application, the applicant provides individual emission unit Q/D TPY calculations where the annual emissions were not based on operating 8,760 hours. See the attached spreadsheet for a summary of the Q/D calculations. Additionally, due to late changes to the design of the facility, CO is still listed as a PSD pollutant when in fact the proposed PTE of CO has fallen below 100 TPY. A revision to the application removing CO as a PSD pollutant will be submitted in the coming weeks. As a final note, the maximum facility-wide hourly emissions given in the FLM Information Form are calculated from the annual emissions and averaged over 8,760 hours. This method was used as there was no aggregate facility-wide hourly emission numbers given in the permit application.

Let me know if you have any questions or comments.

Thank You,

Joe Kessler, PE

Engineer

West Virginia Division of Air Quality

601-57th St., SE

Charleston, WV 25304

Phone: (304) 926-0499 x1219

Fax: (304) 926-0478

Joseph.r.kessler@wv.gov

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Andrea Stacy

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Denver, CO 80225

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303-969-2822 (Fax)

McClung, Jon D

From:	Ash, Jeremy - FS <jash@fs.fed.us>
Sent:	Thursday, January 18, 2018 1:09 PM
To:	'Stacy, Andrea'; Kessler, Joseph R
Cc:	Jalyn Cummings (jalyn_cummings@nps.gov); Holly Salazer (holly_salazer@nps.gov); Jackson, Bill -FS; Pitrolo, Melanie -FS; McClung, Jon D; McKeone, Beverly D; Don Shepherd
Subject:	RE: WV PSD Application Notification (R14-0037 ROXUL USA, Inc.)

Hello Joe,

Similar to NPS, we anticipate no significant impacts to any air quality related values (AQRVs) at Class I Areas administered by the Forest Service (based on the estimated emissions and the FLM information form you provided).

Should the nature of this project change such that maximum emissions increase, please let us know so that we can re-evaluate the proposal. Also, please send us a copy of the draft permit when it becomes available.

Thank you again for keeping the Forest Service informed about permit applications for facilities that may impact Forest Service Class I Areas. Should you have any questions about this determination, please let me know.

Best,
Jeremy

Jeremy Ash
Air Resource Specialist
Forest Service
Eastern Region (R9)
p: 414-297-1902
jash@fs.fed.us
626 E. Wisconsin Ave.
Milwaukee, WI 53202
www.fs.fed.us

Caring for the land and serving people

From: Stacy, Andrea [mailto:andrea_stacy@nps.gov]
Sent: Thursday, January 18, 2018 11:33 AM
To: Kessler, Joseph R <Joseph.R.Kessler@wv.gov>
Cc: Jalyn Cummings (jalyn_cummings@nps.gov) <jalyn_cummings@nps.gov>; Holly Salazer (holly_salazer@nps.gov) <holly_salazer@nps.gov>; Jackson, Bill -FS <bjackson02@fs.fed.us>; Pitrolo, Melanie -FS <mpitrolo@fs.fed.us>; Ash, Jeremy - FS <jash@fs.fed.us>; McClung, Jon D <Jon.D.McClung@wv.gov>; McKeone, Beverly D <Beverly.D.Mckeone@wv.gov>; Don Shepherd <don_shepherd@nps.gov>
Subject: Re: WV PSD Application Notification (R14-0037 ROXUL USA, Inc.)

Thanks for the quick response Joe.

I want to confirm that a Class I analysis will not be necessary for Shenandoah NP, as it is unlikely this facility would result in any adverse impacts in the Park. Thank you for notifying the NPS of the proposed ROXUL, US facility. Please feel free to contact me if you have any questions.

Regards,
Andrea

On Wed, Jan 17, 2018 at 1:23 PM, Kessler, Joseph R <Joseph.R.Kessler@wv.gov> wrote:

OK, let me attempt to clarify. The hourly and annual emissions I put on the form are not the hourly or annual emissions that were used as the basis for calculating the Q/D. As I send out the notification as soon as I can after receiving the app, I grab the given facility-wide PTE (and if they include a facility-wide hourly emission number I use that as well) and put it into the form. As there was no facility-wide hourly emission number given, I just calculated the hourly emissions for the form based on 8,760 hours of operation. But, for this facility, as most annual PTE were calculated at 8,760, the numbers should be pretty close to those used for the Q/D calculation (and, in fact, the PTE on the form gives a q/d of 9.26 as opposed to the official q/d of 9.40).

As for IMF01 and HE01, the PTE and the annual emissions used for Q/D calculation are the same. They are both based on the maximum hourly emissions and the unit operation 8,760 hrs/year. These short-term limits are given in the application on page 65.

I will see if I can get a copy of the excel spreadsheet, but I think the only formula in it will be the summing of the pollutants.

Let me know if you have any other questions or need further clarification.

Thanks,

Joe Kessler, PE

Engineer

West Virginia Division of Air Quality

601-57th St., SE

Charleston, WV 25304

Phone: (304) 926-0499 x1219

Fax: (304) 926-0478

Joseph.r.kessler@wv.gov

From: Stacy, Andrea [mailto:andrea_stacy@nps.gov]
Sent: Wednesday, January 17, 2018 2:23 PM
To: Kessler, Joseph R <Joseph.R.Kessler@wv.gov>
Cc: Jalyn Cummings (jalyn_cummings@nps.gov) <jalyn_cummings@nps.gov>; Holly Salazer (holly_salazer@nps.gov) <holly_salazer@nps.gov>; Jackson, Bill -FS (bjackson02@fs.fed.us) <bjackson02@fs.fed.us>; Pitrolo, Melanie -FS (mpitrolo@fs.fed.us) <mpitrolo@fs.fed.us>; Ash, Jeremy - FS <jash@fs.fed.us>; McClung, Jon D <Jon.D.McClung@wv.gov>; McKeone, Beverly D <Beverly.D.Mckeone@wv.gov>; Don Shepherd <don_shepherd@nps.gov>
Subject: Re: WV PSD Application Notification (R14-0037 ROXUL USA, Inc.)

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Permit Number: **R14-0037**

Applicant: **ROXUL USA, Inc.**

Facility: **Ran Facility**

Location: **Ranson, Jefferson County, WV**

Facility ID Number: **037-00108**

The permit application is available online at:
http://dep.wv.gov/daq/Documents/November%202017%20Applications/037-00108_APPL_R14-0037.pdf

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Let me know if you have any questions or comments.

Thank You,

Joe Kessler, PE

Engineer

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subject the violator to civil or criminal penalties. If you believe you have received this message in error, please notify the sender and delete the email immediately.

ATTACHMENT B

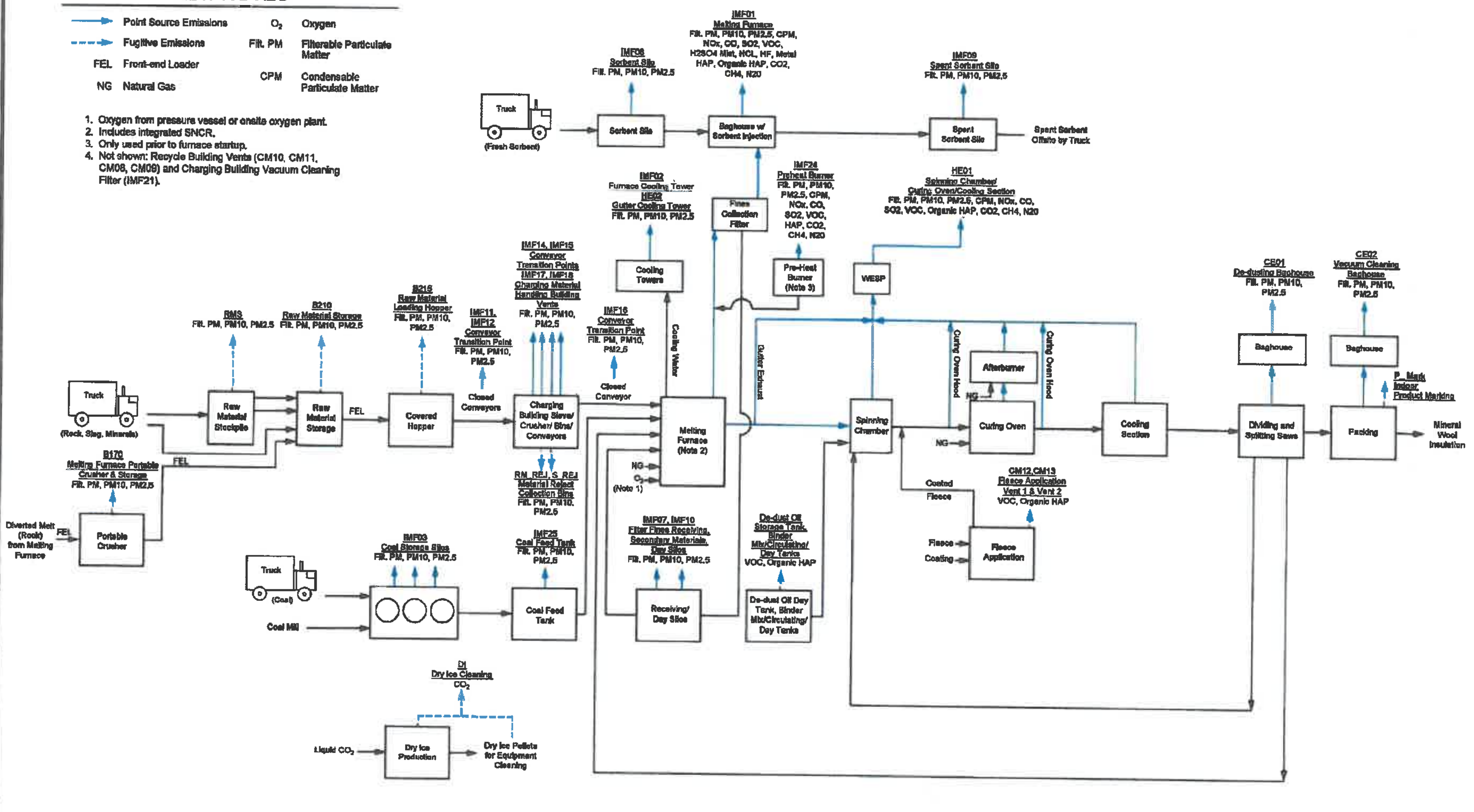
Flow Diagrams

1. Mineral Wool Line
2. Rockfon Line
3. Coal Milling

KEY/ NOTES

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

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).

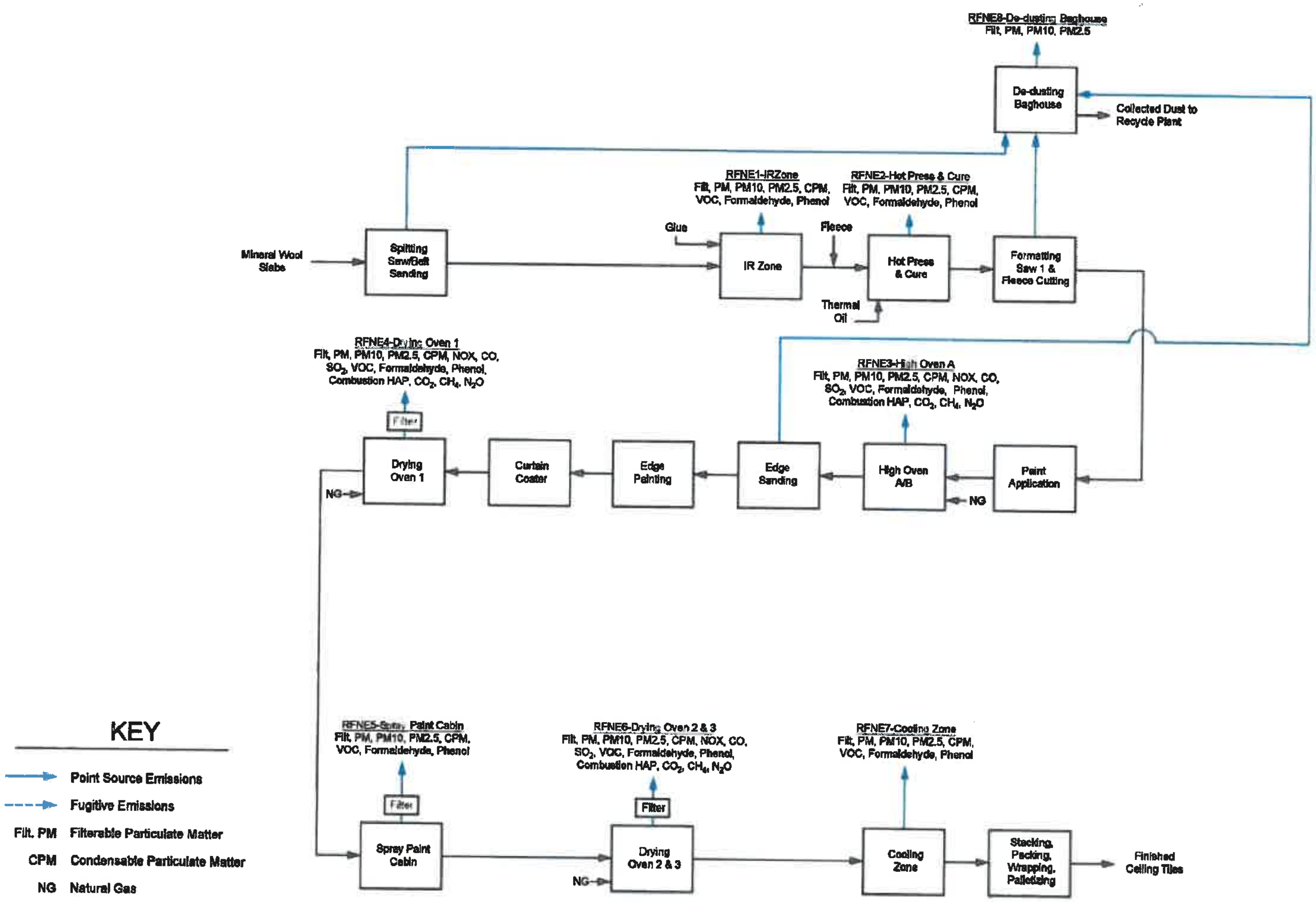


ERM Environmental Resources Management

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

FIGURE 3-1

(SDBNADC022) T:\DWG\AutoCAD\dwg\0\0600\0406003_Roxul\Ranson\PFD\ADS RED_A VERSION R1.dwg, 11/15/2017 2:18:02 PM

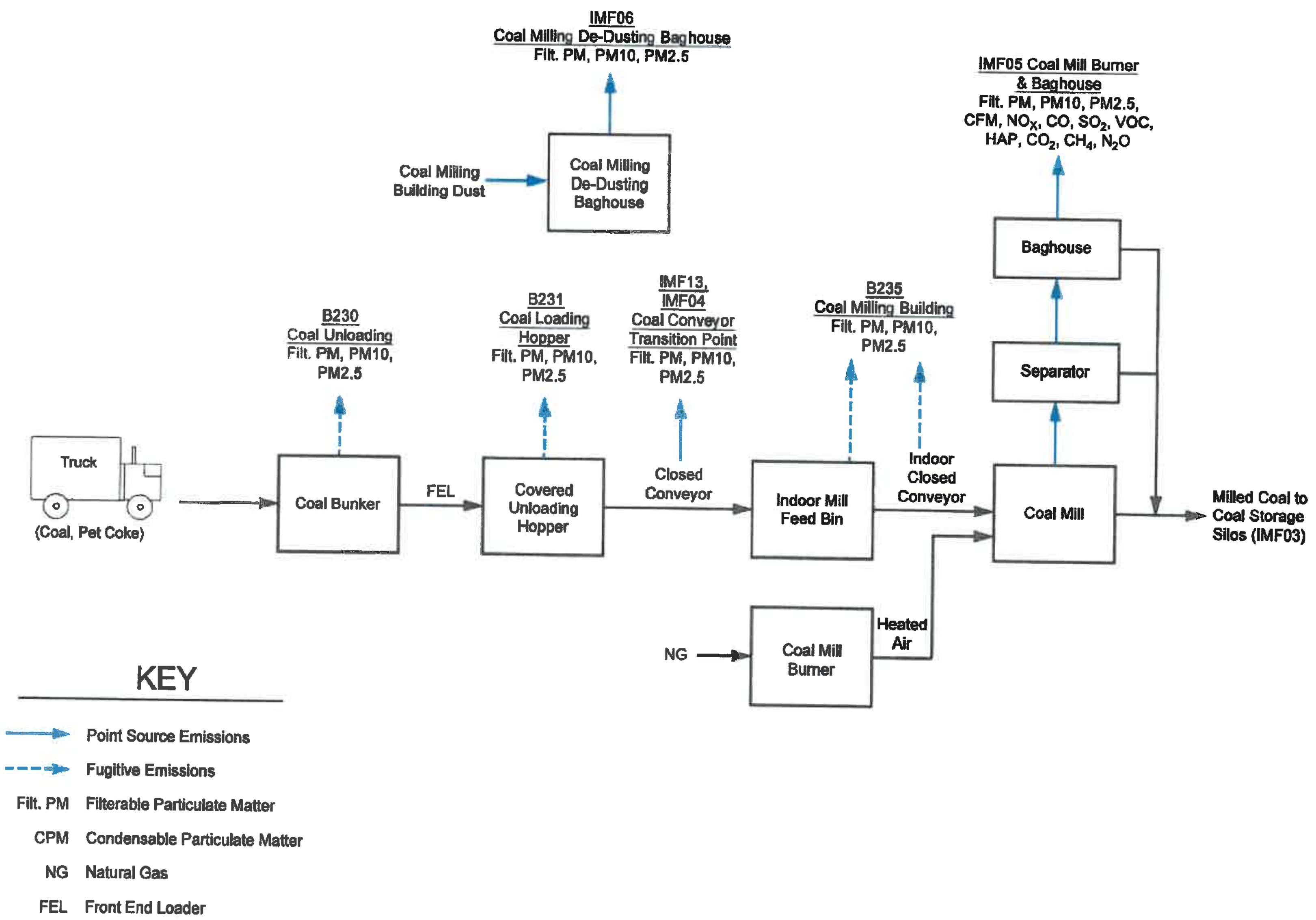


ERM Environmental Resources Management

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

FIGURE 3-2

(BDSNADC02) T:\DWG\A\...\RoxulShuttlePFDs3 RED_A VERSION R1.dwg, 11/14/2017 4:03:10 PM



ERM Environmental Resources Management

COAL MILLING
PROCESS FLOW DIAGRAM
ROXUL USA INC.
RANSON, WEST VIRGINIA

FIGURE 3-3

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

ATTACHMENT C

Modeled Source Parameters and Emission Rates

Attachment 1

Table A1-1 Roxul Modeled Source Parameters

Source ID	Description	Source Type	X Coord. [m]	Y Coord. [m]	Base Elevation [m]	Release Height [m]	Gas Exit Temperature [K]	Gas Exit Velocity [m/s]	Inside Diameter [m]
IMF11	Conveyor Transition Point (B215 to B220)	Point	252100.4	4362712	177.18	5	293	21.1	0.18
IMF12	Conveyor Transition Point (B210 to B220)	Point	252096.1	4362712	177.18	15	293	21.1	0.18
IMF14	Conveyor Transition Point (B220 No. 1)	Point	252060.1	4362679	177.18	15	293	21.1	0.18
IMF15	Conveyor Transition Point (B220 No. 2)	Point	252094.8	4362677	177.18	8	293	21.1	0.18
IMF16	Conveyor Transition Point (B220 to B300)	Point	252084.7	4362658	177.18	24	293	21.1	0.18
IMF17	Charging Material Handling Building Vent 1	Point	252081.9	4362687	177.18	26.88	293	0.001	0.25
IMF18	Charging Material Handling Building Vent 2	Point	252055.3	4362688	177.18	18	293	0.001	0.25
IMF21	Charging Building Vacuum Cleaning Filter	Point	252073.3	4362678	177.18	3	313	9	0.15
IMF03	Three (3) Coal Storage Silos	Point	252153.8	4362601	177.18	22	293	2.85	0.4
IMF25	Coal Feed Tank	Point	252083.2	4362624	177.18	22	293	20.25	0.15
IMF24	Pre-heat Burner	Point	252086.8	4362618	177.18	37	330	15.01	0.35
IMF01	Melting Furnace	Point	252093.5	4362645	177	65	423	20.59	0.95
IMF07	Two (2) Storage Silos	Point	252100.7	4362629	177.18	22	293	2.97	0.4
IMF10	Filter Fines Recieving Silo	Point	252108.2	4362608	177.18	22	293	2.85	0.4
IMF08	Sorbent Silo	Point	252108	4362603	177.18	22	293	2.85	0.4
IMF09	Spent Sorbent Silo	Point	252107.7	4362598	177.18	22	293	2.85	0.4
IMF02	Melting Furnace Cooling Tower	Point	252090.7	4362611	177.18	25	293.15	0.001	0.4
HE02	Gutter Cooling Tower	Point	252073.1	4362661	177.18	25	293.15	0.001	0.4
HE01	WESP	Point	252120.6	4362546	176.38	65	313	15.21	3.95
CE01	De-dusting Baghouse	Point	252076.2	4362535	177.18	35	313	21.47	1.15
CE02	Vacuum Cleaning Baghouse	Point	252061.9	4362515	177.18	30	313	16.56	0.7
CM10	Recycle Plant Building Vent 1	Point	252095.1	4362573	177.18	15	313	12.17	1
CM11	Recycle Plant Building Vent 2	Point	252069.2	4362574	177.18	15	313	12.17	1
CM08	Recycle Plant Building Vent 3	Point	252095.2	4362557	177.18	15	313	16.23	0.25
CM09	Recycle Plant Building Vent 4	Point	252098.3	4362586	177.18	15	313	16.23	0.25
RFNE1	IR Zone	Point	252016	4362291	177.18	13	328	12.85	0.32
RFNE2	Hot Press and Cure	Point	252016.9	4362332	177.18	13	313	12.27	0.32
RFNE3	High Oven A	Point	251985.3	4362307	177.18	12	373	15.47	0.5
RFNE9	High Oven B	Point	251981.6	4362202	177.18	12	373	15.47	0.5
RFNE4	Drying Oven 1	Point	251966.8	4362292	177.18	12	433	11.22	0.5

Attachment 1

Table A1-1 Roxul Modeled Source Parameters (Continued)

Source ID	Description	Source Type	X Coord. [m]	Y Coord. [m]	Base Elevation [m]	Release Height [m]	Gas Exit Temperature [K]	Gas Exit Velocity [m/s]	Inside Diameter [m]
RFNE6	Drying Oven 2 & 3	Point	251964.6	4362250	177.18	15	433	10.52	0.8
RFNE5	Spray Paint Cabin	Point	251965.6	4362269	177.18	33	313	16.23	0.5
RFNE7	Cooling Zone	Point	251978.5	4362280	177.18	14	313	15.85	0.8
RFNE8	De-dusting Baghouse	Point	252039.9	4362259	177.18	30	313	19.64	1.56
CM03	Natural Gas Boiler 1	Point	252062.7	4362638	177.18	15	330	15.01	0.35
CM04	Natural Gas Boiler 2	Point	252055.5	4362639	177.18	15	330	15.01	0.35
RFN10	RFN Building Heat	Point	251989.3	4362356	177.18	15	330	15.01	0.35
EFP1	Emergency Fire Pump Engine	Point	252183.5	4362590	177.18	7.2	478	48.27	0.12
IMF05	Coal Mill Burner & Baghouse	Point	252166.7	4362612	177.18	20	355.37	20.45	0.32
IMF06	Coal Milling De-Dusting Baghouse	Point	252166.7	4362613	177.18	20	293	19.62	0.44
IMF04	Coal Conveyor Transition Point (B231 to B235)	Point	252180.1	4362656	177.18	12	293	18.94	0.19
IMF13	Coal Conveyor Transition Point (B231 to B235)	Point	252181.5	4362668	177.18	2	293	18.94	0.19

Attachment 1

Table A1-1 Roxul Modeled Source Parameters (Continued)

Source ID	Description	Source Type	X Coord. [m]	Y Coord. [m]	Base Elevation [m]	Release Height [m]	Side Length [m]	Initial Lateral Dimension	Initial Vertical Dimension
B210	Raw Material Storage (B210)	Volume	252121.4	4362704	177.18	3.05	27.219	6.33	1.42
B215	Raw Material Loading Hopper (B215)	Volume	252100.3	4362711	177.18	3.05	2.365	0.55	0.71
RM_REJ	Raw Material Reject Collection Bin	Volume	252052	4362680	177.18	0.9	2.322	0.54	0.84
S_REJ	Sieve Reject Collection Bin	Volume	252084.1	4362690	177.18	0.9	2.322	0.54	0.84
P_MARK	Product Marking	Volume	252044.9	4362492	177.18	3.05	9.159	2.13	1.42
RMS	Raw Material Outdoor Stockpile	Volume	251995.1	4362700	177.18	2.4	22.36	5.2	1.12
B170	Melting Furnace Portable Crusher & St	Volume	252052.1	4362733	177.18	2.4	42.441	9.87	2.23
B231	Coal Loading Hopper	Volume	252181.5	4362668	177.18	3.05	4.171	0.97	0.71
B235	Coal Milling Building	Volume	252167.8	4362632	177.18	6	28.982	6.74	5.58
B230	Coal Unloading	Volume	252164.8	4362654	177.18	3.05	13.889	3.23	1.42
RD_RM1	Raw Material Paved Haul Road	Volume	252321.1	4362561	177.18	2.55	31.992	7.44	2.37
RD_RM2	Raw Material Paved Haul Road	Volume	252289.2	4362561	177.18	2.55	31.992	7.44	2.37
RD_RM3	Raw Material Paved Haul Road	Volume	252257.5	4362559	177.18	2.55	31.992	7.44	2.37
RD_RM4	Raw Material Paved Haul Road	Volume	252225.6	4362560	177.18	2.55	31.992	7.44	2.37
RD_RM5	Raw Material Paved Haul Road	Volume	252193.6	4362561	177.18	2.55	31.992	7.44	2.37
RD_RM6	Raw Material Paved Haul Road	Volume	252161.6	4362563	177.18	2.55	31.992	7.44	2.37
RD_RM7	Raw Material Paved Haul Road	Volume	252135.9	4362569	177.18	2.55	31.992	7.44	2.37
RD_RM8	Raw Material Paved Haul Road	Volume	252141.2	4362600	177.18	2.55	31.992	7.44	2.37
RD_RM9	Raw Material Paved Haul Road	Volume	252143.7	4362631	177.18	2.55	31.992	7.44	2.37
RD_RM10	Raw Material Paved Haul Road	Volume	252148.2	4362664	177.18	2.55	31.992	7.44	2.37
RD_RM11	Raw Material Paved Haul Road	Volume	252149.5	4362695	177.18	2.55	31.992	7.44	2.37
RD_RM12	Raw Material Paved Haul Road	Volume	252150.3	4362725	177.18	2.55	31.992	7.44	2.37
RD_RM13	Raw Material Paved Haul Road	Volume	252158.6	4362744	177.18	2.55	31.992	7.44	2.37
RD_RM14	Raw Material Paved Haul Road	Volume	252190.5	4362742	177.18	2.55	31.992	7.44	2.37
RD_RM15	Raw Material Paved Haul Road	Volume	252211.2	4362719	177.18	2.55	31.992	7.44	2.37
RD_RM16	Raw Material Paved Haul Road	Volume	252211.2	4362688	177.18	2.55	31.992	7.44	2.37
RD_RM17	Raw Material Paved Haul Road	Volume	252209.6	4362656	177.18	2.55	31.992	7.44	2.37
RD_RM18	Raw Material Paved Haul Road	Volume	252208	4362624	177.18	2.55	31.992	7.44	2.37
RD_RM19	Raw Material Paved Haul Road	Volume	252208.3	4362592	177.18	2.55	31.992	7.44	2.37

Attachment 1

Table A1-1 Roxul Modeled Source Parameters (Continued)

Source ID	Description	Source Type	X Coord. [m]	Y Coord. [m]	Base Elevation [m]	Release Height [m]	Side Length [m]	Initial Lateral Dimension	Initial Vertical Dimension
RD_RM20	Raw Material Paved Haul Road	Volume	252229.9	4362571	177.18	2.55	31.992	7.44	2.37
RD_RM21	Raw Material Paved Haul Road	Volume	252125.8	4362746	177.18	2.55	31.992	7.44	2.37
RD_RM22	Raw Material Paved Haul Road	Volume	252093.6	4362748	177.18	2.55	31.992	7.44	2.37
RD_RM23	Raw Material Paved Haul Road	Volume	252074.6	4362702	177.18	2.55	31.992	7.44	2.37
RD_RM24	Raw Material Paved Haul Road	Volume	252043.5	4362703	177.18	2.55	31.992	7.44	2.37
RD_RM25	Raw Material Paved Haul Road	Volume	252012.9	4362704	177.18	2.55	31.992	7.44	2.37
RD_RM26	Raw Material Paved Haul Road	Volume	252076.2	4362733	177.18	2.55	31.992	7.44	2.37
RD_RM27	Raw Material Paved Haul Road	Volume	252120.6	4362695	177.18	2.55	31.992	7.44	2.37
RD_RM28	Raw Material Paved Haul Road	Volume	252113.5	4362629	177.18	2.55	31.992	7.44	2.37
RD_RM29	Raw Material Paved Haul Road	Volume	252105.5	4362708	177.18	2.55	31.992	7.44	2.37
RD_RM30	Raw Material Paved Haul Road	Volume	252011.1	4362687	177.18	2.55	31.992	7.44	2.37
RD_RM31	Raw Material Paved Haul Road	Volume	252332	4362561	177.18	2.55	31.992	7.44	2.37
RD_FP1	Finished Product Paved Haul Road	Volume	252285.2	4362055	177.18	2.55	31.992	7.44	2.37
RD_FP2	Finished Product Paved Haul Road	Volume	252253.2	4362056	177.18	2.55	31.992	7.44	2.37
RD_FP3	Finished Product Paved Haul Road	Volume	252228	4362074	177.18	2.55	31.992	7.44	2.37
RD_FP4	Finished Product Paved Haul Road	Volume	252222.5	4362104	177.18	2.55	31.992	7.44	2.37
RD_FP5	Finished Product Paved Haul Road	Volume	252223	4362136	177.18	2.55	31.992	7.44	2.37
RD_FP6	Finished Product Paved Haul Road	Volume	252225.8	4362166	177.18	2.55	31.992	7.44	2.37
RD_FP7	Finished Product Paved Haul Road	Volume	252256.1	4362172	177.18	2.55	31.992	7.44	2.37
RD_FP8	Finished Product Paved Haul Road	Volume	252274	4362196	177.18	2.55	31.992	7.44	2.37
RD_FP9	Finished Product Paved Haul Road	Volume	252275.4	4362228	177.18	2.55	31.992	7.44	2.37
RD_FP10	Finished Product Paved Haul Road	Volume	252276.7	4362260	177.18	2.55	31.992	7.44	2.37
RD_FP11	Finished Product Paved Haul Road	Volume	252278	4362292	177.18	2.55	31.992	7.44	2.37
RD_FP12	Finished Product Paved Haul Road	Volume	252279.3	4362324	177.18	2.55	31.992	7.44	2.37
RD_FP13	Finished Product Paved Haul Road	Volume	252269.9	4362354	177.18	2.55	31.992	7.44	2.37
RD_FP14	Finished Product Paved Haul Road	Volume	252238.9	4362361	177.18	2.55	31.992	7.44	2.37
RD_FP15	Finished Product Paved Haul Road	Volume	252206.9	4362362	177.18	2.55	31.992	7.44	2.37
RD_FP16	Finished Product Paved Haul Road	Volume	252176.7	4362356	177.18	2.55	31.992	7.44	2.37
RD_FP17	Finished Product Paved Haul Road	Volume	252156.3	4362338	177.18	2.55	31.992	7.44	2.37

Attachment 1

Table A1-1 Roxul Modeled Source Parameters (Continued)

Source ID	Description	Source Type	X Coord. [m]	Y Coord. [m]	Base Elevation [m]	Release Height [m]	Side Length [m]	Initial Lateral Dimension	Initial Vertical Dimension
RD_FP18	Finished Product Paved Haul Road	Volume	252156	4362306	177.18	2.55	31.992	7.44	2.37
RD_FP19	Finished Product Paved Haul Road	Volume	252152.6	4362274	177.18	2.55	31.992	7.44	2.37
RD_FP20	Finished Product Paved Haul Road	Volume	252143.6	4362246	177.18	2.55	31.992	7.44	2.37
RD_FP21	Finished Product Paved Haul Road	Volume	252111.6	4362248	177.18	2.55	31.992	7.44	2.37
RD_FP22	Finished Product Paved Haul Road	Volume	252079.7	4362249	177.18	2.55	31.992	7.44	2.37
RD_FP23	Finished Product Paved Haul Road	Volume	252047.8	4362250	177.18	2.55	31.992	7.44	2.37
RD_FP24	Finished Product Paved Haul Road	Volume	252033	4362228	177.18	2.55	31.992	7.44	2.37
RD_FP25	Finished Product Paved Haul Road	Volume	252056.5	4362216	177.18	2.55	31.992	7.44	2.37
RD_FP26	Finished Product Paved Haul Road	Volume	252088.5	4362215	177.18	2.55	31.992	7.44	2.37
RD_FP27	Finished Product Paved Haul Road	Volume	252120.5	4362215	177.18	2.55	31.992	7.44	2.37
RD_FP28	Finished Product Paved Haul Road	Volume	252152.5	4362214	177.18	2.55	31.992	7.44	2.37
RD_FP29	Finished Product Paved Haul Road	Volume	252158.8	4362184	177.18	2.55	31.992	7.44	2.37
RD_FP30	Finished Product Paved Haul Road	Volume	252180.9	4362161	177.18	2.55	31.992	7.44	2.37
RD_FP31	Finished Product Paved Haul Road	Volume	252212.3	4362157	177.18	2.55	31.992	7.44	2.37
RD_FP32	Finished Product Paved Haul Road	Volume	252214.5	4362127	177.18	2.55	31.992	7.44	2.37
RD_FP33	Finished Product Paved Haul Road	Volume	252214.5	4362095	177.18	2.55	31.992	7.44	2.37
RD_FP34	Finished Product Paved Haul Road	Volume	252224.7	4362068	177.18	2.55	31.992	7.44	2.37
RD_FP35	Finished Product Paved Haul Road	Volume	252305.2	4362055	177.18	2.55	31.992	7.44	2.37
RD_CM	FEL - Coal/PET Coke from Bunker to Feed Hopper (for Milling)	Volume	252173	4362661	177.18	2.55	31.992	7.44	2.37

Attachment 1

Table A1-2 Roxul Modeled Source Emission Rates

Source ID	Description	NO_2		SO_2		CO	PM_{10}		$PM_{2.5}$	
		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)
IMF11	Conveyor Transition Point (B215 to B220)	-	-	-	-	-	2.50E-03	2.50E-03	1.25E-03	1.25E-03
IMF12	Conveyor Transition Point (B210 to B220)	-	-	-	-	-	2.50E-03	2.50E-03	1.25E-03	1.25E-03
IMF14	Conveyor Transition Point (B220 No. 1)	-	-	-	-	-	2.50E-03	2.50E-03	1.25E-03	1.25E-03
IMF15	Conveyor Transition Point (B220 No. 2)	-	-	-	-	-	2.50E-03	2.50E-03	1.25E-03	1.25E-03
IMF16	Conveyor Transition Point (B220 to B300)	-	-	-	-	-	2.50E-03	2.50E-03	1.25E-03	1.25E-03
IMF17	Charging Material Handling Building Vent 1	-	-	-	-	-	2.43E-03	2.43E-03	1.22E-03	1.22E-03
IMF18	Charging Material Handling Building Vent 2	-	-	-	-	-	2.43E-03	2.43E-03	1.22E-03	1.22E-03
IMF21	Charging Building Vacuum Cleaning Filter	-	-	-	-	-	6.94E-04	6.94E-04	3.47E-04	3.47E-04
IMF03	Three (3) Coal Storage Silos	-	-	-	-	-	5.00E-03	5.00E-03	2.50E-03	2.50E-03
IMF25	Coal Feed Tank	-	-	-	-	-	1.67E-03	1.67E-03	8.33E-04	8.33E-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	1.41E+00	1.04E+00	1.04E+00	9.42E-01	9.42E-01
IMF07	Two (2) Storage Silos	-	-	-	-	-	3.47E-03	3.47E-03	1.74E-03	1.74E-03
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
IMF02	Melting Furnace Cooling Tower	-	-	-	-	-	1.25E-03	1.25E-03	6.25E-04	6.25E-04
HE02	Gutter Cooling Tower	-	-	-	-	-	2.91E-04	2.91E-04	1.46E-04	1.46E-04
HE01	WESP	1.83E+00	1.83E+00	1.36E-03	1.36E-03	2.29E-01	2.67E+00	2.67E+00	2.42E+00	2.42E+00
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
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
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

Attachment 1

Table A1-2 Roxul Modeled Source Emission Rates

Source ID	Description	NO_2		SO_2		CO	PM_{10}		$PM_{2.5}$	
		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)
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
CM03	Natural Gas Boiler 1	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
CM04	Natural Gas Boiler 2	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
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	intermitte	9.32E-03	intermitte	4.50E-05	7.14E-02	1.98E-04	5.42E-04	1.98E-04	5.42E-04
IMF05	Coal Mill Burner & Baghouse	5.34E-02	5.34E-02	4.42E-04	4.42E-04	6.19E-02	3.99E-02	3.99E-02	3.22E-02	3.22E-02
IMF06	Coal Milling De-Dusting Baghouse	-	-	-	-	-	2.78E-02	2.78E-02	1.39E-02	1.39E-02
IMF04	Coal Conveyor Transition Point (B231 to B235)	-	-	-	-	-	2.50E-03	2.50E-03	1.25E-03	1.25E-03
IMF13	Coal Conveyor Transition Point (B231 to B235)	-	-	-	-	-	2.50E-03	2.50E-03	1.25E-03	1.25E-03
B210	Raw Material Storage (B210)	-	-	-	-	-	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
RM_REJ	Raw Material Reject Collection Bin	-	-	-	-	-	7.50E-06	1.53E-05	1.14E-06	2.32E-06
S_REJ	Sieve Reject Collection Bin	-	-	-	-	-	7.50E-06	1.53E-05	1.14E-06	2.32E-06
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
RMS	Raw Material Outdoor Stockpile	-	-	-	-	-	3.29E-03	1.43E-03	5.09E-04	2.26E-04
B170	Melting Furnace Portable Crusher & Storage	-	-	-	-	-	3.20E-02	7.80E-03	9.00E-03	1.73E-03
B231	Coal Loading Hopper	-	-	-	-	-	1.14E-05	1.04E-05	1.73E-06	1.58E-06
B235	Coal Milling Building	-	-	-	-	-	1.25E-03	1.25E-03	6.25E-04	6.25E-04
B230	Coal Unloading	-	-	-	-	-	1.14E-05	1.04E-05	1.73E-06	1.58E-06
RD_RM1	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM2	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM3	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM4	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM5	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM6	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM7	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM8	Raw Material **Paved** Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM9	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM10	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05

Attachment 1

Table A1-2 Roxul Modeled Source Emission Rates

Source ID	Description	NO_2		SO_2		CO	PM_{10}		$PM_{2.5}$	
		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)
RD_RM11	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM12	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM13	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM14	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM15	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM16	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM17	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM18	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM19	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM20	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM21	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM22	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM23	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM24	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM25	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM26	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM27	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM28	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM29	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM30	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_RM31	Raw Material Paved Haul Road	-	-	-	-	-	8.98E-04	3.90E-04	2.20E-04	9.56E-05
RD_FP1	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP2	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP3	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP4	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP5	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP6	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP7	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP8	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP9	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP10	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06

Attachment 1

Table A1-2 Roxul Modeled Source Emission Rates

Source ID	Description	NO_2		SO_2		CO	PM_{10}		$PM_{2.5}$	
		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)
RD_FP11	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP12	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP13	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP14	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP15	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP16	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP17	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP18	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP19	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP20	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP21	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP22	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP23	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP24	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP25	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP26	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP27	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP28	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP29	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP30	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP31	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP32	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP33	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP34	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_FP35	Finished Product Paved Haul Road	-	-	-	-	-	1.49E-05	1.16E-05	3.65E-06	2.86E-06
RD_CM	FEL - Coal/PET Coke from Bunker to Feed Hopper (for Milling)	-	-	-	-	-	9.33E-05	8.51E-05	2.29E-05	2.09E-05

ATTACHMENT D

Division of Air Quality Memorandum regarding Interim 1-Hour Significant Impact Levels for Nitrogen Dioxide and Sulfur Dioxide dep

west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
dep.wv.gov

MEMORANDUM

To: Jay Fedczak
Fred Durham

Cc: John Benedict
Bev McKeone
Joe Kessler
Steve Pursley

From: Jon McClung JDM

Date: January 28, 2014

Subject: Interim 1-Hour Significant Impact Levels for Nitrogen Dioxide and Sulfur Dioxide

Summary

As a follow-up to our discussions regarding the use of interim significant impact levels (SILs) for the 1-hour nitrogen dioxide (NO_2) and 1-hour sulfur dioxide (SO_2) National Ambient Air Quality Standards (NAAQS), I have conducted a detailed review of EPA's relevant guidance concerning their recommended SILs. EPA's guidance provides recommended SILs for 1-hr NO_2 and 1-hr SO_2 to serve as a useful screening tool for implementing the PSD requirements for an air quality analysis. EPA has provided recommended interim SILs since they have not yet codified final SILs through rulemaking. I have confirmed via discussions with the EPA Region 3 Modeler, Timothy A. Leon Guerrero, that the recommended SILs are consistent for use with EPA's PSD permitting program, as codified in 40 CFR 51. We have reviewed EPA's recommended interim SILs for 1-hr NO_2 and 1-hr SO_2 and concur with EPA's finding that an applicant for a PSD permit demonstrating an air quality impact at or below the SIL is *de minimis* in nature and would not cause a violation of the NAAQS. The interim SILs should be used in air quality impact assessments for PSD permit applications until EPA issues a final rule establishing SILs for 1-hr NO_2 and 1-hr SO_2.

Discussion

On February 9, 2010, EPA published a final rule, which became effective on April 12, 2010, establishing a new 1-hour NO_2 NAAQS at 100 ppb (188 $\mu g/m^3$ at 25 °C and 760 mm Hg), based on the 3-year average of the 98^{th}-percentile of the annual distribution of the daily maximum 1-hour concentrations.

On June 22, 2010, EPA published a final rule, which became effective on August 23, 2010, establishing a new 1-hour SO_2 NAAQS at 75 ppb (196 $\mu g/m^3$ at 25 °C and 760 mm Hg), based on the 3-year average of the 99^{th}-percentile of the annual distribution of the daily maximum 1-hour concentrations.

EPA guidance establishes that an air quality assessment for a PSD application begins with the applicant estimating the potential air quality impacts from the project source alone. If a source demonstrates an impact above a SIL then a cumulative impact analysis and PSD increment analysis is required. If modeled impacts do not exceed the SIL, the permitting authority may conclude that the project would not cause or contribute to a violation of the NAAQS and EPA would not consider it necessary to conduct a more comprehensive cumulative impact assessment. Establishing an appropriate SIL is an integral part of the PSD air quality analysis process since without it a permitting authority may not conclude that impacts below a SIL are *de minimis* and further analyses that may not be necessary to demonstrate compliance would automatically be required.

Interim 1-Hour NO_2 and 1-Hour SO_2 SILs

This memo documents the establishment, for the West Virginia PSD program, of an interim 1-hour NO_2 SIL of 4 ppb (7.5 $\mu g/m^3$), which is the same as that recommended by EPA in the June 29, 2010 memorandum from Stephen D. Page, *Guidance Concerning the Implementation of the 1-hour NO_2 NAAQS for the Prevention of Significant Deterioration Program*. This memorandum, which contains the technical analysis to determine the SIL, is appended as Attachment 1.

This memo also documents the establishment, for the West Virginia PSD program, an interim 1-hour SO_2 SIL of 3 ppb (7.8 $\mu g/m^3$), which is the same as that recommended by EPA in the August 23, 2010 memorandum from Stephen D. Page, *Guidance Concerning the Implementation of the 1-hour SO_2 NAAQS for the Prevention of Significant Deterioration Program*. This memorandum, which contains the technical analysis to determine the SIL, is appended as Attachment 2.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

JUN 29 2010

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

MEMORANDUM

SUBJECT: Guidance Concerning the Implementation of the 1-hour NO_2 NAAQS for the Prevention of Significant Deterioration Program

FROM: Stephen D. Page, Director
Office of Air Quality Planning and Standards

TO: Regional Air Division Directors

On January 22, 2010, the Environmental Protection Agency (EPA) announced a new 1-hour nitrogen dioxide (NO_2) National Ambient Air Quality Standard (hereinafter, either the 1-hour NO_2 NAAQS or 1-hour NO_2 standard) of 100 parts per billion (ppb), which is attained when the 3-year average of the 98th-percentile of the annual distribution of daily maximum 1-hour concentrations does not exceed 100 ppb at each monitor within an area. EPA revised the primary NO_2 NAAQS to provide the requisite protection of public health. The final rule for the new 1-hour NO_2 NAAQS was published in the Federal Register on February 9, 2010 (75 FR 6474), and the standard became effective on April 12, 2010. EPA policy provides that any federal Prevention of Significant Deterioration (PSD) permit issued under 40 CFR 52.21 on or after that effective date must contain a demonstration of source compliance with the new 1-hour NO_2 standard.

EPA is aware of reports from stakeholders indicating that some sources—both existing and proposed—are modeling potential violations of the 1-hour NO_2 standard. In many cases, the affected units are emergency electric generators and pump stations, where short stacks and limited property rights exist. However, larger sources, including coal-fired and natural gas-fired power plants, refineries, and paper mills, could also model potential violations of the new NO_2 NAAQS.

To respond to these reports and facilitate the PSD permitting of new and modified major stationary sources, we are issuing the attached guidance, in the form of two memoranda, for implementing the new 1-hour NO_2 NAAQS under the PSD permit program. The guidance contained in the attached memoranda addresses two areas. The first memorandum, titled, "General Guidance for Implementing the 1-hour NO_2 National Ambient Air Quality Standard in Prevention of Significant Deterioration Permits, Including an Interim 1-hour NO_2 Significant Impact Level," includes guidance for the preparation and review of PSD permits with respect to the new 1-hour NO_2 standard. This guidance memorandum sets forth a recommended interim 1-hour NO_2 significant impact level (SIL) that states may consider when carrying out the required

PSD air quality analysis for NO_2, until EPA promulgates a 1-hour NO_2 SIL via rulemaking. The second memorandum, titled "Applicability of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard," includes specific modeling guidance for estimating ambient NO_2 concentrations and determining compliance with the new 1-hour NO_2 standard.

This guidance does not bind state and local governments and the public as a matter of law. Nevertheless, we believe that state and local air agencies and industry will find this guidance useful when carrying out the PSD permit process. We believe it will provide a consistent approach for estimating NO_2 air quality impacts from proposed construction or modification of NOx emissions sources. For the most part, the attached guidance reiterates existing policy and guidance, but focuses on how this information is relevant to implementation of the new 1-hour NO_2 NAAQS.

Please review the guidance included in the two attached memoranda. If you have questions regarding the general implementation guidance contained in the first memorandum, please contact Raj Rao (rao.raj@epa.gov). If you have questions regarding the modeling guidance in the second memorandum, please contact Tyler Fox (fox.tyler@epa.gov). We are continuing our efforts to address permitting issues related to NO_2 and other NAAQS including the recently-signed 1-hour sulfur dioxide NAAQS. We plan to issue additional guidance to address these new 1-hour standards in the near future.

Attachments:

1. Memorandum from Anna Marie Wood, Air Quality Policy Division, to EPA Regional Air Division Directors, "General Guidance for Implementing the 1-hour NO_2 National Ambient Air Quality Standard in Prevention of Significant Deterioration Permits, Including an Interim 1-hour NO_2 Significant Impact Level" (June 28, 2010).
2. Memorandum from Tyler Fox, Air Quality Modeling Group, to EPA Regional Air Division Directors, "Applicability of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard" (June 28, 2010).

cc: Anna Marie Wood
Richard Wayland
Raj Rao
Tyler Fox
Dan deRoeck
Roger Brode
Rich Ossias
Elliott Zenick
Brian Doster

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

June 28, 2010

MEMORANDUM

SUBJECT: General Guidance for Implementing the 1-hour NO_2 National Ambient Air Quality Standard in Prevention of Significant Deterioration Permits, Including an Interim 1-hour NO_2 Significant Impact Level

FROM: Anna Marie Wood, Acting Director /s/
Air Quality Policy Division

TO: Regional Air Division Directors

INTRODUCTION

We are issuing the following guidance to explain and clarify the procedures that may be followed by applicants for Prevention of Significant Deterioration (PSD) permits and permitting authorities reviewing such applications to properly demonstrate that proposed construction will not cause or contribute to a violation of the new 1-hour nitrogen dioxide (NO_2) National Ambient Air Quality Standard (hereinafter, either the 1-hour NO_2 NAAQS or 1-hour NO_2 standard) that became effective on April 12, 2010. EPA revised the primary NO_2 NAAQS by promulgating a 1-hour NO_2 NAAQS to provide the requisite protection of public health. Under section 165(a)(3) of the Clean Air Act (the Act) and sections 52.21(k) and 51.166(k) of EPA's PSD regulations, to obtain a permit, a source must demonstrate that its proposed emissions increase will not cause or contribute to a violation of any NAAQS.

This guidance is intended to: (1) explain the recommended procedures for stakeholders to follow to properly address concerns over high preliminary modeled estimates of ambient NO_2 concentrations that suggest potential violations of the new 1-hour NO_2 standard under some modeling and permitting scenarios; (2) help reduce the burden of modeling for the hourly NO_2 standard where it can be properly demonstrated that a source will not have a significant impact on ambient 1-hour NO_2 concentrations; and (3) identify approaches that allow sources and permitting authorities to mitigate, in a manner consistent with existing regulatory requirements, potential modeled violations of the 1-hour NO_2 NAAQS, where appropriate. Accordingly, the techniques described in this memorandum may be used by permit applicants and permitting authorities to configure projects and permit conditions in order to reasonably conclude that a proposed source's emissions do not cause or contribute to modeled 1-hour NO_2 NAAQS violations so that permits can be issued in accordance with the applicable PSD program requirements.

This guidance discusses existing provisions in EPA regulations and previous guidance for applying those provisions but focuses on the relevancy of this information for implementing the new NAAQS for NO_2. Importantly, however, this guidance also sets forth a recommended interim 1-hour NO_2 significant impact level (SIL) that EPA will use for implementing the federal PSD program, and that states may choose to rely upon to implement their PSD programs for NOx if they agree that these values represent *de minimis* impact levels and incorporate into each permit record a rationale supporting this conclusion. This interim SIL is a useful screening tool that can be used to determine whether or not the emissions from a proposed source will significantly impact hourly NO_2 concentrations, and, if significant impacts are predicted to occur, whether the source's emissions "cause or contribute to" any modeled violations of the new 1-hour NO_2 NAAQS.

BACKGROUND

On April 12, 2010, the new 1-hour NO_2 NAAQS became effective. EPA interprets its regulations at 40 CFR 52.21 (the federal PSD program) to require permit applicants to demonstrate compliance with "any" NAAQS that is in effect on the date a PSD permit is issued. (See, e.g., EPA memo dated April 1, 2010, titled "Applicability of the Federal Prevention of Significant Deterioration Permit Requirements to New and Revised National Ambient Air Quality Standards.") Due to the introduction of a short-term averaging period for the 1-hour NO_2 NAAQS, we anticipate that some stationary sources with relatively short stacks may experience increased difficulty demonstrating that emissions from new construction or modifications will not cause or contribute to a violation of the 1-hour NO_2 NAAQS.

We are responding to reports from stakeholders which indicate that some sources, existing and proposed, are modeling high hourly NO_2 concentrations showing violations of the 1-hour NO_2 NAAQS—based only on the source's projected emissions of NOx under some modeling and permitting scenarios. We find that, in many cases, the modeled violations are resulting from emissions at emergency electric generators and pump stations, where short stacks and limited property rights exist. In other cases, the problem may occur during periods of unit startup, particularly where controls may initially not be in operation. Finally, certain larger sources, including coal-fired and natural gas-fired power plants, refineries, and paper mills could also experience problems in meeting the new 1-hour NO_2 NAAQS using particular modeling assumptions and permit conditions.

We believe that, in some instances, the projected violations result from the use of maximum modeled concentrations that do not adequately take into account the form of the 1-hour standard, and are based on the conservative assumption of 100% NOx-to-NO_2 conversion in the ambient air. To the extent that this is the case, it may be possible to provide more accurate projections of ambient NO_2 concentrations by applying current procedures which account for the statistical form of the 1-hour NO_2 standard, as well as more realistic estimates of the rate of conversion of NOx emissions to ambient NO_2 concentrations. See EPA Memorandum from Tyler Fox, Air Quality Modeling Group, to EPA Regional Air Division Directors, "Applicability of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard" (June 28, 2010) for specific modeling guidance for estimating ambient NO_2 concentrations consistent with the new 1-hour NO_2 NAAQS. In addition, where short stacks are currently being used, or are under design, it may be possible to lessen the source's air quality impacts without improper dispersion by implementing "good engineering practice" (GEP) stack heights to increase the height of existing or designed stacks to avoid excessive concentrations due to downwash, as described in the guidance below.

It is EPA's expectation that the guidance in this memorandum and available modeling guidance for NO_2 assist in resolving some of the issues arising from preliminary analyses that are reportedly showing potential exceedances of the new 1-hour NO_2 NAAQS that would not be present under more refined modeling applications. In addition, the techniques described in this memorandum may also help avoid violations of the standard through design of the proposed source or permit conditions, consistent with existing regulatory requirements, which enable the source to demonstrate that its proposed emissions increase will not cause or contribute to a modeled violation of the 1-hour NO_2 standard. Moreover, the interim 1-hour NO_2 SIL that is included in this guidance will provide a reasonable screening tool for efficiently implementing the PSD requirements for an air quality impact analysis.

The following discussion provides guidance concerning demonstrating compliance with the new NAAQS and mitigating modeled violations using air quality-based permit limits more stringent than what the Best Available Control Technology provisions may otherwise require, air quality offsets, the use of GEP stack heights, possible permit conditions for emergency generators, and an interim 1-hour NO_2 SIL.

AIR-QUALITY BASED EMISSIONS LIMITATIONS

Once a level of control required by the Best Available Control Technology provisions is proposed by the PSD applicant, the proposed source's emissions must be modeled at the BACT emissions rate(s) to demonstrate that those emissions will not cause or contribute to a violation of any NAAQS or PSD increment. EPA's 1990 Workshop Manual (page B.54) describes circumstances where a source's emissions based on levels proposed through the top-down process may not be sufficiently controlled to prevent modeled violations of an increment or NAAQS. In such cases, it may be appropriate for PSD applicants to propose a more stringent control option (that is, beyond the level identified via the top-down process) as a result of an adverse impact on the NAAQS or PSD increments.

DEMONSTRATING COMPLIANCE WITH THE NEW NAAQS & MITIGATING MODELED VIOLATIONS WITH AIR QUALITY OFFSETS

A 1988 EPA memorandum provides procedures to follow when a modeled violation is identified during the PSD permitting process. See Memorandum from Gerald A. Emison, EPA OAQPS, to Thomas J. Maslany, EPA Air Management Division, "Air Quality Analysis for Prevention of Significant Deterioration (PSD)." (July 5, 1988). In brief, a reviewing authority may issue a proposed new source or modification a PSD permit only if it can be shown that the proposed project's emissions will not "cause or contribute to" any modeled violations.

To clarify the above statement, in cases where modeled violations of the 1-hour NO_2 NAAQS are predicted, but the permit applicant can show that the NOx emissions increase from the proposed source will not have a significant impact *at the point and time of any modeled violation*, the permitting authority has discretion to conclude that the source's emissions will not contribute to the modeled violation. As provided in the July 5, 1988, guidance memo, in such instances, because of the proposed source's *de minimis* contribution to any modeled violation, the source's impact will not be considered to cause or contribute to such modeled violations, and the permit could be issued. This concept continues to apply, and the significant impact level (described further below) may be used as part of this analysis. A 2006 decision by the EPA Environmental Appeals Board (EAB) provides detailed reasoning that demonstrates the permissibility of finding that a PSD source would not be considered to cause or contribute to a modeled NAAQS violation because its estimated air quality impact was insignificant at the time and place of the modeled violations.[1] See In re *Prairie State Gen. Co.*, 13 E.A.D. ___, ___, PSD Appeal No. 05-05, Slip. Op. at 137-144 (EAB 2006)

However, where it is determined that a source's impact does cause or contribute to a modeled violation, a permit cannot be issued without some action taken to mitigate the source's impact. In accordance with 40 CFR 51.165(b)[2], a major stationary source or major modification (as defined at §51.165(a)(1)(iv) and (v)) that locates in an NO_2 attainment area, but would cause or contribute to a violation of the 1-hour NO_2 NAAQS anywhere may "reduce the impact of its emissions upon air quality by obtaining sufficient emission reductions to, at a minimum, compensate for its adverse ambient [NO_2] impact where the major source or major modification would otherwise cause or contribute to a violation ...." An applicant can meet this requirement for obtaining additional emissions reductions by either reducing its emissions at the source, e.g., promoting more efficient production methodologies and energy efficiency, or by obtaining air quality offsets (see below). See, e.g., In re *Interpower of New York, Inc.*, 5 E.A.D. 130, 141 (EAB 1994).[3] A State may also provide the necessary emissions reductions by imposing emissions limitations on other sources through an approved State Implementation Plan (SIP) revision. These approaches may also be combined as necessary to demonstrate that a source will not cause or contribute to a violation of the NAAQS.

Unlike emissions offset requirements in nonattainment areas, in addressing the air quality offset concept, it may not be necessary for a permit applicant to fully offset the proposed emissions increase if an emissions reduction of lesser quantity will mitigate the adverse air quality impact on a modeled violation. ("Although full emission offsets are not required, such a source must obtain emission offsets sufficient to compensate for its air quality impact where the violation occurs." 44 FR 3274, January 16, 1979, at 3278.) To clarify this, the 1988 guidance memo referred to above states that:

> offsets sufficient to compensate for the source's significant impact must be obtained pursuant to an approved State offset program consistent with State Implementation Plan (SIP) requirements under 40 CFR 51.165(b). Where the source is contributing to an

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[1] While there is no 1-hour NO_2 significant impact level (SIL) currently defined in the PSD regulations, we believe that states may adopt interim values, with the appropriate justification for such values, to use for permitting purposes. In addition, we are recommending an interim SIL as part of this guidance for implementing the NO_2 requirements in the federal PSD program, and in state programs where states choose to use it.
[2] The same provision is contained in EPA's Interpretative Ruling at 40 CFR part 51 Appendix S, section III.
[3] In contrast to Nonattainment New Source Review permits, offsets are not mandatory requirements in PSD permits if it can otherwise be demonstrated that a source will not cause or contribute to a violation of the NAAQS. See, In re *Knauf Fiber Glass, GMBH*, 8 E.A.D. 121, 168 (EAB 1999).

existing violation, the required offset may not correct the violation. Such existing violations must be addressed [through the SIP].

In addition, in order to determine the appropriate emissions reductions, the applicant and permitting authority should take into account modeling procedures for the form of the 1-hour standard and for the appropriate NOx-NO_2 conversion rate that applies in the area of concern. As part of this process, existing ambient ozone concentrations and other meteorological conditions in the area of concern may need to be considered. Note that additional guidance for this and other aspects of the modeling analysis for the impacts of NOx emissions on ambient concentrations of NO_2 are addressed in EPA modeling guidance, including the June 28, 2010, Memorandum titled, "Applicability of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard."

"GOOD ENGINEERING PRACTICE" STACK HEIGHT & DISPERSION TECHNIQUES

If a permit applicant is unable to show that the source's proposed emissions increase will not cause or contribute to a modeled violation of the new 1-hour NO_2 NAAQS, the problem could be the result of plume downwash effects which may cause high ambient concentrations near the source. In such cases, a source may be able to raise the height of its existing stacks (or designed stacks if not yet constructed) to a GEP stack height of at least 65 meters, measured from the ground-level elevation at the base of the stack.

While not necessarily totally eliminating the effects of downwash in all cases, raising stacks to GEP height may provide substantial air quality benefits in a manner consistent with statutory provisions (section 123 of the Act) governing acceptable stack heights to minimize extensive concentrations due to atmospheric downwash, eddies or wakes. Permit applicants should also be aware of the regulatory restrictions on stack heights for the purpose of modeling for compliance with NAAQS and increments. Section 52.21(h) of the PSD regulations currently prohibits the use of dispersion techniques, such as stack heights above GEP, merged gas streams, or intermittent controls for setting NOx emissions limits or to meet the annual and 1-hour NAAQS and annual NO_2 increments. However, stack heights in existence before December 31, 1970, and dispersion techniques implemented before then, are not affected by these limitations. EPA's general stack height regulations are promulgated at 40 CFR 51.100(ff), (gg), (hh), (ii), (jj), (kk) and (nn), and 40 CFR 51.118.

a. *Stack heights*: A source cannot take credit for that portion of a stack height in excess of the GEP height when modeling to develop the NOx emissions limitations or to determine source compliance with the annual and 1-hour NO_2 NAAQS. It should be noted, however, that this limitation <u>does not limit</u> the actual height of any stack constructed by a new source or modification.

The following limitations apply in accordance with §52.21(h):

- For a stack height less than GEP, the actual stack height must be used in the source impact analysis for NOx emissions;

- For a stack height equal to or greater than 65 meters, the impact on NOx emission limits may be modeled using the greater of:
  - A *de minimis* stack height equal to 65 meters, as measured from the ground-level elevation at the base of the stack, without demonstration or calculation (40 CFR 51.100(ii)(1));
  - The refined formula height calculated using the dimensions of nearby structures in accordance with the following equation:

  GEP = H + 1.5L, where H is the height of the nearby structure and L is the lesser dimension of the height or projected width of the nearby structure (40 CFR 51.100(ii)(2)(ii)).[4]

- A GEP stack height exceeding the refined formula height may be approved when it can be demonstrated to be necessary to avoid "excessive concentrations" of NO_2 caused by atmospheric downwash, wakes, or eddy effects by the source, nearby structures, or nearby terrain features.
  (40 CFR 51.100(ii)(3), (jj), (kk));

- For purposes of PSD (and NOx/NO_2), "excessive concentrations" means a maximum ground-level concentration of NO_2 due to NOx emissions from a stack due in whole or in part to downwash, wakes, and eddy effects produced by nearby structures or nearby terrain features which individually is at least 40 percent in excess of the maximum NO_2 concentration experienced in the absence of such effects and (a) which contributes to a total NO_2 concentration due to emissions from all sources that is greater than the annual or 1-hour NO_2 NAAQS or (b) greater than the PSD (annual) increment for NO_2.
  (40 CFR 51.100(kk)(1)).

Reportedly, for economic and other reasons, many existing source stacks have been constructed at heights less than 65 meters, and source impact analyses may show that the source's emissions will cause or contribute to a modeled violation of the annual or 1-hour NO_2 NAAQS. Where this is the case, sources should be aware that they can increase their stack heights up to 65 meters without a GEP demonstration.

b. *Other dispersion techniques*: The term "dispersion technique" includes any practice carried out to increase final plume rise, subject to certain exceptions (40 CFR 51.100(hh)(1)(iii), (2)(i) – (v)). Beyond the noted exceptions, such techniques are not allowed for getting credit for modeling source compliance with the annual and 1-hour NO_2 NAAQS and annual NO_2 increment.

[4] For stacks in existence on January 12, 1979, the GEP equation is GEP = 2.5 H (provided the owner or operator produces evidence that this equation was actually relied on in establishing an emission limitation for NOx (40 CFR 51.100(ii)(2)(i)

OPERATION OF EMERGENCY EQUIPMENT & GENERAL STARTUP CONDITIONS

In determining an emergency generator's potential to emit, existing guidance (EPA memo titled "Calculating Potential to Emit (PTE) for Emergency Generators," September 6, 1995) allows a default value of 500 hours "for estimating the number of hours that an emergency generator could be expected to operate under worst-case conditions." The guidance also allows for alternative estimates to be made on a case-by-case basis for individual emergency generators. This time period must also consider operating time for both testing/maintenance as well as for emergency utilization. Likewise, existing EPA policy does not allow NOx emissions to be excluded from the source impact analysis (NAAQS and increments) when the emergency equipment is operating during an emergency. EPA provides no exemption from compliance with the NAAQS during periods of emergency operation. Thus, it is not sufficient to consider only emissions generated during periods of testing/maintenance in the source impact analysis.

If during an emergency, emergency equipment is never operated simultaneously with other emissions units at the source that the emergency equipment will back up, a worst-case hourly impact analysis may very well occur during periods of normal source operation when other emissions units at the facility are likely to be operating simultaneously with the scheduled testing of emergency equipment. To avoid such worst-case modeling situations, a permit applicant may commit to scheduling the testing of emergency equipment during times when the source is not otherwise operating, or during known off-peak operating periods. This could provide a basis to justify not modeling the 1-hour impacts of the emergency equipment under conditions that would include simultaneous operation with other onsite emissions units. Accordingly, permits for emergency equipment may include enforceable conditions that specifically limit the testing/maintenance of emergency equipment to certain periods of time (seasons, days of the week, hours of the day, etc.) as long as these limitations do not constitute dispersion techniques under 40 CFR 51.1(hh)(1)(ii).

We also note that similar problems associated with the modeling of high 1-hour NO_2 concentrations have been reported to occur during startup periods for certain kinds of emissions units—often because control equipment cannot function during all or a portion of the startup process. EPA currently has no provisions for exempting emissions occurring during equipment startups from the air quality analysis to demonstrate compliance with the NAAQS. Startup emissions may occur during only a relatively small portion of the unit's total annual operating schedule; however, they must be included in the required PSD air quality analysis for the NAAQS. Sources may be willing to accept enforceable permit conditions limiting equipment startups to certain hours of the day when impacts are expected to be lower than normal. Such permit limitations can be accounted for in the modeling of such emissions. Applicants should direct other questions arising concerning procedures for modeling startup emissions to the applicable permitting authority to determine the most current modeling guidance.

SCREENING VALUES

In the final rule establishing the hourly NO_2 standard, EPA discussed various implementation considerations for the PSD permitting program. 75 FR.6474, 6524 (Feb. 9, 2010). This discussion included the following statements regarding particular screening values that have historically been used on a widespread basis to facilitate implementation of the PSD permitting program:

> We also believe that there may be a need to revise the screening tools currently used under the NSR/PSD program for completing NO_2 analyses. These screening tools include the significant impact levels (SILs), as mentioned by one commenter, but also include the significant emissions rate for emissions of NOx and the significant monitoring concentration (SMC) for NO_2. EPA intends to evaluate the need for possible changes or additions to each of these important screening tools for NOx/NO_2 due to the addition of a 1-hour NO_2 NAAQS. If changes or additions are deemed necessary, EPA will propose any such changes for public notice and comment in a separate action.
> 75 FR 6525.

EPA intends to conduct an evaluation of these issues and submit our findings in the form of revised significance levels under notice and comment rulemaking if any revisions are deemed appropriate. In the interim, for the reasons provided below, we recommend the continued use of the existing significant emissions rates (SER) for NOx emissions as well as an interim 1-hour NO_2 SIL that we are setting forth today for conducting air quality impact analyses for the 1-hour NO_2 NAAQS. As described in the section titled Introduction, EPA intends to implement the interim 1-hour NO_2 SIL contained herein under the federal PSD program and offers states the opportunity to use it in their PSD programs if they choose to do so. EPA is not addressing the significant monitoring concentrations in this memorandum.

SIGNIFICANT EMISSIONS RATE

Under the terms of existing EPA regulations, the applicable significant emissions rate for nitrogen oxides is 40 tons per year. 40 CFR 52.21(b)(23); 40 CFR 51.166(b)(23). The significant emissions rates defined in those regulations are specific to individual pollutants but are not differentiated by the averaging times of the air quality standards applicable to some of the listed pollutants. Although EPA has not previously promulgated a NO_2 standard using an averaging time of less than one year, the NAAQS for SO_2 have included standards with 3-hour and 24-hour averaging times for many years. EPA has applied the 40 tons per year significant emissions rate for SO_2 across all of these averaging times. Until the evaluation described above and any associated rulemaking is completed, EPA does not believe it has cause to apply the NO_2 significant emissions rate any differently than EPA has historically applied the SO_2 significant emissions rate and others that apply to standards with averaging times less than 1 year.

Under existing regulations, an ambient air quality impact analysis is required for "each pollutant that [a source] would have the potential to emit in significant amounts." 40 CFR 52.21(m)(1)(i)(a); 40 CFR. 51.166(m)(1)(i)(a). For modifications, these regulations require this analysis for "each pollutant for which [the modification] would result in a significant net emissions increase." 40 CFR.52.21(m)(1)(i)(b); 40 CFR.51.166(m)(1)(i)(b). EPA construes this regulation to mean that an ambient impact analysis is not necessary for pollutants with emissions rates below the significant emissions rates in paragraph (b)(23) of the regulations. No additional action by EPA or permitting authorities is necessary at this time to apply the 40 tpy significant emissions rate in existing regulations to the hourly NO_2 standard.

INTERIM 1-HOUR NO_2 SIGNIFICANT IMPACT LEVEL

A significant impact level (SIL) serves as a useful screening tool for implementing the PSD requirements for an air quality analysis. The primary purpose of the SIL is to serve as a screening tool to identify a level of ambient impact that is sufficiently low relative to the NAAQS or PSD increments such that the impact can be considered trivial or *de minimis*. Hence, the EPA considers a source whose individual impact falls below a SIL to have a *de minimis* impact on air quality concentrations that already exist. Accordingly, a source that demonstrates that the projected ambient impact of its proposed emissions increase does not exceed the SIL for that pollutant at a location where a NAAQS or increment violation occurs is not considered to cause or contribute to that violation. In the same way, a source with a proposed emissions increase of a particular pollutant that will have a significant impact at some locations is not required to model at distances beyond the point where the impact of its proposed emissions is below the SILs for that pollutant. When a proposed source's impact by itself is not considered to be "significant," EPA has long maintained that any further effort on the part of the applicant to complete a cumulative source impact analysis involving other source impacts would only yield information of trivial or no value with respect to the required evaluation of the proposed source or modification. The concept of a SIL is grounded on the *de minimis* principles described by the court in *Alabama Power Co. v. Costle*, 636 F.2d 323, 360 (D.C. Cir. 1980); See also *Sur Contra La Contaminacion v. EPA*, 202 F.3d 443, 448-49 (1st Cir. 2000) (upholding EPA's use of SIL to allow permit applicant to avoid full impact analysis); *In re: Prairie State Gen. Co.*, PSD Appeal No. 05-05, Slip. Op. at 139 (EAB 2006)

EPA has codified several SILs into regulations at 40 CFR 51.165(b). EPA plans to undertake rulemaking to develop a 1-hour NO_2 SIL for the new NAAQS for NO_2. However, EPA has recognized that the absence of an EPA-promulgated SIL does not preclude permitting authorities from developing interim SILs for use in demonstrating that a cumulative air quality analysis would yield trivial gain. Response to Comments, Implementation of New Source Review (NSR) Program for Particulate Matter Less Than 2.5 Micrometers in Diameter ($PM_{2.5}$), pg. 82 (March 2008) [EPA-HQ-OAR-2003-0062-0278].

Until such time as a 1-hour NO_2 SIL is defined in the PSD regulations, we are herein providing a recommended interim SIL that we intend to use as a screening tool for completing the required air quality analyses for the new 1-hour NO_2 under the federal PSD program at 40 CFR 52.21. To support the application of this interim SIL in each instance, a permitting authority that utilizes this SIL as part of an ambient air quality analysis should include in the permit record the analysis reflected in this memorandum and the referenced documents to demonstrate that an air quality impact at or below the SIL is *de minimis* in nature and would not cause a violation of the NAAQS.

Using the interim 1-hour NO_2 SIL, the permit applicant and permitting authority can determine: (1) whether, based on the proposed increase in NOx emissions, a cumulative air quality analysis is required; (2) the area of impact within which a cumulative air quality analysis should focus; and (3) whether, as part of a cumulative air quality analysis, the proposed source's NOx emissions will cause or contribute to a modeled violation of the 1-hour NO_2 NAAQS.

In this guidance, EPA recommends an interim 1-hour NO_2 SIL value of 4 ppb. To determine initially whether a proposed project's emissions increase will have a significant impact (resulting in the need for a cumulative air quality analysis), this interim SIL should be compared to either of the following:

- The highest of the 5-year averages of the maximum modeled 1-hour NO_2 concentrations predicted each year at each receptor, based on 5 years of National Weather Service data; or
- The highest modeled 1-hour NO_2 concentration predicted across all receptors based on 1 year of site-specific meteorological data, or the highest of the multi-year averages of the maximum modeled 1-hour NO_2 concentrations predicted each year at each receptor, based on 2 or more, up to 5 complete years of available site-specific meteorological data.

Additional guidance will be forthcoming for the purpose of comparing a proposed source's modeled impacts to the interim 1-hour NO_2 SIL in order to make a determination about whether that source's contribution is significant when a cumulative air quality analysis identifies violations of the 1-hour NO_2 NAAQS (i.e., "causes or contributes to" a modeled violation).

We derived this interim 1-hour NO_2 SIL by using an impact equal to 4% of the 1-hour NO_2 NAAQS (which is 100 ppb). We have chosen this approach because we believe it is reasonable to base the interim 1-hour NO_2 SIL directly on consideration of impacts relative to the 1-hour NO_2 NAAQS. In 1980, we defined SER for each pollutant subject to PSD. 45 FR 52676, August 7, 1980 at 52705-52710. For PM and SO_2, we defined the SER as the emissions rate that resulted in an ambient impact equal to 4% of the applicable short-term NAAQS. The 1980 analysis focused on levels no higher than 5% of the primary standard because of concerns that higher levels were found to result in unreasonably large amounts of increment being consumed by a single source. Within the range of impacts analyzed, we considered two factors that had an important influence on the choice of *de minimis* emissions levels: (1) cumulative effect on increment consumption of multiple sources in an area, each making the maximum *de minimis* emissions increase; and (2) the projected consequence of a given *de minimis* level on administrative burden. As explained in the preamble to the 1980 rulemaking and the supporting documentation,[5] EPA decided to use 4% of the 24-hour primary NAAQS for PM and SO_2 to define the significant emissions rates (SERs) for those pollutants. It was noted that, at the time, only an annual NO_2 NAAQS existed. Thus, for reasons explained in the 1980 preamble, to define the SER for NOx emissions we used a design value of 2% of the annual NO_2 NAAQS. See 45 FR 52708. Looking now at a short-term NAAQS for NO_2, we believe that it is reasonable as an interim approach to use a SIL value that represents 4% of the 1-hour NO_2

[5] EPA evaluated de minimis levels for pollutants for which NAAQS had been established in a document titled "Impact of Proposed and Alternative De Minimis Levels for Criteria Pollutants"; EPA-450/2-80-072, June 1980.

NAAQS. EPA will consider other possible alternatives for developing a 1-hour NO_2 SIL in a future rulemaking that will provide an opportunity for public participation in the development of a SIL as part of the PSD regulations.

Several state programs have already adopted interim 1-hour NO_2 SILs that differ (both higher and lower) from the interim value being recommended herein. The EPA-recommended interim 1-hour NO_2 SIL is not intended to supersede any interim SIL that is now or may be relied upon to implement a state PSD program that is part of an approved SIP, or to impose the use of the SIL concept on any state that chooses to implement the PSD program—in particular the ambient air quality analysis—without using a SIL as a screening tool. Accordingly, states that implement the PSD program under an EPA-approved SIP may choose to use this interim SIL, another value that may be deemed more appropriate for PSD permitting purposes in the state of concern, or no SIL at all. The application of any SIL that is not reflected in a promulgated regulation should be supported by a record in each instance that shows the value represents a *de minimis* impact on the 1-hour NO_2 standard, as described above.

In the event of questions regarding the general implementation guidance contained in this memorandum, please contact Raj Rao (rao.raj@epa.gov).

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June 28, 2010

<u>MEMORANDUM</u>

SUBJECT: Applicability of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard

FROM: Tyler Fox, Leader
Air Quality Modeling Group, C439-01

TO: Regional Air Division Directors

INTRODUCTION

On January 22, 2010, EPA announced a new 1-hour nitrogen dioxide (NO_2) National Ambient Air Quality Standard (1-hour NO_2 NAAQS or 1-hour NO_2 standard) which is attained when the 3-year average of the 98th-percentile of the annual distribution of daily maximum 1-hour concentrations does not exceed 100 ppb at each monitor within an area. The final rule for the new 1-hour NO_2 NAAQS was published in the <u>Federal Register</u> on February 9, 2010 (75 FR 6474-6537), and the standard became effective on April 12, 2010 (EPA, 2010a). This memorandum clarifies the applicability of current guidance in the *Guideline on Air Quality Models* (40 CFR Part 51, Appendix W) for modeling NO_2 impacts in accordance with the Prevention of Significant Deterioration (PSD) permit requirements to demonstrate compliance with the new 1-hour NO_2 standard.

SUMMARY OF CURRENT GUIDANCE

While the new 1-hour NAAQS is defined relative to ambient concentrations of NO_2, the majority of nitrogen oxides (NOx) emissions for stationary and mobile sources are in the form of nitric oxide (NO) rather than NO_2. Appendix W notes that the impact of an individual source on ambient NO_2 depends, in part, "on the chemical environment into which the source's plume is to be emitted" (see Section 5.1.j). Given the role of NOx chemistry in determining ambient impact levels of NO_2 based on modeled NOx emissions, Section 5.2.4 of Appendix W recommends the following three-tiered screening approach for NO_2 modeling for annual averages:

- Tier 1 - assume full conversion of NO to NO_2 based on application of an appropriate refined modeling technique under Section 4.2.2 of Appendix W to estimate ambient NOx concentrations;
- Tier 2 - multiply Tier 1 result by empirically-derived NO_2/NOx ratio, with 0.75 as the annual national default ratio (Chu and Meyer, 1991); and

- Tier 3 - detailed screening methods may be considered on a case-by-case basis, with the Ozone Limiting Method (OLM) identified as a detailed screening technique for point sources (Cole and Summerhays, 1979).

Tier 2 is often referred to as the Ambient Ratio Method, or ARM. Site-specific ambient NO_2/NOx ratios derived from appropriate ambient monitoring data may also be considered as detailed screening methods on a case-by-case basis, with proper justification. Consistent with Section 4.2.2, AERMOD is the current preferred model for "a wide range of regulatory applications in all types of terrain" for purposes of estimating ambient concentrations of NO_2, based on NOx emissions, under Tiers 1 and 2 above. We discuss the role of AERMOD for Tier 3 applications in more detail below.

APPLICABILITY OF CURRENT GUIDANCE TO 1-HOUR NO_2 NAAQS

In general, the Appendix W recommendations regarding the annual NO_2 standard are also applicable to the new 1-hour NO_2 standard, but additional issues may need to be considered in the context of a 1-hour standard, depending on the characteristics of the emission sources, and depending on which tier is used, as summarized below:

- Tier 1 applies to the 1-hour NO_2 standard without any additional justification;
- Tier 2 may also apply to the 1-hour NO_2 standard in many cases, but some additional consideration will be needed in relation to an appropriate ambient ratio for peak hourly impacts since the current default ambient ratio is considered to be representative of "area wide quasi-equilibrium conditions"; and
- Tier 3 "detailed screening methods" will continue to be considered on a case-by-case basis for the 1-hour NO_2 standard. However, certain input data requirements and assumptions for Tier 3 applications may be of greater importance for the 1-hour standard than for the annual standard given the more localized nature of peak hourly vs. annual impacts. In addition, use of site-specific ambient NO_2/NOx ratios based on ambient monitoring data will generally be more difficult to justify for the 1-hour NO_2 standard than for the annual standard.

While Appendix W specifically mentions OLM as a detailed screening method under Tier 3, we also consider the Plume Volume Molar Ratio Method (PVMRM) (Hanrahan, 1999a) discussed under Section 5.1.j of Appendix W to be in this category at this time. Both of these options account for ambient conversion of NO to NO_2 in the presence of ozone, based on the following basic chemical mechanism, known as titration, although there are important differences between these methods:

$$NO + O_3 \rightarrow NO_2 + O_2 \qquad \text{(Eq. 1)}$$

As noted in Section 5.1.j, EPA is currently testing the PVMRM option to determine its suitability as a refined method. Limited evaluations of PVMRM have been completed, which show encouraging results, but the amount of data currently available is too limited to justify a designation of PVMRM as a refined method for NO_2 (Hanrahan, 1999b; MACTEC, 2005). EPA is currently updating and extending these evaluations to examine model performance for predicting hourly NO_2 concentrations, including both the OLM and PVMRM options, and results of these additional evaluations will be provided at a later date. A sensitivity analysis of the OLM and PVMRM options in AERMOD has been conducted that compares modeled concentrations based on OLM and PVMRM with Tiers 1 and 2 for a range of source characteristics (MACTEC, 2004). This analysis serves as a useful reference to understand how ambient NO_2 concentrations may be impacted by application of this three-tiered screening approach, and includes comparisons for both annual average and maximum 1-hour NO_2 concentrations.

Key model inputs for both the OLM and PVMRM options are the in-stack ratios of NO_2/NOx emissions and background ozone concentrations. While the representativeness of these key inputs is important in the context of the annual NO_2 standard, they will generally take on even greater importance for the new 1-hour NO_2 standard, as explained in more detail below. Recognizing the potential importance of the in-stack NO_2/NOx ratio for hourly NO_2 compliance demonstrations, we recommend that in-stack ratios used with either the OLM or PVMRM options be justified based on the specific application, i.e., there is no "default" in-stack NO_2/NOx ratio for either OLM or PVMRM.

The OLM and PVMRM methods are both available as non-regulatory-default options within the EPA-preferred AERMOD dispersion model (Cimorelli, *et al.*, 2004; EPA, 2004; EPA, 2009). As a result of their non-regulatory-default status, pursuant to Sections 3.1.2.c, 3.2.2.a, and A.1.a(2) of Appendix W, application of AERMOD with the OLM or PVMRM option is no longer considered a "preferred model" and, therefore, requires justification and approval by the Regional Office on a case-by-case basis. While EPA is continuing to evaluate the PVMRM and OLM options within AERMOD for use in compliance demonstrations for the 1-hour NO_2 standard, as long as they are considered to be non-regulatory-default options, their use as alternative modeling techniques under Appendix W should be justified in accordance with Section 3.2.2, paragraph (e), as follows:

"e. Finally, for condition (3) in paragraph (b) of this subsection [preferred model is less appropriate for the specific application, or there is no preferred model], an alternative refined model may be used provided that:

i. The model has received a scientific peer review;
ii. The model can be demonstrated to be applicable to the problem on a theoretical basis;
iii. The data bases which are necessary to perform the analysis are available and adequate;
iv. Appropriate performance evaluations of the model have shown that the model is not biased toward underestimates; and
v. A protocol on methods and procedures to be followed has been established."

Since AERMOD is the preferred model for dispersion for a wide range of application, the focus of the alternative model demonstration for use of the OLM and PVMRM options within AERMOD is on the treatment of NOx chemistry within the model, and does not need to address basic dispersion algorithms within AERMOD. Furthermore, items i and iv of the alternative model demonstration for these options can be fulfilled in part based on existing documentation (Cole and Summerhays, 1979; Hanrahan, 1999a; Hanrahan, 1999b; MACTEC, 2005), and the remaining items should be routinely addressed as part of the modeling protocol, irrespective of the regulatory status of these options. The issue of applicability to the problem on a theoretical basis (item ii) is a case-by-case determination based on an assessment of the adequacy of the ozone titration mechanism utilized by these options to account for NOx chemistry within the AERMOD model based on "the chemical environment into which the source's plume is to be emitted" (Appendix W, Section 5.1.j). The adequacy of available data bases needed for application of OLM and PVMRM (item iii), including in-stack NO_2/NOx ratios and background ozone concentrations, is a critical aspect of the demonstration which we discuss in more detail below. It should also be noted that application of the OLM or PVMRM methods with other Appendix W models or alternative models, whether as a separate post-processor or integrated within the model, would require additional documentation and demonstration that the methods have been implemented and applied appropriately within that context, including model-specific performance evaluations which satisfy item iv under Section 3.2.2.e.

Given the form of the new 1-hour NO_2 standard, some clarification is needed regarding the appropriate data periods for modeling demonstrations of compliance with the NAAQS vs. demonstrations of attainment of the NAAQS through ambient monitoring. While monitored design values for the 1-hour NO_2 standard are based on a 3-year average (in accordance with Section 1(c)(2) of Appendix S to 40 CFR Part 50), Section 8.3.1.2 of Appendix W addresses the length of the meteorological data record for dispersion modeling, stating that "[T]he use of 5 years of NWS [National Weather Service] meteorological data or at least 1 year of site specific data is required." Section 8.3.1.2.b further states that "one year or more (including partial years), up to five years, of site specific data . . . are preferred for use in air quality analyses." Although the monitored design value for the 1-hour NO_2 standard is defined in terms of the 3-year average, this definition does not preempt or alter the Appendix W requirement for use of 5 years of NWS meteorological data or at least 1 year of site specific data. The 5-year average based on use of NWS data, or an average across one or more years of available site specific data, serves as an unbiased estimate of the 3-year average for purposes of modeling demonstrations of compliance with the NAAQS. Modeling of "rolling 3-year averages," using years 1 through 3, years 2 through 4, and years 3 through 5, is not required. Furthermore, since modeled results for NO_2 are averaged across the number of years modeled for comparison to the new 1-hour NO_2 standard, the meteorological data period should include complete years of data to avoid introducing a seasonal bias to the averaged impacts. In order to comply with Appendix W recommendations in cases where partial years of site specific meteorological data are available, while avoiding any seasonal bias in the averaged impacts, an approach that utilizes the most conservative modeling result based on the first complete-year period of the available data record vs. results based on the last complete-year period of available data may be appropriate, subject to approval by the appropriate reviewing authority. Such an approach would ensure that all available site specific data are accounted for in the modeling analysis without imposing an undue burden on the applicant and avoiding arbitrary choices in the selection of a single complete-year data period.

The form of the new 1-hour NO_2 standard also has implications regarding appropriate methods for combining modeled ambient concentrations with monitored background concentrations for comparison to the NAAQS in a cumulative modeling analysis. As noted in the March 23, 2010 memorandum regarding "Modeling Procedures for Demonstrating Compliance with $PM_{2.5}$ NAAQS" (EPA, 2010b), combining the 98th percentile monitored value with the 98th percentile modeled concentrations for a cumulative impact assessment could result in a value that is below the 98th percentile of the combined cumulative distribution and would, therefore, not be protective of the NAAQS. However, unlike the recommendations presented for $PM_{2.5}$, the modeled contribution to the cumulative ambient impact assessment for the 1-hour NO_2 standard should follow the form of the standard based on the 98th percentile of the annual distribution of daily maximum 1-hour concentrations averaged across the number of years modeled. A "first tier" assumption that may be applied without further justification is to add the overall highest hourly background NO_2 concentration from a representative monitor to the modeled design value, based on the form of the standard, for comparison to the NAAQS. Additional refinements to this "first tier" approach based on some level of temporal pairing of modeled and monitored values may be considered on a case-by-case basis, with adequate justification and documentation.

DISCUSSION OF TECHNICAL ISSUES

While many of the same technical issues related to application of Appendix W guidance for an annual NO_2 standard would also apply in the context of the new 1-hour NO_2 standard, there are some important differences that may also need to be considered depending on the specific application. This section discusses several aspects of these technical issues related to the new 1-hour NO_2 NAAQS, including a discussion of source emission inventories required for modeling demonstrations of compliance with the NAAQS and other issues specific to each of the three tiers identified in Section 5.2.4 of Appendix W for NO_2 modeling.

Emission Inventories

The source emissions data are a key input for all modeling analyses and one that may require additional considerations under the new 1-hour NO_2 standard is the source emissions data. Section 8.1 of Appendix W provides guidance regarding source emission input data for dispersion modeling and Table 8-2 summarizes the recommendations for emission input data that should be followed for NAAQS compliance demonstrations. Although existing NOx emission inventories used to support modeling for compliance with the annual NO_2 standard should serve as a useful starting point, such inventories may not always be adequate for use in assessing compliance with the new 1-hour NO_2 standard since some aspects of the guidance in Section 8.1 differs for long-term (annual and quarterly) standards vs. short-term ($\leq$ 24 hours) standards. In particular, since maximum ground-level concentrations may be more sensitive to operating levels and startup/shutdown conditions for an hourly standard than for an annual standard, emission rates and stack parameters associated with the maximum ground-level concentrations for the annual standard may underestimate maximum concentrations for the new 1-hour NO_2 standard. Due to the importance of in-stack NO_2/NOx ratios required for application of the OLM and PVMRM options within AERMOD discussed above, consideration should also be given to the potential variability of in-stack NO_2/NOx ratios under different operating conditions when those non-regulatory-default options are applied. We also note that source emission input data recommendations in Table 8-2 of Appendix W for "nearby sources" and "other sources" that may be needed to conduct a cumulative impact assessment include further differences between emission data for long-term vs. short-term standards which could also affect the adequacy of existing annual NOx emission inventories for the new 1-hour NO_2 standard. The terms "nearby sources" and "other sources" used in this context are defined in Section 8.2.3 of Appendix W. Attachment A provides a more detailed discussion on determining NOx emissions for permit modeling.

While Section 8.2.3 of Appendix W emphasizes the importance of professional judgment by the reviewing authority in the identification of nearby and other sources to be included in the modeled emission inventory, Appendix W establishes "a significant concentration gradient in the vicinity of the source" under consideration as the main criterion for this selection. Appendix W also indicates that "the number of such [nearby] sources is expected to be small except in unusual situations." See Section 8.2.3.b. Since concentration gradients will vary somewhat depending on the averaging period being modeled, especially for an annual vs. 1-hour standard, the criteria for selection of "nearby" and "other" sources for inclusion in the modeled inventory may need to be reassessed for the 1-hour NO_2 standard.

The representativeness of available ambient air quality data also plays an important role in determining which nearby sources should be included in the modeled emission inventory. Key issues to consider in this regard are the extent to which ambient air impacts of emissions from nearby sources are reflected in the available ambient measurements, and the degree to which emissions from those background sources during the monitoring period are representative of allowable emission levels under the existing permits. The professional judgments that are required in developing an appropriate inventory of background sources should strive toward the proper balance between adequately characterizing the potential for cumulative impacts of emission sources within the study area to cause or contribute to violations of the NAAQS, while minimizing the potential to overestimate impacts by double-counting of modeled source impacts that are also reflected in the ambient monitoring data. We would also caution against the literal and uncritical application of very prescriptive procedures for identifying which background sources should be included in the modeled emission inventory for NAAQS compliance demonstrations, such as those described in Chapter C, Section IV.C.1 of the draft *New Source Review Workshop Manual* (EPA, 1990), noting again that Appendix W emphasizes the importance of professional judgment in this process. While the draft workshop manual serves as a useful general reference regarding New Source Review (NSR) and PSD programs, and such procedures may play a useful role in defining the spatial extent of sources whose emissions may need to be considered, it should be recognized that "[i]t is not intended to be an official statement of policy and standards and does not establish binding regulatory requirements." See, Preface.

Given the range of issues involved in the determination of an appropriate inventory of emissions to include in a cumulative impact assessment, the appropriate reviewing authority should be consulted early in the process regarding the selection and proper application of appropriate monitored background concentrations and the selection and appropriate characterization of modeled background source emission inventories for use in demonstrating compliance with the new 1-hour NO_2 standard.

Tier-specific Technical Issues

This section discusses technical issues related to application of each tier in the three-tiered screening approach for NO_2 modeling recommended in Section 5.2.4 Appendix W. A basic understanding of NOx chemistry and "of the chemical environment into which the source's plume is to be emitted" (Appendix W, Section 5.1.j) will be helpful for addressing these issues based on the specific application.

Tier 1:

Since the assumption of full conversion of NO to NO_2 will provide the most conservative treatment of NOx chemistry in assessing ambient impacts, there are no technical issues associated with treatment of NOx chemistry for this tier. However, the general issues related to emission inventories for the 1-hour NO_2 standard discussed above and in Attachment A apply to Tier 1.

Tier 2:

As noted above, the 0.75 national default ratio for ARM is considered to be representative of "area wide quasi-equilibrium conditions" and, therefore, may not be as appropriate for use with the 1-hour NO_2 standard. The appropriateness of this default ambient ratio will depend somewhat on the characteristics of the sources, and as such application of Tier 2 for 1-hour NO_2 compliance demonstrations may need to be considered on a source-by-source basis in some cases. The key technical issue to address in relation to this tier requires an understanding of the meteorological conditions that are likely to be associated with peak hourly impacts from the source(s) being modeled. In general, for low-level releases with limited plume rise, peak hourly NOx impacts are likely to be associated with nighttime stable/light wind conditions. Since ambient ozone concentrations are likely to be relatively low for these conditions, and since low wind speeds and stable atmospheric conditions will further limit the conversion of NO to NO_2 by limiting the rate of entrainment of ozone into the plume, the 0.75 national default ratio will likely be conservative for these cases. A similar rationale may apply for elevated sources where plume impaction on nearby complex terrain under stable atmospheric conditions is expected to determine the peak hourly NOx concentrations. By contrast, for elevated sources in relatively flat terrain, the peak hourly NOx concentrations are likely to occur during daytime convective conditions, when ambient ozone concentrations are likely to be relatively high and entrainment of ozone within the plume is more rapid due to the vigorous vertical mixing during such conditions. For these sources, the 0.75 default ratio may not be conservative, and some caution may be needed in applying Tier 2 for such sources. We also note that the default equilibrium ratio employed within the PVMRM algorithm as an upper bound on an hourly basis is 0.9.

Tier 3:

This tier represents a general category of "detailed screening methods" which may be considered on a case-by-case basis. Section 5.2.4(b) of Appendix W cites two specific examples of Tier 3 methods, namely OLM and the use of site-specific ambient NO_2/NOx ratios supported by ambient measurements. As noted above, we also believe it is appropriate to consider the

PVMRM option as a Tier 3 detailed screening method at this time. The discussion here focuses primarily on the OLM and PVMRM methods, but we also note that the use of site-specific ambient NO_2/NOx ratios will be subject to the same issues discussed above in relation to the Tier 2 default ARM, and as a result it will generally be much more difficult to determine an appropriate ambient NO_2/NOx ratio based on monitoring data for the new 1-hour NO_2 standard than for the annual standard.

While OLM and PVMRM are both based on the same simple chemical mechanism of titration to account for the conversion of NO emissions to NO_2 (see Eq. 1) and therefore entail similar technical issues and considerations, there are some important differences that also need to be considered when assessing the appropriateness of these methods for specific applications. While the titration mechanism may capture the most important aspects of NO-to-NO_2 conversion in many applications, both methods will suffer from the same limitations for applications in which other mechanisms, such as photosynthesis, contribute significantly to the overall process of chemical transformation. Sources located in areas with high levels of VOC emissions may be subject to these limitations of OLM and PVMRM. Titration is generally a much faster mechanism for converting NO to NO_2 than photosynthesis, and as such is likely to be appropriate for characterizing peak 1-hour NO_2 impacts in many cases.

Both OLM and PVMRM rely on the same key inputs of in-stack NO_2/NOx ratios and hourly ambient ozone concentrations. Although both methods can be applied within the AERMOD model using a single "representative" background ozone concentration, it is likely that use of a single value would result in very conservative estimates of peak hourly ambient concentrations since its use for the 1-hour NO_2 standard would be contingent on a demonstration of conservatism for all hours modeled. Furthermore, hourly monitored ozone concentrations used with the OLM and PVMRM options must be concurrent with the meteorological data period used in the modeling analysis, and thus the temporal representativeness of the ozone data for estimating ambient NO_2 concentrations could be a factor in determining the appropriateness of the meteorological data period for a particular application. As noted above, the representativeness of these key inputs takes on somewhat greater importance in the context of a 1-hour NO_2 standard than for an annual standard, for obvious reasons. In the case of hourly background ozone concentrations, methods used to substitute for periods of missing data may play a more significant role in determining the 1-hour NO_2 modeled design value, and should therefore be given greater scrutiny, especially for data periods that are likely to be associated with peak hourly concentrations based on meteorological conditions and source characteristics. In other words, ozone data substitution methods that may have been deemed appropriate in prior applications for the annual standard may not be appropriate to use for the new 1-hour standard.

While these technical issues and considerations generally apply to both OLM and PVMRM, the importance of the in-stack NO_2/NOx ratios may be more important for PVMRM than for OLM in some cases, due to differences between the two methods. The key difference between the two methods is that the amount of ozone available for conversion of NO to NO_2 is based simply on the ambient ozone concentration and is independent of source characteristics for OLM, whereas the amount of ozone available for conversion in PVMRM is based on the amount of ozone within the volume of the plume for an individual source or group of sources. The plume volume used in PVMRM is calculated on an hourly basis for each source/receptor combination, taking into account the dispersive properties of the atmosphere for that hour. For a low-level release where peak hourly NOx impacts occur close to the source under stable/light wind conditions, the plume volume will be relatively small and the ambient NO_2 impact for such cases will be largely determined by the in-stack NO_2/NOx ratio, especially for sources with relatively close fenceline or ambient air boundaries. This example also highlights the fact that the relative importance of the in-stack NO_2/NOx ratios may be greater for some applications than others, depending on the source characteristics and other factors. Assumptions regarding in-stack NO_2/NOx ratios that may have been deemed appropriate in the context of the annual standard may not be appropriate to use for the new 1-hour standard. In particular, it is worth reiterating that the 0.1 in-stack ratio often cited as the "default" ratio for OLM should not be treated as a default value for hourly NO_2 compliance demonstrations.

Another difference between OLM and PVMRM that is worth noting here is the treatment of the titration mechanism for multiple sources of NOx. There are two possible modes that can be used for applying OLM to multiple source scenarios within AERMOD: (1) apply OLM to each source separately and assume that each source has all of the ambient ozone available for conversion of NO to NO_2; and (2) assume that sources whose plumes overlap compete for the available ozone and apply OLM on a combined plume basis. The latter option can be applied selectively to subsets of sources within the modeled inventory or to all modeled sources using the OLMGROUP keyword within AERMOD, and is likely to result in lower ambient NO_2 concentrations in most cases since the ambient NO_2 levels will be more ozone-limited. One of the potential refinements in application of the titration method incorporated in PVMRM is a technique for dynamically determining which sources should compete for the available ozone based on the relative locations of the plumes from individual sources, both laterally and vertically, on an hourly basis, taking into account wind direction and plume rise. While this approach addresses one of the implementation issues associated with OLM by making the decision of which sources should compete for ozone, there is only very limited field study data available to evaluate the methodology.

Given the importance of the issue of whether to combine plumes for the OLM option, EPA has addressed the issue in the past through the Model Clearinghouse process. The general guidance that has emerged in those cases is that the OLM option should be applied on a source-by-source basis in most cases and that combining plumes for application of OLM would require a clear demonstration that the plumes will overlap to such a degree that they can be considered as "merged" plumes. However, much of that guidance was provided in the context of applying the OLM method outside the dispersion model in a post-processing mode on an annual basis. The past guidance on this issue is still appropriate in that context since there is no realistic method to account for the degree of plume merging on an hourly basis throughout the modeling analysis when applied as a post-processor. However, the implementation of the OLM option within the AERMOD model applies the method on a source-by-source, receptor-by-receptor, and hour-by-hour basis. As a result, the application of the OLMGROUP option within AERMOD is such that the sources only compete for the available ozone to the extent that each source contributes to the cumulative NOx concentration at each receptor for that hour. Sources which contribute significantly to the ambient NOx concentration at the receptor will compete for available ozone in proportion to their contribution, while sources that do not contribute significantly to the ambient NOx concentration will not compete for the ozone. Thus, the OLMGROUP option implemented in AERMOD will tend to be "self-correcting" with respect to concerns that combining plumes for OLM will overestimate the degree of ozone limiting potential (and therefore underestimate ambient NO_2 concentrations). As a result of these considerations, we recommend that use of the "OLMGROUP ALL" option, which specifies that all sources will potentially compete for the available ozone, be routinely applied and accepted for all approved applications of the OLM option in AERMOD. This recommendation is supported by model-to-monitor comparisons of hourly NO_2 concentrations from the application of AERMOD for the Atlanta NO_2 risk and exposure assessment (EPA, 2008), and recent re-evaluations of hourly NO_2 impacts from the two field studies (New Mexico and Palaau) that were used in the evaluation of PVMRM (MACTEC, 2005). These model-to-monitor comparisons of hourly NO_2 concentrations show reasonably good performance using the "OLMGROUP ALL" option within AERMOD, with no indication of any bias to underestimate hourly NO_2 concentrations with OLMGROUP ALL. Furthermore, model-to-monitor comparisons based on OLM without the OLMGROUP option do exhibit a bias to overestimate hourly NO_2 concentrations. We will provide further details regarding these recent hourly NO_2 model-to-monitor comparisons at a later date.

SUMMARY

To summarize, we emphasize the following points:

1. The 3-tiered screening approach recommended in Section 5.2.4 of Appendix W for annual NO_2 assessments generally applies to the new 1-hour NO_2 standard.
2. While generally applicable, application of the 3-tiered screening approach for assessments of the new 1-hour NO_2 standard may entail additional considerations, such as the importance of key input data, including appropriate emission rates for the 1-hour standard vs. the annual standard for all tiers, and the representativeness of in-stack NO_2/NOx ratios and hourly background ozone concentrations for Tier 3 detailed screening methods.
3. Since the OLM and PVMRM methods in AERMOD are currently considered non-regulatory-default options, application of these options requires justification and approval by the Regional Office on a case-by-case basis as alternative modeling techniques, in accordance with Section 3.2.2, paragraph (e), of Appendix W.
4. Applications of the OLM option in AERMOD, subject to approval under Section 3.2.2.e of Appendix W, should routinely utilize the "OLMGROUP ALL" option for combining plumes.
5. While the 1-hour NAAQS for NO_2 is defined in terms of the 3-year average for monitored design values to determine attainment of the NAAQS, this definition does not preempt or alter the Appendix W requirement for use of 5 years of NWS meteorological data or at least 1 year of site specific data.

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ATTACHMENT A

Background on Hourly NOx Emissions for Permit Modeling for the 1-hour NO_2 NAAQS

Introduction

The purpose of this attachment is to address questions about availability of hourly NOx emissions for permit modeling under the new NO_2 NAAQS. It summarizes existing guidance regarding emission input data requirements for NAAQS compliance modeling, and provides background on the historical approach to development of inventories for NO_2 permit modeling and computation of hourly emissions appropriate for assessing the new 1-hour NO_2 standard. Although the NAAQS is defined in terms of ambient NO_2 concentrations, source emission estimates for modeling are based on NOx.

Under the PSD program, the owner or operator of the source is required to demonstrate that the source does not cause or contribute to a violation of a NAAQS (40 CFR 51.166 (k)(1) and 40 CFR 52.21 (k)(1)) and/or PSD increments (40 CFR 51.166 (k)(2) and 52.21 (k)(2)). However, estimation of the necessary emission input data for NAAQS compliance modeling entails consideration of numerous factors, and the appropriate reviewing authority should be consulted early in the process to determine the appropriate emissions data for use in specific modeling applications (see 40 CFR 51, Appendix W, 8.1.1.b and 8.2.3.b)

Summary of Current Guidance

Section 8.1 of the *Guideline on Air Quality Models*, Appendix W to 40 CFR Part 51, provides recommendations regarding source emission input data needed to support dispersion modeling for NAAQS compliance demonstrations. Table 8-2 of Appendix W provides detailed guidance regarding the specific components of the emission input data, including the appropriate emission limits (pounds/MMBtu), operating level (MMBtu/hr), and operating factor (e.g., hr/yr or hr/day), depending on the averaging time of the standard. Table 8-2 also distinguishes between the emission input data needed for the new or modified sources being assessed, and "nearby" and "other" background sources included in the modeled emission inventory.

Based on Table 8-2, emission input data for new or modified sources for annual and quarterly standards are essentially the same as for short-term standards ($\leq$ 24 hours), based on maximum allowable or federally enforceable emission limits, design capacity or federally enforceable permit conditions, and the assumption of continuous operation. However, there are a few additional considerations cited in Appendix W that could result in different emission input data for the 1-hour vs. annual NO_2 NAAQS. For example, while design capacity is listed as the recommended operating level for the emission calculation, peak hourly ground-level concentrations may be more sensitive than annual average concentrations to changes in stack parameters (effluent exit temperature and exit velocity) under different operating capacities. Table 8-2 specifically recommends modeling other operating levels, such as 50 percent or 75 percent of capacity, for short-term standards (see footnote 3). Another factor that may affect maximum ground-level concentrations differently between the 1-hour vs. annual standard is restrictions on operating factors based on federally enforceable permit conditions. While federally enforceable operating factors other than continuous operation may be accounted for in the emission input data (e.g., if operation is limited to 8 am to 4 pm each day), Appendix W also states that modeled emissions should not be averaged across non-operating time periods (see footnote 2 of Table 8-2).

While emission input data recommendations for "nearby" and "other" background sources included in the modeled emission inventory are similar to the new or modified source emission inputs in many respects, there is an important difference in the operating factor between annual and short-term standards. Emission input data for nearby and other sources may reflect actual operating factors (averaged over the most recent 2 years) for the annual standard, while continuous operation should be assumed for short-term standards. This could result in important differences in emission input data for modeled background sources for the 1-hour NO_2 NAAQS relative to emissions used for the annual standard.

Model Emission Inventory for NO_2 Modeling

For the existing annual NO_2 NAAQS, the permit modeling inventory has generally been compiled from the annual state emission inventory questionnaire (EIQ) or Title V permit applications on file with the relevant permitting authority (state or local air program). Since a state uses the annual EIQ for Title V fee assessment, the state EIQ typically requires reporting of unit capacity, total fuel combusted, and/or hours of operation to help verify annual emissions calculations for fee accuracy purposes. Likewise, Title V operating permit applications contain all of the same relevant information for calculating emissions. While these emission inventories are important resources for gathering emission input data on background sources for NAAQS compliance modeling, inventories which are based on actual operations may not be sufficient for short-term standards, such as the new 1-hour NO_2 NAAQS. However, appropriate estimates of emissions from background sources for the 1-hour NO_2 standard may be derived in many cases from information in these inventories regarding permitted emission limits and operating capacity.

Historically, it has not been a typical practice for an applicant to use the EPA's national emission inventory (NEI) as the primary source for compiling the permit modeling inventory. Since the emission data submitted to the NEI represents annual emission totals, it may not be suitable for use in NAAQS compliance modeling for short-term standards since modeling should be based on continuous operation, even for modeled background sources. Although the NEI may provide emission data for background sources that are more appropriate for the annual NO_2 standard, the utility of the NEI for purposes of NAAQS compliance modeling is further limited due to the fact that additional information regarding stack parameters and operating rates required for modeling may not be available from the NEI. While records exist in the NEI for reporting stack data necessary for point source modeling (i.e., stack coordinates, stack heights, exit temperatures, exit velocities), some states do not report such information to the NEI, or there are may be errors in the location data submitted to the NEI. Under such conditions, default stack information based upon SIC is substituted and use of such data could invalidate modeling results. Building locations and dimensions, which may be required to account for building downwash influences in the modeling analysis, may also be missing or incomplete in many cases.

A common and relatively straightforward approach for compiling the necessary information to develop an inventory of emissions from background sources for a permit modeling demonstration is as follows, patterned after the draft *New Source Review Workshop Manual* (EPA, 1990). The applicant completes initial modeling of allowable emission increases associated with the proposed project and determines the radii of impact (ROI) for each pollutant and averaging period, based on the maximum distance at which the modeled ambient concentration exceeds the Significant Impact Level (SIL) for each pollutant and averaging period. Typically, the largest ROI is selected and then a list of potential background sources within the ROI plus a screening distance beyond the ROI is compiled by the permitting authority and supplied to the applicant. The applicant typically requests permit applications or EIQ submittals from the records department of the permitting authority to gather stack data and source operating data necessary to compute emissions for the modeled inventory. Once the applicant has gathered the relevant data from the permitting authorities, model emission rates are calculated. While this approach is fairly common, it should be noted that the draft workshop manual "is not intended to be an official statement of policy and standards and does not establish binding regulatory requirements" (see, Preface), and the appropriate reviewing authority should be consulted early in the process regarding the selection of appropriate background source emission inventories for the 1-hour NO_2 standard. We also note that Appendix W establishes "a significant concentration gradient in the vicinity of the source" under consideration as the main criterion for selection of nearby sources for inclusion in the modeled inventory, and further indicates that "the number of such [nearby] sources is expected to be small except in unusual situations." See Section 8.2.3.b.

As mentioned previously, modeled emission rates for short-term NAAQS are computed consistent with the recommendations of Section 8.1 of Appendix W, summarized in Table 8-2. The maximum allowable (SIP-approved process weight rate limits) or federally enforceable permit limit emission rates assuming design capacity or federally enforceable capacity limitation are used to compute hourly emissions for dispersion modeling against short-term NAAQS such as the new 1-hour NO_2 NAAQS. If a source assumes an enforceable limit on the hourly firing capacity of a boiler, this is reflected in the calculations. Otherwise, the design capacity of the source is used to compute the model emission rate. A load analysis is typically necessary to determine the load or operating condition that causes the maximum ground-level concentrations. In addition to 100 percent load, loads such as 50 percent and 75 percent are commonly assessed. As noted above, the load analysis is generally more important for short-term standards than for annual standards. For an hourly standard, other operating scenarios of relatively short duration such as "startup" and "shutdown" should be assessed since these conditions may result in maximum hourly ground-level concentrations, and the control efficiency of emission control devices during these operating conditions may also need to be considered in the emission estimation.

Emission Calculation Example

The hourly emissions are most commonly computed from AP-42 emission factors based on unit design capacity. For a combustion unit, the source typically reports both the unit capacity and the actual total amount of fuel combusted annually (gallons, millions of cubic feet of gas, etc.) to the permitting authority for the EIQ. Likewise, Title V operating permit applications will contain similar information that can be used to compute hourly emissions.

For example, assume you are modeling an uncontrolled natural gas package boiler with a design firing rate of 30 MMBtu/hr. The AP-42 emission factor for an uncontrolled natural gas external combustion source (AP-42, Section 1.4) for firing rates less than 100 MMBtu/hr is 100 lbs. NOx/10^6 SCF natural gas combusted. The hourly emission rate is derived by converting the emission factor expressed in terms of lbs. NOx/10^6 SCF to lbs. NOx/MMBtu. The conversion is done by dividing the 100 lbs. NOx/10^6 SCF by 1,020 to convert the AP-42 factor to lbs. NOx/MMBtu. The new emission factor is now 0.098 lbs. NOx/MMBtu.

For this example, the source has no limit on the hourly firing rate of the boiler; therefore, the maximum hourly emissions are computed by multiplying the design firing rate of the boiler by the new emission factor.

$$E_{hourly} = 0.098 \text{ lbs/MMBtu} \times 30\text{MMBtu/hr} = 2.94 \text{ lbs/hr}$$

Thus 2.94 lbs/hr represents the emission rate that would be input into the dispersion model for modeling against the 1-hour NO_2 NAAQS to comport with emission rate recommendations of Section 8.1 of Appendix W.

It is important to note that data derived for the annual state emission inventory (EI) is based on actual levels of fuel combusted for the year, and is therefore different than how allowable emissions are computed for near-field dispersion modeling. For the annual EI report, a source computes their annual emissions based upon the AP-42 emission factor multiplied by the actual total annual throughput or total fuel combusted.

In the 30 MMBtu/hr boiler example, the annual NOx emissions reported to the NEI is computed by:

$$E_{annual} = (\text{AP-42 emission factor}) \times (\text{total annual fuel combusted})$$

$$E_{annual} = (100 \text{ lbs}/10^6 \text{ SCF}) \times (100\ 10^6 \text{ SCF/yr}) = 10{,}000 \text{ lbs. NOx/yr or 5 tons NOx/yr}$$

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

AUG 23 2010

MEMORANDUM

SUBJECT: Guidance Concerning the Implementation of the 1-hour SO_2 NAAQS for the Prevention of Significant Deterioration Program

FROM: Stephen D. Page, Director
Office of Air Quality Planning and Standards

TO: Regional Air Division Directors

On June 2, 2010, the U.S. Environmental Protection Agency (EPA) announced a new 1-hour sulfur dioxide (SO_2) National Ambient Air Quality Standard (hereinafter, either the 1-hour SO_2 NAAQS or 1-hour SO_2 standard) of 75 ppb, which is attained when the 3-year average of the annual 99th-percentile of 1-hour daily maximum concentrations does not exceed 75 ppb at each monitor within an area. EPA revised the primary SO_2 NAAQS to provide the requisite protection of public health. The final rule for the new 1-hour SO_2 NAAQS was published in the Federal Register on June 22, 2010 (75 FR 35520), and the standard becomes effective on August 23, 2010. In the same notice, we also announced that we are revoking both the existing 24-hour and annual primary SO_2 standards. However, as explained in this guidance, those SO_2 standards, as well as the 24-hour and annual increments for SO_2, remain in effect for a while further and must continue to be protected.

EPA interprets the Prevention of Significant Deterioration (PSD) provisions of the Clean Air Act and EPA regulations to require that any federal permit issued under 40 CFR 52.21 on or after that effective date must contain a demonstration of source compliance with the new 1-hour SO_2 NAAQS. We anticipate that some new major stationary sources or major modifications, especially those involving relatively short stacks, may experience difficulty demonstrating that emissions from proposed projects will not cause or contribute to a modeled violation of the new 1-hour SO_2 NAAQS. We also anticipate problems that sources may have interpreting the modeled 1-hour SO_2 impacts if the form of the hourly standard is not properly addressed. To respond to these and other related issues, we are providing the attached guidance, in the form of two memoranda, for implementing the new 1-hour SO_2 NAAQS under the PSD permit program.

The first memorandum, titled "General Guidance for Implementing the 1-hour SO_2 National Ambient Air Quality Standard in Prevention of Significant Deterioration Permits, Including an Interim 1-hour SO_2 Significant Impact Level," includes guidance for the preparation and review of PSD permits with respect to the new 1-hour SO_2 standard. That guidance memorandum sets forth a recommended interim 1-hour SO_2 significant impact level (SIL) that states may consider for carrying out the required PSD air quality analysis for SO_2, until EPA promulgates a 1-hour SO_2 SIL via rulemaking, and addresses the continued use of the existing SO_2 Significant Emissions Rate (SER) and Significant Monitoring Concentration (SMC) to implement the new 1-hour SO_2 standard.. The second memorandum, titled "Applicability of Appendix W Modeling Guidance for the 1-hour SO_2 National Ambient Air Quality Standard," includes specific modeling guidance for estimating ambient SO_2 concentrations and determining compliance with the new 1-hour SO_2 standard.

This guidance does not bind state and local governments and permit applicants as a matter of law. Nevertheless, we believe that state and local air agencies and industry will find this guidance useful for carrying out the PSD permit process and it will provide a consistent approach for estimating SO_2 air quality impacts from proposed construction or modification of SO_2 emissions sources. For the most part, the attached guidance focuses on how existing policy and guidance is relevant to and should be used for implementing the new 1-hour SO_2 NAAQS.

Please review the guidance included in the two attached memoranda. In the event of questions regarding the general implementation guidance contained in the first memorandum, please contact Raj Rao (rao.raj@epa.gov). For questions pertaining to the modeling guidance in the second memorandum, please contact Tyler Fox (fox.tyler@epa.gov). We are continuing our efforts to address permitting issues related to the implementation of new and revised NAAQS, and will issue additional guidance to address the NAAQS as appropriate.

Attachments:

1. Memorandum from Anna Marie Wood, Air Quality Policy Division, to EPA Regional Air Division Directors, "General Guidance for Implementing the 1-hour SO_2 National Ambient Air Quality Standard in Prevention of Significant Deterioration Permits, Including an Interim 1-hour SO_2 Significant Impact Level" (August 23, 2010).
2. Memorandum from Tyler Fox, Air Quality Modeling Group, to EPA Regional Air Division Directors, "Applicability of Appendix W Modeling Guidance for the 1-hour SO_2 National Ambient Air Quality Standard" (August 23, 2010).

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

August 23, 2010

MEMORANDUM

SUBJECT: General Guidance for Implementing the 1-hour SO_2 National Ambient Air Quality Standard in Prevention of Significant Deterioration Permits, Including an Interim 1-hour SO_2 Significant Impact Level

FROM: Anna Marie Wood, Acting Director /s/
Air Quality Policy Division

TO: Regional Air Division Directors

INTRODUCTION

We are issuing the following guidance to explain and clarify the procedures that may be followed by applicants for Prevention of Significant Deterioration (PSD) permits, and permitting authorities reviewing such applications, to properly demonstrate that proposed projects to construct and operate will not cause or contribute to a modeled violation of the new 1-hour sulfur dioxide (SO_2) National Ambient Air Quality Standard (hereinafter, either the 1-hour SO_2 NAAQS or 1-hour SO_2 standard) that becomes effective on August 23, 2010. The EPA revised the primary SO_2 NAAQS by promulgating a 1-hour SO_2 NAAQS to provide the requisite protection of public health. Under section 165(a)(3) of the Clean Air Act (the Act) and sections 52.21(k) and 51.166(k) of EPA's PSD regulations, to obtain a permit, a source must demonstrate that its proposed emissions increase will not cause or contribute to a violation of "any NAAQS."

This guidance is intended to (1) highlight the importance of a 1-hour averaging period for setting an emissions limitation for SO_2 in the PSD permit (2) reduce the modeling burden to implement the 1-hour SO_2 standard where it can be properly demonstrated that a source will not have a significant impact on ambient 1-hour SO_2 concentrations, and (3) identify approaches that allow sources and permitting authorities to mitigate, in a manner consistent with existing regulatory requirements, potential modeled violations of the 1-hour SO_2 NAAQS, where appropriate. Accordingly, the techniques described in this memorandum may be used by permit applicants and permitting authorities to perform an acceptable 1-hour SO_2 NAAQS compliance modeling assessment and/or properly configure projects and permit conditions in order that a proposed source's emissions do not cause or contribute to modeled 1-hour SO_2 NAAQS violations, so that permits can be issued in accordance with the applicable PSD program requirements.

This guidance discusses existing provisions in EPA regulations and guidance, and focuses on the relevancy of this information for implementing the new NAAQS for SO_2. Importantly, however, this guidance also sets forth a recommended interim 1-hour SO_2 significant impact level (SIL) that EPA will use when it evaluates applications and issues permits under the federal PSD program, and that states may choose to rely upon to implement their PSD programs for SO_2 if they agree that the value represents a reasonable threshold for determining a significant ambient impact, and they incorporate into each permit record a rationale supporting this conclusion. This interim SIL is a useful screening tool that can be used to determine whether or not the predicted ambient impacts caused by a proposed source's emissions increase will be significant and, if so whether the source's emissions should be considered to "cause or contribute to" modeled violations of the new 1-hour SO_2 NAAQS.

BACKGROUND

On August 23, 2010, the new 1-hour SO_2 NAAQS will become effective. Regulations at 40 CFR 52.21 (the federal PSD program) require permit applicants to demonstrate compliance with "any" NAAQS that is in effect on the date a PSD permit is issued. (See, e.g., EPA memo dated April 1, 2010, titled "Applicability of the Federal Prevention of Significant Deterioration Permit Requirements to New and Revised National Ambient Air Quality Standards.") Due to the promulgation of this short-term averaging period (1-hour) for the SO_2 NAAQS, we anticipate that some new major stationary sources or major modifications, especially those involving relatively short stacks may experience increased difficulty demonstrating that emissions from proposed project will not cause or contribute to a modeled violation.

We believe that, in some instances, preliminary predictions of violations could result from the use of maximum modeled concentrations that do not adequately take into account the form of the 1-hour standard. To the extent that is the case, ambient SO_2 concentrations in the form of the new 1-hour NAAQS should be estimated by applying the recommended procedures that account for the statistical form of the standard. See EPA Memorandum from Tyler Fox, Air Quality Modeling Group, to EPA Regional Air Division Directors, "Applicability of Appendix W Modeling Guidance for the 1-hour SO_2 National Ambient Air Quality Standard" (August 23, 2010) for specific modeling guidance for estimating ambient SO_2 concentrations consistent with the new 1-hour SO_2 NAAQS.

It is EPA's expectation that currently available SO_2 guidance, including the guidance presented in this memorandum, will assist in resolving some of the issues arising from preliminary analyses that show potential exceedances of the new 1-hour SO_2 NAAQS that would not be present under more refined modeling applications. In addition, the techniques described in this memorandum may also help avoid violations of the standard through design of the proposed source or permit conditions, consistent with existing regulatory requirements. Moreover, the interim 1-hour SO_2 SIL that is included in this guidance will provide a reasonable screening tool for effectively implementing the PSD requirements for an air quality impact analysis.

The following discussion provides guidance for establishing a 1-hour emissions limitation to demonstrate compliance with the new NAAQS, and for possibly mitigating modeled violations using any of the following: air quality-based permit limits more stringent than what the Best Available Control Technology provisions may otherwise require, air quality offsets, "good engineering practice" (GEP) stack heights, and an interim 1-hour SO_2 SIL. The continued use of the existing SO_2 Significant Emissions Rate (SER) and Significant Monitoring Concentration (SMC) to implement the new 1-hour SO_2 standard is also discussed.

SCREENING VALUES

In the final rule establishing the 1-hour SO_2 standard, EPA discussed various implementation considerations for the PSD permitting program. 75 FR.35520 (June 22, 2010). That discussion included the following statements regarding particular screening values that have historically been used on a widespread basis to facilitate implementation of the PSD permitting program:

> We agree with the commenters that there may be a need for EPA to provide additional screening tools or to revise existing screening tools that are frequently used under the NSR/PSD program for reducing the burden of completing SO_2 ambient air impact analyses. These screening tools include the SILs, as mentioned by the commenter, but also include the SER for emissions of SO_2 and the SMC for SO_2. The existing screening tools apply to the periods used to define the existing NAAQS for SO_2, including the annual, 24-hour, and 3-hour averaging periods. EPA intends to evaluate the need for possible changes or additions to each of these useful screening tools for SO_2 due to the revision of the SO_2 NAAQS to provide for a 1-hour standard. We believe it is highly likely that in order to be most effective for implementing the new 1-hour averaging period for NSR purposes, new 1-hour screening values will be appropriate.

75 FR 35579. EPA intends to conduct an evaluation of these issues and submit our findings in the form of revised significance levels under notice and comment rulemaking if any revisions are deemed appropriate. In the interim, for the reasons provided below, we recommend the continued use of the existing SER for SO_2 emissions as well as an interim 1-hour SO_2 SIL that we are setting forth today for conducting air quality impact analyses for the 1-hour SO_2 NAAQS. As described in the section titled Introduction, EPA intends to implement the interim 1-hour SO_2 SIL contained herein under the federal PSD program and offers states the opportunity to use it in their PSD programs if they choose to do so. EPA is not addressing the significant monitoring concentration (SMC) for SO_2 in this memorandum; the existing SMC for SO_2, at 40 CFR 52.21(i)(5)(i) should continue to be used.

SIGNIFICANT EMISSIONS RATE

The PSD regulations define SER for various regulated NSR pollutants. When a proposed new source's potential to emit a pollutant, or a modified source's net emissions increase of a pollutant, would be less than the SER, the source is not required to undergo the requisite PSD analyses (BACT and air quality) for that particular emissions increase. Under the terms of existing EPA regulations, the applicable SER for SO_2 is 40 tons per year (tpy). 40 CFR 52.21(b)(23); 40 CFR 51.166(b)(23). Each of the significant emissions rates defined in those regulations is specific to an individual pollutant with no differentiation by averaging time with regard to NAAQS. The NAAQS for SO_2 have included standards with 3-hour and 24-hour and annual averaging times for many years. The EPA has applied the 40 tpy SER for SO_2 across all of these averaging times, and we are aware of no reason why it should not be used for the 1-hour averaging period for the present time. Therefore, until the evaluation described above and any associated rulemaking are completed, we will use 40 tpy as the SER for the 1-hour standard.

Under existing regulations, an ambient air quality impact analysis is required for "each pollutant that [a source] would have the potential to emit in significant amounts." [40 CFR 52.21(m)(1)(i)(a); 40 CFR. 51.166(m)(1)(i)(a)]. For modifications, these regulations require this analysis for "each pollutant for which [the modification] would result in a significant net emissions increase." 40 CFR.52.21(m)(1)(i)(b); 40 CFR.51.166(m)(1)(i)(b). EPA construes this regulation to mean that an ambient impact analysis is not necessary for pollutants with emissions rates below the significant emissions rates in paragraph (b)(23) of the regulations. No additional action by EPA or permitting authorities is necessary at this time to apply the 40 tpy significant emissions rate in existing regulations to the hourly SO_2 standard.

INTERIM 1-HOUR SO_2 SIGNIFICANT IMPACT LEVEL

Under the PSD program, a proposed new major stationary source or major modification must, among other things, complete an air quality impact analysis that involves performing an analysis of air quality modeling and ambient monitoring data, where appropriate, to demonstrate compliance with applicable NAAQS. In order to implement this requirement, EPA traditionally has provided a screening tool known as the Significant Impact Level (SIL) to help applicants and permitting authorities determine whether a source's modeled ambient impact is significant so as to warrant a comprehensive, cumulative air quality analysis to demonstrate compliance with the NAAQS. Accordingly, where a proposed source's modeled impact is deemed insignificant, or *de minimis*, using the SIL as a threshold for significance, the applicant is not required to model anything besides its own proposed emissions increase to show that the proposed source or modification will not cause or contribute to a violation of the NAAQS.[1]

If, on the other hand, the source's modeled impact is found to be significant, based on the SIL, the applicant will need to complete a comprehensive, cumulative air quality impact analysis to demonstrate that the source's emissions will not cause or contribute to a modeled violation of any NAAQS. To make this demonstration, EPA has recommended that a cumulative analysis cover a circular area measuring out from the source to the maximum distance where the source's impact is equal to the SIL. Within this modeling area, the source should also model the impacts of other sources (existing and newly permitted), including applicable SO_2 sources located outside the circular area described above, to account for the cumulative hourly SO_2 air quality impacts

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[1] When a proposed source's impact by itself is not considered to be "significant," EPA has long maintained that any further effort on the part of the applicant to complete a cumulative source impact analysis involving other source impacts would only yield information of trivial or no value with respect to the required evaluation of the proposed source or modification. The concept of a SIL is grounded on the *de minimis* principles described by the court in *Alabama Power Co. v. Costle*, 636 F.2d 323, 360 (D.C. Cir. 1980); See also *Sur Contra La Contaminacion v. EPA*, 202 F.3d 443, 448-49 (1st Cir. 2000) (upholding EPA's use of SIL to allow permit applicant to avoid full impact analysis); *In re: Prairie State Gen. Co.*, PSD Appeal No. 05-05, Slip. Op. at 139 (EAB 2006).

that are predicted to occur. The applicant may also have to gather ambient monitoring data as part of the total air quality analysis that is required for demonstrating compliance with the NAAQS.[2] Accordingly, the source will evaluate its contribution to any modeled violation of the 1-hour SO_2 NAAQS to determine whether the source's emissions contribution will cause or contribute to the modeled violation at any receptor. Note that in the accompanying modeling guidance memorandum we are providing recommended procedures and guidance for completing the modeling analysis to demonstrate compliance with the new 1-hour SO_2 NAAQS.

We plan to undertake rulemaking to adopt a 1-hour SO_2 SIL value. However, until such time as a 1-hour SO_2 SIL is defined in the PSD regulations, we are providing an interim SIL of 3 ppb, which we intend to use as a screening tool for completing the required air quality analyses for the new 1-hour SO_2 NAAQS under the federal PSD program at 40 CFR 52.21. We are also making the interim SIL available to States with EPA-approved implementation plans containing a PSD program to use at their discretion. To support the application of this interim 1-hour SO_2 SIL in each instance, a permitting authority that utilizes it as part of an ambient air quality analysis should include in the permit record the analysis reflected in this memorandum and the referenced documents to demonstrate that a modeled air quality impact is *de minimis,* and thereby would not be considered to cause or contribute to a modeled violation of the NAAQS.[3]

States may also elect to choose another value that they believe represents a significant air quality impact relative to the 1-hour SO_2 NAAQS. The EPA-recommended interim 1-hour SO_2 SIL is not intended to supersede any interim SIL that any state chooses to rely upon to implement a state PSD program that is part of an approved SIP, or to impose the use of the SIL concept on any state that chooses to implement the PSD program—in particular the ambient air quality analysis—without using a SIL as a screening tool. Accordingly, states that implement the PSD program under an EPA-approved SIP may choose to use this interim SIL, another value that may be deemed more appropriate for PSD permitting purposes in the state of concern, or no SIL at all. The application of any SIL that is not reflected in a promulgated regulation should be supported by a record in each instance that shows the value represents a *de minimis* impact on the 1-hour SO_2 standard, as described above.

As indicated above, using the interim 1-hour SO_2 SIL, the permit applicant and permitting authority can determine: (1) whether, based on the proposed increase in SO_2 emissions, a cumulative air quality analysis is required; (2) the area of impact within which a cumulative air quality analysis should focus; and (3) whether, as part of a cumulative air quality analysis, the proposed source's SO_2 emissions will cause or contribute to any modeled violation of the 1-hour SO_2 NAAQS.

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[2] A screening tool known as the Significant Monitoring Concentration (SMC) for SO_2 already exists in the PSD regulations. EPA plans to evaluate the existing SMC in light of the new 1-hour SO_2 NAAQS; however, the existing value of 13 $\mu g/m^3$, 24-hour average, should continue to be used until and unless a revised value is issued through rulemaking.

[3] Where the cumulative air quality analysis identifies a modeled violation of the NAAQS or increments, and the proposed source is issued its permit by virtue of the fact that its proposed emissions increase is not considered to cause or contribute to the modeled violation, it is still the permitting authority's responsibility to address such modeled violations independently from the PSD permitting process to determine the nature of the problem and to mitigate it accordingly,

As mentioned above, we are providing an interim 1-hour SO_2 SIL value of 3 ppb to implement the federal PSD program. To determine initially whether a proposed project's emissions increase will have a significant impact (resulting in the need for a cumulative air quality analysis), this interim SIL should be compared to either of the following:

- The highest of the 5-year averages of the maximum modeled 1-hour SO_2 concentrations predicted each year at each receptor, based on 5 years of National Weather Service data; or
- The highest modeled 1-hour SO_2 concentration predicted across all receptors based on 1 year of site-specific meteorological data, or the highest of the multi-year averages of the maximum modeled 1-hour SO_2 concentrations predicted each year at each receptor, based on 2 or more, up to 5 complete years of available site-specific meteorological data.

Additional guidance will be forthcoming for the purpose of comparing a proposed source's modeled impacts to the interim 1-hour SO_2 SIL in order to make a determination about whether that source's contribution is significant when a cumulative air quality analysis identifies violations of the 1-hour SO_2 NAAQS (i.e., "causes or contributes to" a modeled violation).

We derived this interim 1-hour SO_2 SIL by using an impact equal to 4% of the 1-hour SO_2 NAAQS (which is 75 ppb). On June 29, 2010, we issued an interim 1-hour NO_2 SIL that used an impact equal to 4% of the 1-hour NO_2 standard. As explained in the June memorandum, we have chosen this approach because we believe it is reasonable to base the interim 1-hour SIL directly on consideration of impacts relative to the corresponding 1-hour NAAQS. In 1980, we defined SER for each pollutant subject to PSD. 45 FR 52676 (August 7, 1980) at 52705-52710. For PM and SO_2, we defined the SER as the emissions rate that resulted in an ambient impact equal to 4% of the applicable short-term NAAQS. The 1980 analysis focused on levels no higher than 5% of the primary standard because of concerns that higher levels were found to result in unreasonably large amounts of increment being consumed by a single source. Within the range of impacts analyzed, we considered two factors that had an important influence on the choice of the significant impact levels: (1) cumulative effect on increment consumption of multiple sources in an area, each making the maximum *de minimis* emissions increase; and (2) the projected consequence of a given significant impact level on administrative burden. As explained in the preamble to the 1980 rulemaking and the supporting documentation,[4] EPA decided to use 4% of the 24-hour primary NAAQS for PM and SO_2 to define the significant emissions rates (SERs) for those pollutants. See 45 FR 52708. Looking now at a 1-hour NAAQS for SO_2, we believe that it is reasonable as an interim approach to use a SIL value that represents 4% of the 1-hour SO_2 NAAQS. EPA will consider other possible alternatives for developing a 1-hour SO_2 SIL in a future rulemaking that will provide an opportunity for public participation in the development of a SIL as part of the PSD regulations.

AIR-QUALITY BASED EMISSIONS LIMITATIONS

[4] EPA evaluated *de minimis* levels for pollutants for which NAAQS had been established in a document titled "Impact of Proposed and Alternative De Minimis Levels for Criteria Pollutants"; EPA-450/2-80-072, June 1980.

Once a level of control is determined by the PSD applicant via the Best Available Control Technology (BACT) top-down process, the applicant must model the proposed source's emissions at the BACT emissions rate(s) to demonstrate that those emissions will not cause or contribute to a violation of any NAAQS or PSD increment. However, the EPA 1990 Workshop Manual (page B.54) describes circumstances where a proposed source's emissions based on levels determined via the top-down process may not be sufficiently controlled to prevent modeled violations of an increment or NAAQS. In such cases, it may be appropriate for PSD applicants to propose a more stringent control option (that is, beyond the level identified via the top-down process) as a result of an adverse impact on the NAAQS or PSD increments. In addition, the use of certain dispersion techniques is permissible for certain proposed projects for SO_2 that may need to be considered where emissions limitations alone may not enable the source to demonstrate compliance with the new 1-hour SO_2 NAAQS. This is discussed in greater detail below in the section addressing GEP stack height requirements.

Because compliance with the new SO_2 NAAQS must be demonstrated on the basis of a 1-hour averaging period, the reviewing authority should ensure that the source's PSD permit defines a maximum allowable hourly emissions limitation for SO_2, regardless of whether it is derived from the BACT top-down approach or it is the result of an air-quality based emissions rate. Hourly limits are important because they are the foundation of the air quality modeling demonstration relative to the 1-hour SO_2 NAAQS. For estimating the impacts of existing sources, if necessary, existing SO_2 emission inventories used to support modeling for compliance with the 3-hour and 24-hour SO_2 standards should serve as a useful starting point, and may be adequate in many cases for use in assessing compliance with the new 1-hour SO_2 standard. The PSD applicant's coordination with the reviewing authority is important in this matter to obtain the most appropriate estimates of maximum allowable hourly SO_2 emissions.

DEMONSTRATING COMPLIANCE WITH THE NAAQS AND INCREMENTS & MITIGATING MODELED VIOLATIONS WITH AIR QUALITY OFFSETS

A 1988 EPA memorandum provides procedures to follow when a modeled violation is identified during the PSD permitting process. [See Memorandum from Gerald A. Emison , EPA OAQPS, to Thomas J. Maslany, EPA Air Management Division, "Air Quality Analysis for Prevention of Significant Deterioration (PSD)." (July 5, 1988.)] In cases where the air quality analysis predicts violations of the 1-hour SO_2 NAAQS, but the permit applicant can show that the SO_2 emissions increase from the proposed source will not have a significant impact *at the point and time of any modeled violation*, the permitting authority has discretion to conclude that the source's emissions will not contribute to the modeled violation. As provided in the July 5, 1988 guidance memo, because the proposed source only has a *de minimis* contribution to the modeled violation, the source's impact will not be considered to cause or contribute to such modeled violations, and the permit could be issued. This concept continues to apply, and the significant impact level (described further below) may be used as part of this analysis. A 2006 decision by the EPA Environmental Appeals Board (EAB) provides detailed reasoning that demonstrates the permissibility of a finding that a PSD source would not be considered to cause or contribute to a modeled NAAQS violation because its estimated air quality impact was insignificant at the time and place of the modeled violations.[5] [See In re *Prairie State Gen. Co.*, 13 E.A.D. ___, ___, PSD Appeal No. 05-05, Slip. Op. at 137-144 (EAB 2006)]

However, where it is determined that a source's impact does cause or contribute to a modeled violation, a permit cannot be issued without some action to mitigate the source's impact. In accordance with 40 CFR 51.165(b)[6], a major stationary source or major modification (as defined at §51.165(a)(1)(iv) and (v)) that locates in a SO_2 attainment area for the 1-hour SO_2 NAAQS and would cause or contribute to a violation of the 1-hour SO_2 NAAQS may "reduce the impact of its emissions upon air quality by obtaining sufficient emission reductions to, at a minimum, compensate for its adverse ambient [SO_2] impact where the major source or major modification would otherwise cause or contribute to a violation …." An applicant can meet this requirement for obtaining additional emissions reductions either by reducing its emissions at the source (e.g., promoting more efficient production methodologies and energy efficiency) or by obtaining air quality offsets (see below). [See, e.g., In re *Interpower of New York, Inc.*, 5 E.A.D. 130, 141 (EAB 1994)].[7] A State may also provide the necessary emissions reductions by imposing emissions limitations on other sources through an approved SIP revision. These approaches may also be combined as necessary to demonstrate that a source will not cause or contribute to a violation of the NAAQS.

Unlike emissions offset requirements in areas designated as nonattainment, in addressing the air quality offset concept, it may not be necessary for a permit applicant to fully offset the proposed emissions increase if an emissions reduction of lesser quantity will mitigate the adverse air quality impact where the modeled violation was originally identified. ("Although full emission offsets are not required, such a source must obtain emission offsets sufficient to compensate for its air quality impact where the violation occurs." 44 FR 3274, January 16, 1979, at 3278.) To clarify this, the 1988 guidance memo referred to above states that:

> offsets sufficient to compensate for the source's significant impact must be obtained pursuant to an approved State offset program consistent with State Implementation Plan (SIP) requirements under 40 CFR 51.165(b). Where the source is contributing to an existing violation, the required offset may not correct the violation. Such existing violations must be addressed [through the SIP].

Note that additional guidance for this and other aspects of the modeling analysis for the impacts of SO_2 emissions on ambient concentrations of SO_2 are addressed in EPA modeling guidance, including the attached August 23, 2010 Memorandum titled "Applicability of Appendix W Modeling Guidance for the 1-hour SO_2 National Ambient Air Quality Standard."

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[5] While there is no 1-hour SO_2 significant impact level (SIL) currently defined in the PSD regulations, we believe that states may adopt interim values, with the appropriate justification for such values, to use for permitting purposes. In addition, we are recommending an interim SIL as part of this guidance for implementing the SO_2 requirements in the federal PSD program, and in state programs where states choose to use it.

[6] The same provision is contained in EPA's Interpretative Ruling at 40 CFR part 51 Appendix S, section III.

[7] In contrast to Nonattainment New Source Review permits, offsets are not mandatory requirements in PSD permits if it can otherwise be demonstrated that a source will not cause or contribute to a violation of the NAAQS. See, In re *Knauf Fiber Glass, GMBH*, 8 E.A.D. 121, 168 (EAB 1999).

Although EPA announced that it is revoking the annual and 24-hour SO_2 NAAQS, the June 22, 2010 preamble to the final rule announcing the new 1-hour SO_2 NAAQS explained that those standards will remain in effect for a limited period of time as follows: for current SO_2 nonattainment areas and SIP call areas, until attainment and maintenance SIPs are approved by EPA for the new 1-hour SO_2 NAAQS; for all other areas, for one year following the effective date of the initial designations under section 107(d)(1) for the new 1-hour SO_2 NAAQS. Accordingly, the annual and 24-hour SO_2 NAAQS must continue to be protected under the PSD program for as long as they remain in effect for a PSD area. There is a more detailed discussion of the transition from the existing SO_2 NAAQS to a revised SO_2 NAAQS in that preamble. Also, the same preamble includes a footnote listing the current nonattainment areas and SIP call areas. 75 FR 35520, at 35580-2.

In addition, the existing SO_2 increments (class I, II and III) for the annual and 24-hour averaging periods will not be revoked in conjunction with our decision to revoke the corresponding SO_2 NAAQS. Instead, the annual and 24-hour SO_2 increments (Class I, II and III increments) will remain in effect because they are defined in the Clean Air Act at title I, part C, section 163. The annual and 24-hour SO_2 increments in section 163 are considered part of the suite of statutory increments applicable to sulfur dioxide that Congress expressly included in the statutory provisions for PSD. As such, those increments cannot be revoked simply because we have decided to revoke the annual and 24-hour SO_2 NAAQS, upon which the SO_2 increments are based. Consequently, sources must continue to demonstrate that their proposed emissions increases of SO_2 emissions will not cause or contribute to any modeled violation of the existing annual and 24-hour SO_2 increments for as long as those statutory increments remain in effect. Increments for the 1-hour averaging period do not yet exist; the Act provides a specific schedule for the promulgation of additional regulations, which may include new increments, following the promulgation of new or revised NAAQS. EPA plans to begin that rulemaking process in the near future to consider the need for such increments.

"GOOD ENGINEERING PRACTICE" STACK HEIGHT AND DISPERSION TECHNIQUES

If a permit applicant is unable to show that the source's proposed emissions increase will not cause or contribute to a modeled violation of the new 1-hour SO_2 NAAQS, the problem could be the result of plume downwash effects causing high ambient concentrations near the source. In such cases, a source may be able to raise the height of its existing stacks (or designed stacks if not yet constructed) to a "good engineering practice" (GEP) stack height, or at least 65 meters, measured from the ground-level elevation at the base of the stack.

While not necessarily eliminating the full effect of downwash in all cases, raising stacks to GEP height may provide substantial air quality benefits in a manner consistent with statutory provisions (section 123 of the Act) governing acceptable stack heights to minimize excessive concentrations due to atmospheric downwash, eddies or wakes. Permit applicants should also be aware of the regulatory restrictions on stack heights for the purpose of modeling for compliance with NAAQS and increments. Section 52.21(h) of the PSD regulations currently prohibits the use of dispersion techniques, such as stack heights above GEP, merged gas streams, or intermittent controls for setting SO_2 emissions limits to meet the NAAQS and PSD increments.

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However, stack heights in existence before December 31, 1970, and dispersion techniques implemented before then, are not affected by these limitations. EPA's general stack height regulations are promulgated at 40 CFR 51.100(ff), (gg), (hh), (ii), (jj), (kk) and (nn), and 40 CFR 51.118.

a. *Stack heights*: A source can include only the actual stack height up to GEP height when modeling to develop the SO_2 emissions limitations or to determine source compliance with the SO_2 NAAQS and increments. This is not a limit on the actual height of any stack constructed by a new source or modification, however, and there may be circumstances where a source owner elects to build a stack higher than GEP height. However, such additional height may not be considered when determining an emissions limitation or demonstrating compliance with an applicable NAAQS or PSD increment. Thus, when modeling, the following limitations apply in accordance with §52.21(h):

- For a stack height less than GEP, the actual stack height must be used in the source impact analysis for emissions;
- For a stack height equal to or greater than 65 meters the impact may be modeled using the greater of:
    - A *de minimis* stack height equal to 65 meters, as measured from the ground-level elevation at the base of the stack, without demonstration or calculation (40 CFR 51.100(ii)(1));
    - The refined formula height calculated using the dimensions of nearby structures in accordance with the following equation:

  GEP = H + 1.5L, where H is the height of the nearby structure and L is the lesser dimension of the height or projected width of the nearby structure (40 CFR 51.100(ii)(2)(ii)).[8]

- A GEP stack height exceeding the refined formula height may be approved when it can be demonstrated to be necessary to avoid "excessive concentrations" of SO_2 caused by atmospheric downwash, wakes, or eddy effects by the source, nearby structures, or nearby terrain features.
  (40 CFR 51.100(ii)(3), (jj), (kk));

- For purposes of PSD, "excessive concentrations" means a maximum ground-level concentration from a stack due in whole or in part to downwash, wakes, and eddy effects produced by nearby structures or nearby terrain features which individually is at least 40 percent in excess of the maximum concentration experienced in the absence of such effects and (a) which contributes to a total concentration due to emissions from all sources that is greater than the applicable NAAQS or (b) greater than the applicable PSD increments.
  (40 CFR 51.100(kk)(1)).

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[8] For stacks in existence on January 12, 1979, the GEP equation is GEP = 2.5 H (provided the owner or operator produces evidence that this equation was actually relied on in establishing an emission limitation for SO_2 (40 CFR 51.100(ii)(2)(i)

Reportedly, for economic and other reasons, many existing source stacks have been constructed at heights less than 65 meters, and source impact analyses may show that the source's emissions will cause or contribute to a modeled violation of the 1-hour SO_2 NAAQS. Where this is the case, sources should be aware that it is permissible for them to increase their stack heights up to 65 meters without a GEP demonstration.

b. *Other dispersion techniques*: The term "dispersion technique" includes any practice carried out to increase final plume rise, subject to certain exceptions (40 CFR 51.100(hh)(1), (2)(i) – (v)). Beyond the noted exceptions, such techniques are not allowed for getting credit for modeling source compliance with the NAAQS and PSD increments. One such exception is for sources of SO_2. Section 51.100(hh)(2)(v) provides that identified techniques that increase final exhaust gas plume rise are not considered prohibited dispersion techniques pursuant to section 51.100(hh)(1)(iii) "where the resulting allowable emissions of sulfur dioxide from the facility do not exceed 5,000 tons per year." Thus, proposed modifications that experience difficulty modeling compliance with the new 1-hour SO_2 NAAQS when relying on BACT or an air quality-based emissions limit alone may permissibly consider techniques to increase their final exhaust gas plume rise consistent with these provisions.

The definition of "dispersion technique" at 40 CFR 51.100(hh)(1)(iii) describes techniques that are generally prohibited, but which do not apply with respect to the exemption for SO_2. Accordingly, it is permissible for eligible SO_2 sources to make adjustments to source process parameters, exhaust gas parameters, stack parameters, or to combine exhaust gases from several existing stacks into one stack, so as to increase the exhaust gas plume rise. It is important to remember that the exemption applies to sources that have facility-wide allowable SO_2 emissions of less than 5,000 tpy resulting from the increase in final exhaust gas plume rise. Thus, proposed modifications should not base their eligibility to use dispersion on the amount of the proposed net emissions increase, but on the total source emissions of SO_2.

The EPA does not recommend or encourage sources to rely on dispersion to demonstrate compliance with the NAAQS; however, we acknowledge the fact that certain SO_2 sources may legally do so. For example, while increasing stack height is a method of dispersion, EPA's rules allow use of that approach to the extent the resulting height meets EPA's requirements defining "good engineering practice (GEP)" stack height. See 40 CFR 50.100(hh)(1)(i), 50.100(ii)(1)-(3). Nevertheless, EPA encourages PSD applicants to seek other remedies, including the use of the most stringent controls (beyond top-down BACT) feasible or the acquisition of emissions reductions (offsets) from other existing sources, to address situations where proposed emissions increases would result in modeled violations of the SO_2 NAAQS.

GENERAL START-UP CONDITIONS

We do not anticipate widespread problems associated with high short-term SO_2 emissions resulting from start-up/shutdown conditions. Many sources are capable of starting a unit with natural gas or low-sulfur fuel to avoid significant start-up emissions problems. However, some sources could experience short-term peaks of SO_2 during start-up or shutdown that could adversely affect the new 1-hour SO_2 NAAQS. The EPA currently has no provisions for exempting emissions occurring during equipment start-up/shutdown from the BACT requirements or for air quality analyses to demonstrate compliance with the SO_2 NAAQS and increments. Therefore, such emissions should be addressed in the required BACT and air quality analyses.

There are approaches to addressing issues related to start-up/shutdown emissions. For example, sources may be willing to accept enforceable permit conditions limiting equipment start-up/shutdown to certain hours of the day when impacts are expected to be lower than normal. Such permit limitations can be accounted for in the modeling of such emissions. Applicants should direct other questions arising concerning procedures for modeling start-up/shutdown emissions to the applicable permitting authority to determine the most current modeling guidance.

In the event of questions regarding the general implementation guidance contained in this memorandum, please contact Raj Rao (rao.raj@epa.gov).

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
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August 23, 2010

MEMORANDUM

SUBJECT: Applicability of Appendix W Modeling Guidance for the 1-hour SO_2 National Ambient Air Quality Standard

FROM: Tyler Fox, Leader /s/
Air Quality Modeling Group, C439-01

TO: Regional Air Division Directors

INTRODUCTION

On June 2, 2010, EPA announced a new 1-hour sulfur dioxide (SO_2) National Ambient Air Quality Standard (1-hour SO_2 NAAQS or 1-hour SO_2 standard) which is attained when the 3-year average of the 99th-percentile of the annual distribution of daily maximum 1-hour concentrations does not exceed 75 ppb at each monitor within an area. The final rule for the new 1-hour SO_2 NAAQS was published in the Federal Register on June 22, 2010 (75 FR 35520-35603), and the standard becomes effective on August 23, 2010 (EPA, 2010a). This memorandum clarifies the applicability of current guidance in the *Guideline on Air Quality Models* (40 CFR Part 51, Appendix W) for modeling SO_2 impacts in accordance with the Prevention of Significant Deterioration (PSD) permit requirements to demonstrate compliance with the new 1-hour SO_2 standard.

SUMMARY OF CURRENT GUIDANCE

Current modeling guidance for estimating ambient impacts of SO_2 for comparison with applicable NAAQS is presented in Section 4 of Appendix W under the general heading of "Traditional Stationary Source Models." This guidance acknowledges the fact that ambient SO_2 impacts are largely a result of emissions from stationary sources. Section 4.2.2 provides specific recommendations regarding "Refined Analytical Techniques," stating that "For a wide range of regulatory applications in all types of terrain, the recommended model is AERMOD" (see Section 4.2.2.b). As described in Section 4.1.d, the AERMOD dispersion model "employs best state-of-practice parameterizations for characterizing the meteorological influences and dispersion" (Cimorelli, *et al.*, 2004; EPA, 2004; EPA, 2009).

Section 7.2.6 of Appendix W addresses the issue of chemical transformation for modeling SO_2 emissions, stating that:

The chemical transformation of SO_2 emitted from point sources or single industrial plants in rural areas is generally assumed to be relatively unimportant to the estimation of maximum concentrations when travel time is limited to a few hours. However, in urban areas, where synergistic effects among pollutants are of considerable consequence, chemical transformation rates may be of concern. In urban area applications, a half-life of 4 hours may be applied to the analysis of SO_2 emissions. Calculations of transformation coefficients from site specific studies can be used to define a ''half-life'' to be used in a steady-state Gaussian plume model with any travel time, or in any application, if appropriate documentation is provided. Such conversion factors for pollutant half-life should not be used with screening analyses.

The AERMOD model incorporates the 4 hour half-life for modeling ambient SO_2 concentrations in urban areas under the regulatory default option.

General guidance regarding source emission input data requirements for modeling ambient SO_2 impacts is provided in Section 8.1 of Appendix W and guidance regarding determination of background concentrations for purposes of a cumulative ambient air quality impact analysis is provided in Section 8.2.

APPLICABILITY OF CURRENT GUIDANCE TO 1-HOUR SO_2 NAAQS

The current guidance in Appendix W regarding SO_2 modeling in the context of the previous 24-hour and annual primary SO_2 NAAQS and the 3-hour secondary SO_2 NAAQS is generally applicable to the new 1-hour SO_2 standard. Since short-term SO_2 standards ($\leq$ 24 hours) have been in existence for decades, existing SO_2 emission inventories used to support modeling for compliance with the 3-hour and 24-hour SO_2 standards should serve as a useful starting point, and may be adequate in many cases for use in assessing compliance with the new 1-hour SO_2 standard, since issues identified in Table 8-2 of Appendix W related to short-term vs. long-term emission estimates may have already been addressed. However, the PSD applicant and reviewing authority may need to reassess emission estimates for very short-term emission scenarios, such as start-up and shut-down operations, for purposes of estimating source impacts on the 1-hour SO_2 standard. This is especially true if existing emission estimates for 3-hour or 24-hour periods are based on averages that include zero (0) or reduced emissions for some of the hours.

Given the form of the new 1-hour SO_2 standard, we are providing clarification regarding the appropriate data periods for modeling demonstrations of compliance with the NAAQS vs. demonstrations of attainment of the NAAQS through ambient monitoring. While monitored design values for the 1-hour SO_2 standard are based on a 3-year average (in accordance with Section 1(c) of Appendix T to 40 CFR Part 50), Section 8.3.1.2 of Appendix W addresses the length of the meteorological data record for dispersion modeling, stating that "[T]he use of 5 years of NWS [National Weather Service] meteorological data or at least 1 year of site specific data is required." Section 8.3.1.2.b further states that "one year or more (including partial years), up to five years, of site specific data . . . are preferred for use in air quality analyses." Although the monitored design value for the 1-hour SO_2 standard is defined in terms of the 3-year average, this definition does not preempt or alter the Appendix W requirement for use of 5 years of NWS meteorological data or at least 1 year of site specific data. The 5-year average based on use of NWS data, or an average across one or more years of available site specific data, serves as an unbiased estimate of the 3-year average for purposes of modeling demonstrations of compliance with the NAAQS. Modeling of "rolling 3-year averages," using years 1 through 3, years 2 through 4, and years 3 through 5, is not required. Furthermore, since modeled results for SO_2 are averaged across the number of years modeled for comparison to the new 1-hour SO_2 standard, the meteorological data period should include complete years of data to avoid introducing a seasonal bias to the averaged impacts. In order to comply with Appendix W recommendations in cases where partial years of site specific meteorological data are available, while avoiding any seasonal bias in the averaged impacts, an approach that utilizes the most conservative modeling result based on the first complete-year period of the available data record vs. results based on the last complete-year period of available data may be appropriate, subject to approval by the appropriate reviewing authority. Such an approach would ensure that all available site specific data are accounted for in the modeling analysis without imposing an undue burden on the applicant and avoiding arbitrary choices in the selection of a single complete-year data period.

The form of the new 1-hour SO_2 standard also has implications regarding appropriate methods for combining modeled ambient concentrations with monitored background concentrations for comparison to the NAAQS in a cumulative modeling analysis. As noted in the March 23, 2010 memorandum regarding "Modeling Procedures for Demonstrating Compliance with $PM_{2.5}$ NAAQS" (EPA, 2010b), combining the 98^{th} percentile monitored value with the 98^{th} percentile modeled concentrations for a cumulative impact assessment could result in a value that is below the 98^{th} percentile of the combined cumulative distribution and would, therefore, not be protective of the NAAQS. However, unlike the recommendations presented for $PM_{2.5}$, the modeled contribution to the cumulative ambient impact assessment for the 1-hour SO_2 standard should follow the form of the standard based on the 99^{th} percentile of the annual distribution of daily maximum 1-hour concentrations averaged across the number of years modeled. A "first tier" assumption that may be applied without further justification is to add the overall highest hourly background SO_2 concentration from a representative monitor to the modeled design value, based on the form of the standard, for comparison to the NAAQS. Additional refinements to this "first tier" approach based on some level of temporal pairing of modeled and monitored values may be considered on a case-by-case basis, subject to approval by the reviewing authority, with adequate justification and documentation.

Section 8.2.3 of Appendix W provides recommendations regarding the determination of background concentrations for multi-source areas. That section emphasizes the importance of professional judgment by the reviewing authority in the identification of nearby and other sources to be included in the modeled emission inventory, and establishes "a significant concentration gradient in the vicinity of the source" under consideration as the main criterion for this selection. Appendix W also indicates that "the number of such [nearby] sources is expected to be small except in unusual situations." See Section 8.2.3.b.

The representativeness of available ambient air quality data also plays an important role in determining which nearby sources should be included in the modeled emission inventory. Key issues to consider in this regard are the extent to which ambient air impacts of emissions from nearby sources are reflected in the available ambient measurements, and the degree to which emissions from those background sources during the monitoring period are representative of allowable emission levels under the existing permits. The professional judgments that are required in developing an appropriate inventory of background sources should strive toward the proper balance between adequately characterizing the potential for cumulative impacts of emission sources within the study area to cause or contribute to violations of the NAAQS, while minimizing the potential to overestimate impacts by double counting modeled source impacts that are also reflected in the ambient monitoring data.

We would also caution against the literal and uncritical application of very prescriptive procedures for identifying which background sources should be included in the modeled emission inventory for NAAQS compliance demonstrations, including those described in Chapter C, Section IV.C.1 of the draft *New Source Review Workshop Manual* (EPA, 1990), noting again that Appendix W emphasizes the importance of professional judgment in this process. While the draft workshop manual serves as a useful general reference that provides potential approaches for meeting the requirements of New Source Review (NSR) and PSD programs, it is not the only source of EPA modeling guidance. The procedures described in the manual may be appropriate in some circumstances for defining the spatial extent of sources whose emissions may need to be considered, but not in others. While the procedures described in the NSR Workshop Manual may appear very prescriptive, it should be recognized that "[i]t is not intended to be an official statement of policy and standards and does not establish binding regulatory requirements." See, Preface.

Given the range of issues involved in the determination of an appropriate inventory of emissions to include in a cumulative impact assessment, the PSD applicant should consult with the appropriate reviewing authority early in the process regarding the selection and proper application of appropriate monitored background concentrations and the selection and appropriate characterization of modeled background source emission inventories for use in demonstrating compliance with the new 1-hour SO_2 standard.

SUMMARY

To summarize, we emphasize the following points:

1. Current guidance in Appendix W for modeling to demonstrate compliance with the previous 24-hour and annual primary SO_2 standards, and 3-hour secondary SO_2 standard, is generally applicable for the new 1-hour SO_2 NAAQS.
2. While the 1-hour NAAQS for SO_2 is defined in terms of the 3-year average for monitored design values to determine attainment of the NAAQS, this definition does not preempt or alter the Appendix W requirement for use of 5 years of NWS meteorological data or at least 1 year of site specific data.

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ATTACHMENT E

Division of Air Quality $PM_{2.5}$ Design Values Report

West Virginia PM2.5

Design Values

data final and certified through 12/31/2016

(NAAQS 24 hr 3 yr 98% = 35 ug/m^3)

County	Site	02-04	03-05	04-06	05-07	06-08	07-09	08-10	09-11	10-12	11-13	12-14	13-15	14-16
Berkeley	Martinsburg	37	36	34	33	31	29	31	30	31	26	27	26	27
Brooke	Follansbee	44	42	40	37	37	34	31	27	27	26	24	25	22
	Weirton-Marl. Hgts	47	45	43	44	41	37	31	29	27	26	24	24	23
Cabell	Huntington	37	35	34	37	32	30	26	25	24	21	21	21	20
Hancock	Weirton-Summit Circle												22	21
	Weirton-Oak St.	44	41	40	41	38	35	31	28	27	26	23		
Harrison	Clarksburg	34	32	35	34	31	26	23	21	21	20	19	19	18
Kanawha	Charleston	34	34	35	36	34	29	25	24	23	21	18	18	
	Charleston NCore													14
	So. Charleston	36	36	37	38	36	32	28	26	24	22	20	20	19
Marion	Fairmont	36	34	34	34	32	28	26	26	25	22	19	19	18
Marshall	Moundsville	36	33	34	35	34	31	29	29	29	25	23	23	22
Monongalia	Morgantown	39	36	34	36	34	30	25	25	24	22	18	19	18
Ohio	Wheeling	35	32	31	32	31	29	26	26	25	24	22	23	20
Raleigh	Beckley	32	31	31	30	28	24	21	20	20	19	14	11	
Wood	Vienna	35	34	35	37	34	31	28	27	24	22	19	21	19

(Annual NAAQS <= 12.0 ug/m^3)

County	Site	02-04	03-05	04-06	05-07	06-08	07-09	08-10	09-11	10-12	11-13	12-14	13-15	14-16
Berkeley	Martinsburg	16.1	16.2	15.8	15.8	14.9	14.0	12.9	11.8	11.6	10.7	10.4	10.3	9.9
Brooke	Follansbee	16.5	16.8	16.4	16.4	15.4	14.4	13.7	13.0	12.7	11.6	11.1	11.2	10.5
	Weirton-Marl. Hgts	15.8	16.4	15.7	16.1	14.9	14.0	13.1	11.6	11.1	10.1	10.4	10.3	9.8
Cabell	Huntington	15.8	16.3	16.1	16.8	15.2	14.3	13.1	12.1	11.6	10.4	9.8	9.2	8.7
Hancock	Weirton-Summit Circle												9.7	8.8
	Weirton-Oak St.	17.0	16.6	15.4	15.2	14.3	13.4	12.4	11.7	11.3	10.5	10.0	10.0	9.8
Harrison	Clarksburg	13.6	13.9	13.9	14.2	13.4	12.5	11.8	10.6	10.2	9.2	9.1	8.8	8.4
Kanawha	Charleston	14.8	15.1	15.0	15.4	14.2	13.1	11.8	11.0	10.7	9.7	9.1	8.8	8.6
	Charleston NCore													7.6
	So. Charleston	16.4	16.6	16.4	16.6	15.4	14.4	13.2	12.5	11.9	10.8	10.2	9.6	9.0
Marion	Fairmont	14.8	15.0	14.9	15.3	14.5	13.6	12.9	12.1	11.6	10.3	9.7	9.4	8.9
Marshall	Moundsville	15.1	15.3	15.0	15.2	14.2	13.4	13.1	13.0	12.8	11.6	11.1	10.7	10.2
Monongalia	Morgantown	14.5	14.5	14.1	14.4	13.6	12.7	11.5	10.9	10.3	9.5	8.8	8.6	8.1
Ohio	Wheeling	14.7	14.9	14.2	14.6	13.7	13.2	12.4	11.9	11.6	10.6	10.4	10.3	9.6
Raleigh	Beckley	12.6	12.9	12.8	13.0	11.9	11.0	10.1	9.6	9.3	8.3	6.8	5.9	5.1
Wood	Vienna	15.2	15.4	15.3	15.4	14.6	13.7	13.1	12.3	11.8	10.4	9.8	9.4	8.9

* Summit Circle sampling started 1/1/2015; therefore 3 yr 98% not complete
Charleston NCore sampling started 1/1/2016; therefore 3 yr 98% not complete

Oak Street site shut-down 12/31/2014
Charleston site shut-down 12/31/2015

Kessler, Joseph R

From: Kessler, Joseph R
Sent: Friday, March 2, 2018 3:56 PM
To: 'grant.morgan@erm.com'
Subject: Revised Pre-Draft ROXUL R14-0037
Attachments: R14-0037_dpm.pdf

Grant, attached is a revised "pre-draft" version of R14-0037. Please provide to interested parties at ROXUL.

It is important to note that this pre-draft version of the permit has not yet been approved by my supervisor and therefore all language is subject to change. Further, the review of permit application is ongoing and the access provided to this pre-draft permit does not indicate that a preliminary determination has made regarding the application. ROXUL may be required to subsequently submit, in a timely manner, any additional or corrected information deemed necessary for a final permit determination.

Thanks,

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I.D. No. 037-00108 Reg. R14-0037
Company ROXUL
Facility RAN Region
Initials JRK

Entire Document
NON-CONFIDENTIAL

West Virginia Department of Environmental Protection
Austin Caperton
Cabinet Secretary

Permit to Construct

R14-0037

This permit is issued in accordance with the West Virginia Air Pollution Control Act (West Virginia Code §§ 22-5-1 et seq.), 45 C.S.R. 13 — Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation, and 45 C.S.R. 14 - Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration. The permittee identified at the facility listed below is authorized to construct the stationary sources of air pollutants identified herein in accordance with all terms and conditions of this permit.

Issued to:
ROXUL USA, Inc.
RAN Facility
037-00108

William F. Durham
Director, Division of Air Quality

Issued: ***DRAFT***

Facility Location:	Ranson, Jefferson County, West Virginia
Mailing Address:	71 Edmond Road, Suite 6 Kearneysville, WV 25430
Facility Description:	Mineral Wool Manufacturing Facility
SIC/NAICS Code:	3296/327993
UTM Coordinates:	Easting: 252.06 km Northing: 4,362.62 km Zone: 18
Latitude/Longitude:	39.37754, -77.87844
Permit Type:	Major Source Construction
Desc. of Change:	Construction of a new mineral wool manufacturing facility defined as a major stationary source and subject to Prevention of Significant Deterioration (PSD) permitting requirements.

Any person whose interest may be affected, including, but not necessarily limited to, the applicant and any person who participated in the public comment process, by a permit issued, modified or denied by the Secretary may appeal such action of the Secretary to the Air Quality Board pursuant to article one [§§ 22B-1-1 et seq.], Chapter 22B of the Code of West Virginia. West Virginia Code §22-5-14.

As a result of this permit, the source is a major source subject to 45CSR30. The Title V (45CSR30) application will be due within twelve (12) months after the commencement date of any operation authorized by this permit.

Table of Contents

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity(1)	Control Device(2)
Raw Material Handling					
IMF11	IMF11	Conveyor Transfer Point	2018	CBI	IMF11-FF
B215	B215	Raw Material Loading Hopper	2018	CBI	PE
IMF12	IMF12	Conveyor Transfer Point	2018	CBI	IMF12-FF
IMF14	IMF14	Conveyor Transfer Point	2018	CBI	IMF14-FF
IMF15	IMF15	Conveyor Transfer Point	2018	CBI	IMF15-FF
IMF16	IMF16	Conveyor Transfer Point	2018	CBI	IMF16-FF
IMF21	IMF21	Charging Building Vacuum Cleaning Filter	2018	316 scfm (500 Nm^3/hr)	IMF21-FF
RM_REJ	RM_REJ	Raw Material Reject Bin	2018	CBI	PE
S_REJ	S_REJ	Sieve Reject Bin	2018	CBI	PE
B170	B170	Melting Furnace Portable Crusher & Storage	2018	<150 TPH (<136 tonne/hr)	None
B210	B210	Raw Material Storage - Loading	2018	CBI	PE
IMF25	IMF25	Coal Feed Tank	2018	CBI	IMF25-FF
RMS	RMS	Raw Material Storage	2018	5,382 ft^2 (500m^2)	PE
IMF17	IMF17	Charging Building Vent 1	2018	n/a	None
IMF18	IMF18	Charging Building Vent 2	2018	n/a	None
Coal Milling					
IMF03A	IMF03A	Coal Storage Silo A	2018	TBD	IMF03A-FF
IMF03B	IMF03B	Coal Storage Silo B	2018	TBD	IMF03B-FF
IMF03C	IMF03C	Coal Storage Silo C	2018	TBD	IMF03C-FF
IMF04	IMF04	Conveyor Transfer Point	2018	CBI	IMF04-FF
IMF05	IMF05	Coal Milling Burner & Baghouse	2018	CBI	IMF05-BH
IMF06	IMF06	Coal Milling De-Dusting Baghouse	2018	CBI	IMF06-BH
IMF13	IMF13	Conveyor Transfer Point	2018	CBI	IMF13-FF
B235	B235	Coal Milling Building	2018	n/a	None
B230	B230	Coal Unloading	2018	CBI	PE
B231	B231	Coal Unloading Hopper	2018	CBI	PE

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity[1]	Control Device[2]
Mineral Wool Line					
IMF01	IMF01	Melting Furnace	2018	CBI	IMF01-BH De-NO_x De-SO_x
IMF02	IMF02	Furnace Cooling Tower	2018	1,321 gpm (300 m^3/hr)	Drift Eliminator
IMF07A	IMF07A	Filter Fines Day Silo	2018	TBD	IMF07A-FF
IMF07B	IMF07B	Secondary Energy Materials Silo	2018	TBD	IMF07B-FF
IMF08	IMF08	Sorbent Silo	2018	TBD	IMF08-FF
IMF09	IMF09	Spent Sorbent Silo	2018	TBD	IMF09-FF
IMF10	IMF10	Filter Fines Receiving Silo	2018	TBD	IMF10-FF
IMF24	IMF24	Preheat Burner	2018	5.1 mmBtu/hr (1,500 kW)	None
CO	HE01	Curing Oven	2018	CBI	WESP (HE01) CO-AB
CO-HD	HE01	Curing Oven Hoods	2018	CBI	WESP (HE01)
GUT-EX	HE01	Gutter Exhaust	2018	CBI	WESP (HE01)
SPN	HE01	Spinning Chamber	2018	CBI	WESP (HE01)
CS	HE01	Cooling Section	2018	CBI	WESP (HE01)
HE02	HE02	Gutter Cooling Tower	2018	308 gpm (70 m^3/hr)	Drift Eliminator
CM12	CM12	Fleece Application Vent 1	2018	408 lb/hr (185 kg/hr)	None
CM13	CM13	Fleece Application Vent 2	2018		None
CE01	CE01	De-dusting Baghouse	2018	44,217 scfm (70,000 Nm^3/hr)	CE01-BH
CE02	CE02	Vacuum Cleaning Baghouse	2018	12,633 scfm (20,000 Nm^3/hr)	CE02-BH
DI	DI	Dry Ice Cleaning	2018	165.3 lbs/hour (75 kg/hr)	None
P_MARK	P_MARK	Product Marking	2018	0.40 mmBtu/hr (88 kW)	None

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity(1)	Control Device(2)
Recycling					
CM08	CM08	Recycle Plant Building Vent 3	2018	1,579 scfm (2,500 Nm^3/hr)	CM08-FF
CM09	CM09	Recycle Plant Building Vent 4	2018	1,579 scfm (2,500 Nm^3/hr)	CM09-FF
CM10	CM10	Recycle Plant Building Vent 1	2018	18,950 scfm (30,000 Nm^3/hr)	CM10-FF
CM11	CM11	Recycle Plant Building Vent 2	2018	18,950 scfm (30,000 Nm^3/hr)	CM11-FF
Rockfon Line					
RFNE1	RFNE1	IR Zone	2018	CBI	None
RFNE2	RFNE2	Hot Press	2018	CBI	None
RFNE3	RFNE3	High Oven A	2018	2.73 mmBtu/hr (800 kW)	None
RFNE4	RFNE4	Drying Oven 1	2018	2.05 mmBtu/hr (600 kW)	RFNE4-FF
RFNE5	RFNE5	Spraying Cabin	2018	CBI	RFNE5-FF
RFNE6	RFNE6	Drying Oven 2 & 3	2018	4.78 mmBtu/hr (1,400 kW)	RFNE6-FF
RFNE7	RFNE7	Cooling Zone	2018	CBI	None
RFNE8	RFNE8	Rockfon De-dusting Baghouse	2018	74,419 scfm (117,812 Nm^3/hr)	RFNE8-BH
RFNE9	RFNE9	High Oven B	2018	2.73 mmBtu/hr (800 kW)	None
Miscellaneous Emission Units					
CM03	CM03	Natural Gas Boiler 1	2018	5.1 mmBtu/hr (1,500 kW)	None
CM04	CM04	Natural Gas Boiler 2	2018	5.1 mmBtu/hr (1,500 kW)	None
EFP1	EFP1	Emergency Fire Pump Engine	2018	197 hp (147 kw)	None
RFN10	RFN10	Rockfon Building Heater	2018	5.1 mmBtu/hr (1,500 kW)	None
Storage Tanks					

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity(1)	Control Device(2)
TK-DF	TK-DF	Diesel Fuel Tank	2018	2,642 gallons ($10\ m^3$)	None
TK-UO	TK-UO	Used Oil Tank	2018	581 gallons ($2.2\ m^3$)	None
TK-TO1	TK-TO1	Thermal Oil Expansion Tank - Rockfon	2018	212 gallons ($0.8\ m^3$)	None
TK-TO2	TK-TO2	Thermal Oil Drain Tank - Rockfon	2018	159 gallons ($0.6\ m^3$)	None
TK-TO3	TK-TO3	Thermal Oil Tank - IMF	2018	2,642 gallons ($10\ m^3$)	None
TK-TO4	TK-TO4	Thermal Oil Expansion Tank - IMF	2018	1,321 gallons ($5\ m^3$)	None
TK-DO	TK-DO	De-dust Oil Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS1	TK-RS1	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS2	TK-RS2	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS3	TK-RS3	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS4	TK-RS4	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS5	TK-RS5	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS6	TK-RS6	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-RS7	TK-RS7	Resin Storage Tank	2018	15,850 gallons ($60\ m^3$)	None
TK-CA	TK-CA	Coupling Agent Storage Tank	2018	264 gallons ($1\ m^3$)	None
TK-AD	TK-AD	Additive Storage Tank	2018	53 gallons ($0.2\ m^3$)	None
TK-BM	TK-BM	Binder Mix Tank	2018	2,642 gallons ($10m^3$)	None
TK-BC	TK-BC	Binder Circulation Tank	2018	4,227 gallons ($16\ m^3$)	None

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity[1]	Control Device[2]
TK-BD	TK-BD	Binder Day Tank	2018	793 gallons ($3 m^3$)	None
TK-BS1	TK-BS1	Binder Storage Container	2018	264 gallons ($1 m^3$)	None
TK-BS2	TK-BS2	Binder Storage Container	2018	264 gallons ($1 m^3$)	None
TK0-BS3	TK-BS3	Binder Storage Container	2018	264 gallons ($1 m^3$)	None
TK-DOD	TK-DOD	De-dust Oil Day Tank	2018	264 gallons ($1 m^3$)	None
TK-PD	TK-PD	Paint Dilution Storage Tank	2018	793 gallons ($3 m^3$)	None
TK-PDD	TK-PDD	Paint Dilution Day Tank	2018	397 gallons ($1.5 m^3$)	None

(1) CBI = Confidential Business Information.

(2) AB = Afterburner; BH = Baghouse; FF = Fabric Filter; PE = Partial Enclosure; WESP = Wet Electrostatic Precipitator.

2.0. General Conditions

2.1. Definitions

2.1.1. All references to the "West Virginia Air Pollution Control Act" or the "Air Pollution Control Act" mean those provisions contained in W.Va. Code §§ 22-5-1 to 22-5-18.

2.1.2. The "Clean Air Act" means those provisions contained in 42 U.S.C. §§ 7401 to 7671q, and regulations promulgated thereunder.

2.1.3. "Secretary" means the Secretary of the Department of Environmental Protection or such other person to whom the Secretary has delegated authority or duties pursuant to W.Va. Code §§ 22-1-6 or 22-1-8 (45 CSR § 30-2.12.). The Director of the Division of Air Quality is the Secretary's designated representative for the purposes of this permit.

2.2. Acronyms

CAAA	Clean Air Act Amendments
CBI	Confidential Business Information
CEM	Continuous Emission Monitor
CES	Certified Emission Statement
C.F.R. *or* **CFR**	Code of Federal Regulations
CO	Carbon Monoxide
C.S.R. *or* **CSR**	Codes of State Rules
DAQ	Division of Air Quality
DEP	Department of Environmental Protection
dscm	Dry Standard Cubic Meter
FOIA	Freedom of Information Act
HAP	Hazardous Air Pollutant
HON	Hazardous Organic NESHAP
HP	Horsepower
lbs/hr	Pounds per Hour
LDAR	Leak Detection and Repair
M	Thousand
MACT	Maximum Achievable Control Technology
MDHI	Maximum Design Heat Input
MM	Million
MMBtu/hr *or* **mmbtu/hr**	Million British Thermal Units per Hour
MMCF/hr *or* **mmcf/hr**	Million Cubic Feet per Hour
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NESHAPS	National Emissions Standards for Hazardous Air Pollutants
NO_x	Nitrogen Oxides
NSPS	New Source Performance Standards
PM	Particulate Matter
$PM_{2.5}$	Particulate Matter less than 2.5μm in diameter
PM_{10}	Particulate Matter less than 10μm in diameter
Ppb	Pounds per Batch
pph	Pounds per Hour
ppm	Parts per Million
Ppmv or ppmv	Parts per million by volume
PSD	Prevention of Significant Deterioration
psi	Pounds per Square Inch
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
TAP	Toxic Air Pollutant
TPY	Tons per Year
TRS	Total Reduced Sulfur
TSP	Total Suspended Particulate
USEPA	United States Environmental Protection Agency
UTM	Universal Transverse Mercator
VEE	Visual Emissions Evaluation
VOC	Volatile Organic Compounds
VOL	Volatile Organic Liquids

2.3. Authority

This permit is issued in accordance with West Virginia Air Pollution Control Law W.Va. Code §§22-5-1 et seq. and the following Legislative Rules promulgated thereunder:

2.3.1. 45CSR13 – *Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation; and*

2.3.2. *45CSR14 – Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration.*

2.4. Term and Renewal

2.4.1. This permit shall remain valid, continuous and in effect unless it is revised, suspended, revoked or otherwise changed under an applicable provision of 45CSR13 or any applicable legislative rule.

2.5. Duty to Comply

2.5.1. The permitted facility shall be constructed and operated in accordance with the plans and specifications filed in Permit Applications R14-0037 and any modifications, administrative updates, or amendments thereto. The Secretary may suspend or revoke a permit if the plans and specifications upon which the approval was based are not adhered to;
[45CSR§§13-5.11 and 13-10.3]

2.5.2. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the West Virginia Code and the Clean Air Act and is grounds for enforcement action by the Secretary or USEPA;

2.5.3. Violations of any of the conditions contained in this permit, or incorporated herein by reference, may subject the permittee to civil and/or criminal penalties for each violation and further action or remedies as provided by West Virginia Code 22-5-6 and 22-5-7;

2.5.4. Approval of this permit does not relieve the permittee herein of the responsibility to apply for and obtain all other permits, licenses and/or approvals from other agencies; i.e., local, state and federal, which may have jurisdiction over the construction and/or operation of the source(s) and/or facility herein permitted.

2.6. Duty to Provide Information

The permittee shall furnish to the Secretary within a reasonable time any information the Secretary may request in writing to determine whether cause exists for administratively updating, modifying, revoking or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Secretary copies of records to be kept by the permittee. For information claimed to be confidential, the permittee shall furnish such records to the Secretary along with a claim of confidentiality in accordance with 45CSR31. If confidential information is to be sent to USEPA, the permittee shall directly provide such information to USEPA along with a claim of confidentiality in accordance with 40 C.F.R. Part 2.

2.7. Duty to Supplement and Correct Information

Upon becoming aware of a failure to submit any relevant facts or a submittal of incorrect information in any permit application, the permittee shall promptly submit to the Secretary such supplemental facts or corrected information.

2.8. Administrative Update

The permittee may request an administrative update to this permit as defined in and according to the procedures specified in 45CSR13.
[45CSR§13-4]

2.9. Permit Modification

The permittee may request a minor modification to this permit as defined in and according to the procedures specified in 45CSR13.
[45CSR§13-5.4.]

2.10. Major Permit Modification

The permittee may request a major modification as defined in and according to the procedures specified in 45CSR14 or 45CSR19, as appropriate.
[45CSR§13-5.1]

2.11. Inspection and Entry

The permittee shall allow any authorized representative of the Secretary, upon the presentation of credentials and other documents as may be required by law, to perform the following:

a. At all reasonable times (including all times in which the facility is in operation) enter upon the permittee's premises where a source is located or emissions related activity is conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times (including all times in which the facility is in operation) any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit;

d. Sample or monitor at reasonable times substances or parameters to determine compliance with the permit or applicable requirements or ascertain the amounts and types of air pollutants discharged.

2.12. Emergency

2.12.1. An "emergency" means any situation arising from sudden and reasonable unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission

limitation under the permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

2.12.2. Effect of any emergency. An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if the conditions of Section 2.12.3 are met.

2.12.3. The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:

a. An emergency occurred and that the permittee can identify the cause(s) of the emergency;

b. The permitted facility was at the time being properly operated;

c. During the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in the permit; and,

d. The permittee submitted notice of the emergency to the Secretary within one (1) working day of the time when emission limitations were exceeded due to the emergency and made a request for variance, and as applicable rules provide. This notice must contain a detailed description of the emergency, any steps taken to mitigate emission, and corrective actions taken.

2.12.4. In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency has the burden of proof.

2.12.5. The provisions of this section are in addition to any emergency or upset provision contained in any applicable requirement.

2.13. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it should have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. However, nothing in this paragraph shall be construed as precluding consideration of a need to halt or reduce activity as a mitigating factor in determining penalties for noncompliance if the health, safety, or environmental impacts of halting or reducing operations would be more serious than the impacts of continued operations.

2.14. Suspension of Activities

In the event the permittee should deem it necessary to suspend, for a period in excess of sixty (60) consecutive calendar days, the operations authorized by this permit, the permittee shall notify the Secretary, in writing, within two (2) calendar weeks of the passing of the sixtieth (60) day of the suspension period.

2.15. Property Rights

This permit does not convey any property rights of any sort or any exclusive privilege.

2.16. Severability

The provisions of this permit are severable and should any provision(s) be declared by a court of competent jurisdiction to be invalid or unenforceable, all other provisions shall remain in full force and effect.

2.17. Transferability

This permit is transferable in accordance with the requirements outlined in Section 10.1 of 45CSR13.
[45CSR§13-10.1]

2.18. Notification Requirements

The permittee shall notify the Secretary, in writing, no later than thirty (30) calendar days after the actual startup of the operations authorized under this permit.

2.19. Credible Evidence

Nothing in this permit shall alter or affect the ability of any person to establish compliance with, or a violation of, any applicable requirement through the use of credible evidence to the extent authorized by law. Nothing in this permit shall be construed to waive any defense otherwise available to the permittee including, but not limited to, any challenge to the credible evidence rule in the context of any future proceeding.

3.0. Facility-Wide Requirements

3.1. Limitations and Standards

3.1.1. **Open burning.** The open burning of refuse by any person, firm, corporation, association or public agency is prohibited except as noted in 45CSR§6-3.1.
[45CSR§6-3.1.]

3.1.2. **Open burning exemptions.** The exemptions listed in 45CSR§6-3.1 are subject to the following stipulation: Upon notification by the Secretary, no person shall cause, suffer, allow or permit any form of open burning during existing or predicted periods of atmospheric stagnation. Notification shall be made by such means as the Secretary may deem necessary and feasible.
[45CSR§6-3.2.]

3.1.3. **Asbestos.** The permittee is responsible for thoroughly inspecting the facility, or part of the facility, prior to commencement of demolition or renovation for the presence of asbestos and complying with 40 C.F.R. § 61.145, 40 C.F.R. § 61.148, and 40 C.F.R. § 61.150. The permittee, owner, or operator must notify the Secretary at least ten (10) working days prior to the commencement of any asbestos removal on the forms prescribed by the Secretary if the permittee is subject to the notification requirements of 40 C.F.R. § 61.145(b)(3)(i). The USEPA, the Division of Waste Management and the Bureau for Public Health - Environmental Health require a copy of this notice to be sent to them.
[40CFR§61.145(b) and 45CSR§34]

3.1.4. **Odor.** No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public.
[45CSR§4-3.1 State-Enforceable only.]

3.1.5. **Permanent shutdown.** A source which has not operated at least 500 hours in one 12-month period within the previous five (5) year time period may be considered permanently shutdown, unless such source can provide to the Secretary, with reasonable specificity, information to the contrary. All permits may be modified or revoked and/or reapplication or application for new permits may be required for any source determined to be permanently shutdown.
[45CSR§13-10.5.]

3.1.6. **Standby plan for reducing emissions.** When requested by the Secretary, the permittee shall prepare standby plans for reducing the emissions of air pollutants in accordance with the objectives set forth in Tables I, II, and III of 45 C.S.R. 11.
[45CSR§11-5.2.]

3.2. Monitoring Requirements

3.2.1. **Emission Limit Averaging Time.** Unless otherwise specified, compliance with all annual limits shall be based on a rolling twelve month total. A rolling twelve month total shall be the sum of the measured parameter of the previous twelve calendar months. Unless otherwise specified, compliance with all hourly emission limits shall be based on the applicable NAAQS averaging times or, where applicable, as given in any approved performance test method. However, nothing under 3.2.1. requires that continuous performance testing take place for the entire averaging period time frame (e.g., performance testing to show compliance with a PM_{10} emission limit is not necessarily required for 24 consecutive hours). The required length of time of a performance test will be determined by th appropriate test method and compliance procedures as approved under a protocol submitted pursuant to 3.3.1(c).

3.3. Testing Requirements

3.3.1. **Stack testing.** As per provisions set forth in this permit or as otherwise required by the Secretary, in accordance with the West Virginia Code, underlying regulations, permits and orders, the permittee shall conduct test(s) to determine compliance with the emission limitations set forth in this permit and/or established or set forth in underlying documents. The Secretary, or his duly authorized representative, may at his option witness or conduct such test(s). Should the Secretary exercise his option to conduct such test(s), the operator shall provide all necessary sampling connections and sampling ports to be located in such manner as the Secretary may require, power for test equipment and the required safety equipment, such as scaffolding, railings and ladders, to comply with generally accepted good safety practices. Such tests shall be conducted in accordance with the methods and procedures set forth in this permit or as otherwise approved or specified by the Secretary in accordance with the following:

a. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with 40 C.F.R. Parts 60, 61, and 63 in accordance with the Secretary's delegated authority and any established equivalency determination methods which are applicable. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4 or 45CSR§13-5.4 as applicable.

b. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with applicable requirements which do not involve federal delegation. In specifying or approving such alternative testing to the test methods, the Secretary, to the extent possible, shall utilize the same equivalency criteria as would be used in approving such changes under Section 3.3.1.a. of this permit. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4 or -5.4 as applicable.

c. All periodic tests to determine mass emission limits from or air pollutant concentrations in discharge stacks and such other tests as specified in this permit shall be conducted in accordance with an approved test protocol. Unless previously approved, such protocols shall be submitted to the Secretary in writing at least thirty (30) days prior to any testing and shall contain the information set forth by the Secretary. In addition, the permittee shall notify the Secretary at least fifteen (15) days prior to any testing so the Secretary may have the opportunity to observe such tests. This notification shall include the actual date and time during which the test will be conducted and, if appropriate, verification that the tests will fully conform to a referenced protocol previously approved by the Secretary.

d. The permittee shall submit a report of the results of the stack test within sixty (60) days of completion of the test. The test report shall provide the information necessary to document the objectives of the test and to determine whether proper procedures were used to accomplish these objectives. The report shall include the following: the certification described in paragraph 3.5.1.; a statement of compliance status, also signed by a responsible official; and, a summary of conditions which form the basis for the compliance status evaluation. The summary of conditions shall include the following:

1. The permit or rule evaluated, with the citation number and language;
2. The result of the test for each permit or rule condition; and,
3. A statement of compliance or noncompliance with each permit or rule condition.

[WV Code § 22-5-4(a)(14-15) and 45CSR13]

3.4. Recordkeeping Requirements

3.4.1. **Retention of records.** The permittee shall maintain records of all information (including monitoring data, support information, reports and notifications) required by this permit recorded in a form suitable and readily available for expeditious inspection and review. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation. The files shall be maintained for at least five (5) years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. At a minimum, the most recent two (2) years of data shall be maintained on site. The remaining three (3) years of data may be maintained off site, but must remain accessible within a reasonable time. Where appropriate, the permittee may maintain records electronically (on a computer, on computer floppy disks, CDs, DVDs, or magnetic tape disks), on microfilm, or on microfiche.

3.4.2. **Odors.** For the purposes of 45CSR4, the permittee shall maintain a record of all odor complaints received, any investigation performed in response to such a complaint, and any responsive action(s) taken.
[45CSR§4. *State-Enforceable only.*]

3.5. Reporting Requirements

3.5.1. **Responsible official.** Any application form, report, or compliance certification required by this permit to be submitted to the DAQ and/or USEPA shall contain a certification by the responsible official that states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate and complete.

3.5.2. **Confidential information.** A permittee may request confidential treatment for the submission of reporting required by this permit pursuant to the limitations and procedures of W.Va. Code § 22-5-10 and 45CSR31.

3.5.3. **Correspondence.** All notices, requests, demands, submissions and other communications required or permitted to be made to the Secretary of DEP and/or USEPA shall be made in writing and shall be deemed to have been duly given when delivered by hand, or mailed first class or by private carrier with postage prepaid to the address(es), or submitted in electronic format by email as set forth below or to such other person or address as the Secretary of the Department of Environmental Protection may designate:

Table 3.5.3.: Correspondence Addresses

If to the DAQ:	**If to the US EPA:**
Director WVDEP Division of Air Quality 601 57th Street, SE Charleston, WV 25304-2345 **DAQ Compliance and Enforcement[1]:** **DEPAirQualityReports@wv.gov**	Associate Director Office of Air Enforcement and Compliance Assistance - (3AP20) U. S. Environmental Protection Agency Region III 1650 Arch Street Philadelphia, PA 19103-2029

1 For all self-monitoring reports (MACT, GACT, NSPS, etc.), stack tests and protocols, notice of Compliance Status Reports, Initial Notifications, etc.

3.5.4. **Operating Fee.**

3.5.4.1. In accordance with 45CSR30 – Operating Permit Program, the permittee shall submit a Certified Emissions Statement (CES) and pay fees on an annual basis in accordance with the submittal requirements of the Division of Air Quality. A receipt for the appropriate fee shall be maintained on the premises for which the receipt has been issued, and shall be made immediately available for inspection by the Secretary or his/her duly authorized representative.

3.5.4.2. In accordance with 45CSR30 – Operating Permit Program, enclosed with this permit is a Certified Emissions Statement (CES) Invoice, from the date of initial startup through the following June 30. Said invoice and the appropriate fee shall be submitted to this office no later than 30 days prior to the date of initial startup. For any startup date other than July 1, the permittee shall pay a fee or prorated fee in accordance with the Section 4.5 of 45CSR22. A copy of this schedule may be found attached to the Certified Emissions Statement (CES) Invoice.

3.5.5. **Emission inventory.** At such time(s) as the Secretary may designate, the permittee herein shall prepare and submit an emission inventory for the previous year, addressing the emissions from the facility and/or process(es) authorized herein, in accordance with the emission inventory submittal requirements of the Division of Air Quality. After the initial submittal, the Secretary may, based upon the type and quantity of the pollutants emitted, establish a frequency other than on an annual basis.

4.0. Source-Specific Requirements

4.1. Limitations and Standards

4.1.1. Only those emission units/sources as identified in Table 1.0, with the exception of any *de minimis* sources as identified under Table 45-13B of 45CSR13, are authorized at the permitted facility by this permit. In accordance with the information filed in Permit Application R14-0037, the emission units/sources identified under Table 1.0 of this permit shall be installed, maintained, and operated so as to minimize any fugitive escape of pollutants, shall not exceed the listed maximum design capacities, shall use the specified control devices, and comply with any other information provided under Table 1.0.

4.1.2. **Material Handling Operations**
The handling of raw materials used in the production of mineral wool (including but not limited to igneous rocks, slags, dolomite/limestone, and mineral additives), coal milling material handling operations, recycling operations, and all other operations involved in the handling or processing of friable materials with a potential of producing particulate matter emissions, shall be in accordance with the following requirements:

a. The permittee shall not exceed the specified maximum design capacities of the following operations:

Table 4.1.2(a): Maximum Design Capacities

Parameter	Limit	Units
Raw Materials(1)	716(2) (650)	Ton/Day (Tonne/Day)
Lump Coal/Pet Coke	93(3) (84)	Ton/Day (Tonne/Day)
Portable Melt Crushing	<150 (<136)	TPH (Tonne/Hour)

(1) Rock, Slag, and Minerals
(2) As based on the Charging Building (B220) Conveyer Belt.
(3) As based on the Coal Mill Feed Conveyer Belt.

b. The permittee shall not exceed the specified maximum annual throughputs or hours of operation of the following operations:

Table 4.1.2(b): Maximum Annual Throughputs

Parameter	Limit	Units
Portable Melt Crushing	540	Hours of Operation

c. The permittee shall not exceed the maximum emission limits for the specified emission points given in the following tables:

(1) **British Units**

Table 4.1.2(c)(1): Material Handling Operations Stack Emission Limits in British Units

Emission Point ID	Source Description	Filter Outlet (gr/dscf)[1]	Pollutant[2]	PPH[3]	TPY
IMF03A	Coal Storage Silo 1	0.001	$PM_{2.5}$	0.006	0.03
		0.002	PM/PM_{10}	0.013	0.06
IMF03B	Coal Storage Silo 2	0.001	$PM_{2.5}$	0.006	0.03
		0.002	PM/PM_{10}	0.013	0.06
IMF03C	Coal Storage Silo 3	0.001	$PM_{2.5}$	0.006	0.03
		0.002	PM/PM_{10}	0.013	0.06
IMF04	Conveyer TP (B231 to B235)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.019	0.09
IMF06	Coal Milling Building (B235) De-Dusting Baghouse[4]	0.002	$PM_{2.5}$	0.108	0.47
		0.004	PM/PM_{10}	0.217	0.95
IMF07A	Filter Fines Day Silo	0.001	$PM_{2.5}$	0.007	0.03
		0.002	PM/PM_{10}	0.014	0.06
IMF07B	Secondary Energy Materials Silo	0.001	$PM_{2.5}$	0.007	0.03
		0.002	PM/PM_{10}	0.014	0.06
IMF08	Sorbent Silo	0.001	$PM_{2.5}$	0.006	0.03
		0.002	PM/PM_{10}	0.013	0.06
IMF09	Spent Sorbent Silo	0.001	$PM_{2.5}$	0.006	0.03
		0.002	PM/PM_{10}	0.013	0.06
IMF10	Filter Fines Receiving Silo	0.001	$PM_{2.5}$	0.006	0.03
		0.002	PM/PM_{10}	0.013	0.06
IMF11	Conveyer TP (B215 to B220)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.019	0.09
IMF12	Conveyer TP (B210 to B220)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.019	0.09
IMF13	Bin-Conveyer TP (B231 to Conveyer)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.019	0.09

Emission Point ID	Source Description	Filter Outlet (gr/dscf)(1)	Pollutant(2)	PPH(3)	TPY
IMF14	Conveyer TP (B220 No. 1)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.019	0.09
IMF15	Conveyer TP (B220 No. 2)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.019	0.09
IMF16	Conveyer TP (B220 to B300)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.019	0.09
IMF17	Charging Building Vent 1	n/a(5)	$PM_{2.5}$	0.009	0.04
			PM/PM_{10}	0.019	0.08
IMF18	Charging Building Vent 2	n/a(5)	$PM_{2.5}$	0.009	0.04
			PM/PM_{10}	0.019	0.08
IMF21	Charging Building Vacuum Cleaning	0.001	$PM_{2.5}$	0.003	0.01
		0.002	PM/PM_{10}	0.005	0.02
IMF25	Coal Feed Tank	0.001	$PM_{2.5}$	0.006	0.03
		0.002	PM/PM_{10}	0.013	0.06
B235	Coal Milling Building	n/a(5)	$PM_{2.5}$	0.010	0.04
			PM/PM_{10}	0.019	0.09
CE01	De-Dusting Baghouse	0.0020	$PM_{10}/PM_{2.5}$	0.220	0.97
		0.0041	PM	0.440	1.93
		n/a	Mineral Fiber	0.220	0.97
CE02	Vacuum Cleaning Baghouse	0.0020	$PM_{10}/PM_{2.5}$	0.220	0.97
		0.0041	PM	0.440	1.93
		n/a	Mineral Fiber	0.220	0.97
CM08	Recycle Building Vent 3	0.002	$PM_{2.5}$	0.027	0.12
		0.004	PM/PM_{10}	0.054	0.24
CM09	Recycle Building Vent 4	0.002	$PM_{2.5}$	0.027	0.12
		0.004	PM/PM_{10}	0.054	0.24

Emission Point ID	Source Description	Filter Outlet (gr/dscf)(1)	Pollutant(2)	PPH(3)	TPY
CM10	Recycle Building Vent 1	0.002	$PM_{2.5}$	0.330	1.45
		0.004	PM/PM_{10}	0.660	2.90
CM11	Recycle Building Vent 2	0.002	$PM_{2.5}$	0.330	1.45
		0.004	PM/PM_{10}	0.660	2.90

(1) gr/dscf = grains/dry standard cubic feet. This represents the PM/PM_{10} **BACT** limit for the specified emission points where applicable. Where a filter outlet limit is not specified, **BACT** is the PPH limit.
(2) Particulate Matter limits are filterable only. With the exception of CE01 and CE02, PM/PM_{10} limits are the same.
(3) Hourly emission limits are based on a 24-hour average.
(4) This baghouse is optional and not required but if installed will be subject to the given emission limits.
(5) This is an uncontrolled building opening.

(2) **Metric Units**

Table 4.1.2(c)(2): Material Handling Operations Stack Emission Limits in Metric Units

Emission Point ID	Source Description	Filter Outlet (mg/Nm^3)(1)	Pollutant(2)	kg/hr(3)	tonne /yr
IMF03A	Coal Storage Silo 1	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF03B	Coal Storage Silo 2	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF03C	Coal Storage Silo 3	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF04	Conveyer TP (B231 to B235)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF06	Coal Milling Building (B235) De-Dusting Baghouse(4)	5	$PM_{2.5}$	0.050	0.44
		10	PM/PM_{10}	0.100	0.88
IMF07A	Filter Fines Day Silo	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF07B	Secondary Energy Materials Silo	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05

Emission Point ID	Source Description	Filter Outlet (mg/Nm^3)(1)	Pollutant(2)	kg/hr(3)	tonne /yr
IMF08	Sorbent Silo	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF09	Spent Sorbent Silo	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF10	Filter Fines Receiving Silo	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
IMF11	Conveyer TP (B215 to B220)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF12	Conveyer TP (B210 to B220)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF13	Bin-Conveyer TP (B231 to Conveyer)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF14	Conveyer TP (B220 No. 1)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF15	Conveyer TP (B220 No. 2)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF16	Conveyer TP (B220 to B300)	2.5	$PM_{2.5}$	0.005	0.04
		5	PM/PM_{10}	0.010	0.08
IMF17	Charging Building Vent 1	n/a(5)	$PM_{2.5}$	0.004	0.04
			PM/PM_{10}	0.010	0.08
IMF18	Charging Building Vent 2	n/a(5)	$PM_{2.5}$	0.004	0.04
			PM/PM_{10}	0.010	0.08
IMF21	Charging Building Vacuum Cleaning	2.5	$PM_{2.5}$	0.001	0.01
		5	PM/PM_{10}	0.003	0.02
IMF25	Coal Feed Tank	2.5	$PM_{2.5}$	0.003	0.03
		5	PM/PM_{10}	0.006	0.05
B235	Coal Milling Building	n/a(5)	$PM_{2.5}$	0.005	0.04
			PM/PM_{10}	0.010	0.08
CE01	De-Dusting Baghouse	5	$PM_{10}/PM_{2.5}$	0.350	3.07
		10	PM	0.700	6.13

Emission Point ID	Source Description	Filter Outlet (mg/Nm^3)(1)	Pollutant(2)	kg/hr(3)	tonne /yr
		n/a	Mineral Fiber	0.350	3.07
CE02	Vacuum Cleaning Baghouse	5	$PM_{10}/PM_{2.5}$	0.350	3.07
		10	PM	0.200	1.75
		n/a	Mineral Fiber	0.350	3.07
CM08	Recycle Building Vent 3	5	$PM_{2.5}$	0.010	0.11
		10	PM/PM_{10}	0.030	0.22
CM09	Recycle Building Vent 4	5	$PM_{2.5}$	0.010	0.11
		10	PM/PM_{10}	0.030	0.22
CM10	Recycle Building Vent 1	5	$PM_{2.5}$	0.150	1.31
		10	PM/PM_{10}	0.300	2.63
CM11	Recycle Building Vent 2	5	$PM_{2.5}$	0.150	1.31
		10	PM/PM_{10}	0.300	2.63

(1) mg/Nm^3 = milligrams/cubic meter. This represents the PM/PM_{10} **BACT** limit for the specified emission points where applicable. Where a filter outlet limit is not specified, **BACT** is the kg/hr limit.
(2) Particulate Matter limits are filterable only. With the exception of CE01 and CE02, PM/PM_{10} limits are the same.
(3) Hourly emission limits are based on a 24-hour average.
(4) This baghouse is optional and not required but if installed will be subject to the given emission limits.
(5) This is an uncontrolled building opening.

d. The permittee shall not exceed the maximum emission limits and shall utilize the control methods for the specified fugitive emission sources given in the following tables:

(1) **British Units**

Table 4.1.2(d)(1): Material Handling Operations Fugitive Emission Limits in British Units

Emission Unit ID	Source Description	Control Technology	Pollutant(1)	PPH(2)	TPY
B215	Drop into Raw Material Loading Hopper	3-sided enclosure w/cover	$PM_{2.5}$	9.08e-04	3.98e-03
			PM_{10}	6.00e-03	2.63e-02
			PM	1.27e-02	5.55e-02

Emission Unit ID	Source Description	Control Technology	Pollutant(1)	PPH(2)	TPY
RMS	Drop onto Raw Material Stockpile	3-sided enclosure	$PM_{2.5}$	2.48e-03	1.08e-03
			PM_{10}	1.64e-02	7.13e-03
			PM	3.46e-02	1.51e-02
RM_REJ	Drop into Raw Material Reject Collection Bin	4-sided rubber drop guard	$PM_{2.5}$	8.99e-06	3.35e-06
			PM_{10}	5.94e-05	2.21e-05
			PM	1.25e-04	4.67e-05
S_REJ	Drop into Sieve Reject Collection Bin	4-sided rubber drop guard	$PM_{2.5}$	8.99e-06	3.35e-06
			PM_{10}	5.94e-05	2.21e-05
			PM	1.25e-04	4.67e-05
B170	Drop from Portable Crusher into Pit Waste Storage Pile	3-sided enclosure	$PM_{2.5}$	5.89e-03	3.18e-03
			PM_{10}	3.89e-02	2.10e-02
			PM	8.21e-02	4.43e-02
B210	Drop into B210	3-sided enclosure w/cover	$PM_{2.5}$	4.68e-03	2.05e-02
			PM_{10}	3.09e-02	1.35e-01
			PM	6.52e-02	2.86e-01
	Truck or FEL Drop into B210	None	$PM_{2.5}$	1.17e-03	5.13e-03
			PM_{10}	7.74e-03	3.39e-02
			PM	1.63e-02	7.15e-02
B230	Truck Dump to Coal Bunker	3-sided enclosure w/cover	$PM_{2.5}$	1.57e-06	6.90e-06
			PM_{10}	1.04e-05	4.56e-05
			PM	2.19e-05	9.61e-05
B231	Drop into Covered Coal Unloading Hopper	3-sided enclosure w/cover	$PM_{2.5}$	1.57e-06	6.90e-06
			PM_{10}	1.04e-05	4.56e-05
			PM	2.19e-05	9.61e-05

(1) Particulate Matter limits are filterable only.
(2) Hourly emission limits are based on a 24-hour average and are the **BACT** limits for the listed fugitive emission sources.

(2) **Metric Units**

Table 4.1.2(d)(2): Material Handling Operations Fugitive Emission Limits in Metric Units

Emission Unit ID	Source Description	Control Technology	Pollutant(1)	kg/hr(2)	tonne/yr
B215	Drop into Raw Material Loading Hopper	3-sided enclosure w/cover	$PM_{2.5}$	4.17e-04	3.65e-03
			PM_{10}	2.28e-03	2.00e-02
			PM	5.71e-03	5.00e-02
RMS	Drop onto Raw Material Stockpile	3-sided enclosure	$PM_{2.5}$	1.12e-04	9.81e-04
			PM_{10}	7.40e-04	6.48e-03
			PM	1.14e-03	1.00e-02
RM_REJ	Drop into Raw Material Reject Collection Bin	4-sided rubber drop guard	$PM_{2.5}$	8.57e-06	7.51e-05
			PM_{10}	5.51e-05	4.83e-04
			PM	1.16e-04	1.02e-03
S_REJ	Drop into Sieve Reject Collection Bin	4-sided rubber drop guard	$PM_{2.5}$	8.34e-06	7.31e-05
			PM_{10}	5.51e-05	4.83e-04
			PM	1.16e-04	1.02e-03
B170	Drop from Portable Crusher into Pit Waste Storage Pile	3-sided enclosure	$PM_{2.5}$	3.29e-04	2.88e-03
			PM_{10}	2.28e-03	2.00e-02
			PM	4.57e-03	4.00e-02
B210	Drop into B210	3-sided enclosure w/cover	$PM_{2.5}$	4.17e-04	3.65e-03
			PM_{10}	2.28e-03	2.00e-02
			PM	5.71e-03	5.00e-02
	Truck or FEL Drop into B210	None	$PM_{2.5}$	1.14e-03	1.00e-02
			PM_{10}	1.14e-02	1.00e-01
			PM	2.28e-02	2.00e-01
B230	Truck Dump to Coal Bunker	3-sided enclosure w/cover	$PM_{2.5}$	5.68e-06	4.98e-05
			PM_{10}	3.76e-05	3.29e-04
			PM	7.95e-05	6.96e-04
B231	Drop into Covered Coal Unloading Hopper	3-sided enclosure w/cover	$PM_{2.5}$	5.68e-06	4.98e-05
			PM_{10}	3.76e-05	3.29e-04
			PM	7.95e-05	6.96e-04

(1) Particulate Matter limits are filterable only.
(2) Hourly emission limits are based on a 24-hour average and are the **BACT** limits for the listed fugitive emission sources.

e. **Melting Furnace Portable Crusher**
Emissions from the Melting Furnace Portable Crusher (not including associated storage pile) shall

not exceed the limits given in the following table:

Table 4.1.2(e): Melting Furnace Portable Crusher Emission Limits

Pollutant[(1)]	PPH[(2)] (kg/hr)	TPY (tonne/yr)
$PM_{2.5}$	0.12 (0.05)	0.03 (0.03)
PM_{10}	0.36 (0.16)	0.10 (0.09
PM	0.81 (0.37)	0.22 (0.20)

(1) Particulate Matter limits are filterable only.
(2) Hourly emission limits are based on a 24-hour average and are the **BACT** limits.

f. In addition to the particulate matter controls as required in the Emission Units Table 1.0, the raw material mixer and crusher located in the Charging Building (B220) and the coal conveyer transfer point located inside the Coal Milling Building (B235) shall be equipped with fabric filters to control particulate matter emissions from these sources. The maximum outlet grain loading concentration for each of these fabric filters shall not exceed 0.002 gr/dscf (5 mg/Nm^3)) of filterable PM/PM_{10} and 0.001 gr/dscf (2.5 mg/Nm^3) filterable $PM_{2.5}$;.

g. **Outdoor Material Storage Areas**
All outdoor raw material, coal, waste, or recycled material storage shall be in accordance with the following:

(1) The permittee is authorized to operate one (1) raw material stockpile (RMS) that shall not exceed a base of 5,382 ft^2 (500 m^2) and shall utilize 3-sided enclosures to minimize the potential fugitive emissions of particulate matter from wind erosion and pile activity;

(2) The permittee is authorized to operate Building 210 and 211 for raw material storage. These buildings shall utilize 3-sided enclosures and a roof to minimize the potential fugitive emissions of particulate matter from wind erosion and pile activity;

(3) The permittee is authorized to operate one (1) coal bunker (B230) that shall utilize a 3-sided enclosure, a roof, and a closeable bay door (or equivalent design) to minimize the potential fugitive emissions of particulate matter from wind erosion and pile activity;

(4) The permittee is authorized to operate one (1) recycled material stockpile. The material in this storage area is limited to the slag-like material tapped from the Melting Furnace that is of such a physical nature so as to limit any significant generation of fugitive matter from wind erosion and pile activity;

(5) The permittee is authorized to operate one (1) pit waste (crushed recycled material) storage area (B170) that shall not exceed a base of 19,375 ft^2 (1,800 m^2) and shall utilize a 3-sided enclosure to minimize the potential fugitive emissions of particulate matter from wind erosion and pile activity;

(6) For all storage piles, the permittee shall manage on-pile activity so as to minimize the release of emissions; and

(7) All storage area enclosures shall be reasonably maintained and any significant holes shall be repaired immediately.

h. **Haulroads and Mobile Work Areas**
Fugitive particulate emissions resulting from use of haulroads and mobile work areas shall be minimized by the following:

(1) The permittee shall pave, and maintain such pavement, on all haulroads and mobile work areas (including a reasonable shoulder area) within the plant boundary;

(2) The permittee shall maintain access to a vacuum sweeper truck in good operating condition, and shall utilize same as needed to remove excess dirt and dust from all haulroads and mobile work areas. The haulroads and mobile work areas shall be flushed with water immediately prior to each vacuum sweeping (flushing may be part of vacuum sweeper truck); and

(3) The permittee shall collect, in a timely fashion, material spilled on haulroads that could become airborne if it dried or were subject to vehicle traffic.

i. **45CSR7**
The handling of raw materials used in the production of mineral wool and coal milling material handling operations shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) No person shall cause, suffer, allow or permit any manufacturing process or storage structure generating fugitive particulate matter to operate that is not equipped with a system, which may include, but not be limited to, process equipment design, control equipment design or operation and maintenance procedures, to minimize the emissions of fugitive particulate matter. To minimize means such system shall be installed, maintained and operated to ensure the lowest fugitive particulate matter emissions reasonably achievable.
[45CSR§7-5.1]

j. **40 CFR 60, Subpart OOO**

The non-metallic mineral handling operations prior to the furnace building (B300) are subject to the applicable limitations and standards under 40 CFR 60, Subpart OOO including, but not limited to, the following:

(1) Affected facilities must meet the stack emission limits and compliance requirements in Table 2 of Subpart OOO within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup as required under §60.8. The requirements in Table 2 of Subpart OOO apply for affected facilities with capture systems used to capture and transport particulate matter to a control device.
[40 CFR §60.672(a)]

(2) Affected facilities must meet the fugitive emission limits and compliance requirements in Table 3 of Subpart OOO within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup as required under §60.11. The requirements in Table 3 of Subpart OOO apply for fugitive emissions from affected facilities without capture systems and for fugitive emissions escaping capture systems.
[40 CFR §60.672(b)]

(3) Truck dumping of nonmetallic minerals into any screening operation, feed hopper, or crusher is exempt from the requirements of this section.
[40 CFR §60.672(d)]

(4) If any transfer point on a conveyor belt or any other affected facility is enclosed in a building, then each enclosed affected facility must comply with the emission limits in 40 CFR §60.672(a) and (b), or the building enclosing the affected facility or facilities must comply with the following emission limits:

   (1) Fugitive emissions from the building openings (except for vents as defined in §60.671) must not exceed 7 percent opacity; and

   (2) Vents (as defined in §60.671) in the building must meet the applicable stack emission limits and compliance requirements in Table 2 of Subpart OOO.
   [40 CFR §60.672(e)]

(5) Any baghouse that controls emissions from only an individual, enclosed storage bin is exempt from the applicable stack PM concentration limit (and associated performance testing) in Table 2 of Subpart OOO but must meet the applicable stack opacity limit and compliance requirements in Table 2 of Subpart OOO. This exemption from the stack PM concentration limit does not apply for multiple storage bins with combined stack emissions.
[40 CFR §60.672(f)]

4.1.3. **Coal Mill Burner and Fluidized Bed Dryer**

The Coal Mill Burner and Fluidized Bed Dryer, identified as IMF05, shall meet the following requirements:

a. The Coal Mill Burner shall not exceed an MDHI of 6.00 mmBtu/hr (1,757 kW) shall only be fired by pipeline-quality natural gas (PNG);

b. The Fluidized Bed Dryer shall have a design capacity not to exceed 200 tons per day;

c. The combined exhaust from the Coal Mill Burner and Fluidized Bed Dryer shall be vented to first a separator and then to a baghouse (IMF05-BH) for control of filterable particulate matter;

d. The combined exhaust of the Coal Mill Burner and Fluidized Bed Dryer shall not exceed the emission limits, and shall utilize the specified BACT Technology, as given in the following table:

Table 4.1.3(d): Coal Mill Burner and Fluidized Bed Dryer Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/ year)
CO	n/a	n/a	0.49 (0.22)	2.15 (1.95)
NO_x	60 ppmvd @ 3% O_2	LNB, Temperature Control[(1)]	0.42 (0.19)	1.86 (1.68)
$PM_{2.5(2)}$	PPH Limit	Baghouse	0.26 (0.12)	1.06 (0.96)
$PM_{10(2)}$			0.32 (0.14)	1.33 (1.20)
PM[(3)]	0.005 gr/dscf (12.3 mg/Nm^3)		0.12 (0.06)	0.54 (0.49)
SO_2		Use of Natural Gas	3.51e-03 (1.59e-03)	0.02 (0.01)
VOCs		Good Combustion Practices[(4)]	0.41 (0.18)	1.65 (1.50)
CO_2e	117 lb/mmBtu	Use of Natural Gas, Good Combustion Practices[(4)]	--	3,080 (2,793)

(1) Drying in the Fluidized Bed Dryer shall take place at a temperature of less than 180 degrees Fahrenheit so as to prevent any combustion of the coal.
(2) Includes condensables.
(3) Filterable only.
(4) Good Combustion Practices shall mean activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.

e. **45CSR7**
The Coal Mill Burner and Fluidized Bed Dryer shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period

or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

4.1.4. **Melting Furnace**

The Melting Furnace, identified as IMF01, shall meet the following requirements:

a. The Melting Furnace shall not exceed the emission limits, and shall utilize the specified **BACT** Technology, as given in the following table:

Table 4.1.4(a): Melting Furnace Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/ yr)
CO	n/a	n/a	11.21(1) (5.09)	49.10 (44.54)
NO_x	PPH Limit	Integrated SNCR, Oxy-Fired Burners(2)	37.37(1) (16.95)	163.67 (148.48)
$PM_{2.5(3)}$		Baghouse	7.47 (3.39)	32.73 (29.10)
$PM_{10(3)}$			8.22 (3.73)	36.01 (32.67)
PM(4)	0.013 gr/dscf 31 mg/Nm^3		2.32 (1.05)	10.15 (9.21)
SO_2	PPH Limit	Sorbent Injection in the Baghouse	33.63(1) (15.26)	147.31 (33.63)
VOCs		Good Combustion Practices(5)	11.66 (5.29)	51.07 (46.34)
H_2SO_4		Sorbent Injection in the Baghouse	3.74 (1.70)	16.37 (14.85)
Mineral Fiber	n/a	n/a	2.32 (1.05)	10.15 (9.21)
HF			0.37 (0.17)	1.62 (1.47)
HCl			0.29 (0.13)	1.29 (1.17)

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/ yr)
COS			0.37 (0.17)	1.64 (1.48)
Total HAPs			3.43 (1.56)	15.04 (13.64)
CO_2e	TPY	Energy Efficiency(6)	--	95,547 (86,679)

(1) Compliance based on a 30-day rolling average.
(2) Integrated SNCR system utilizes ammonia injection to promote a de-NOx reaction to occur. The oxy-fuel burners are specially designed to fire with O_2 instead of ambient air.
(3) Includes condensables.
(4) Filterable only.
(5) Good combustion practices include, but are not limited to the following: (1) maintaining a proper oxidizing atmosphere to control VOC emissions through proper combustion tuning, temperature, and air/fuel mixing and (2) activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.
(6) Energy Efficiency measures listed in Table D-9-2 (pp. 554) of the permit application.

b. **45CSR7**
The Melting Furnace shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) Mineral acids shall not be released from any type source operation or duplicate source operation or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity given in Table 45-7B found at the end of this rule.
[45CSR§7-4.2]

c. **45CSR10**
The Melting Furnace shall comply with all applicable requirements of 45CSR10 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit the emission into the open air from any source operation an in-stack sulfur dioxide concentration exceeding 2,000 parts per million by volume from existing source operations, except as provided in subdivisions 4.1.a through 4.1.e.
[45CSR§10-3.1]

e. **40 CFR 63, Subpart DDD**
The Melting Furnace shall comply with all applicable requirements of 40 CFR 63, Subpart DDD including, but not limited to, the following:

(1) **§63.1178 For cupolas, what standards must I meet?**

(i) You must control emissions from each cupola as specified in Table 2 to this subpart.
[40 CFR§63.1178(a)]

Table 2 to Subpart DDD of Part 63—Emissions Limits and Compliance Dates

If your source is a:	And you commenced construction:	Your emission limits are:[1]	And you must comply by:[2]
2. Cupola	After May 8, 1997	0.10 lb PM per ton of melt	June 1, 1999
8. Open-top cupola	After November 25, 2011	3.2 lb of COS per ton melt	July 29, 2015[4]
10. Cupola using slag as a raw material	After November 25, 2011	0.015 lb of HF per ton melt 0.012 lb of HCl per ton melt.	July 29, 2015[4]

(1) The numeric emissions limits do not apply during startup and shutdown.
(2) Existing sources must demonstrate compliance by the compliance dates specified in this table. New sources have 180 days after the applicable compliance date to demonstrate compliance.
(4) Or upon initial startup, whichever is later.

(ii) You must meet the following operating limits for each cupola:
[40 CFR§63.1178(b)]

(A) Begin within one hour after the alarm on a bag leak detection system sounds, and complete in a timely manner, corrective actions as specified in your operations, maintenance, and monitoring plan required by §63.1187 of this subpart.
[40 CFR§63.1178(b)(1)]

(B) When the alarm on a bag leak detection system sounds for more than five percent of the total operating time in a six-month reporting period, develop and implement a written quality improvement plan (QIP) consistent with the compliance assurance monitoring requirements of §64.8(b)-(d) of 40 CFR part 64.
[40 CFR§63.1178(b)(2)]

(C) Additionally, on or after the applicable compliance date for each new or reconstructed cupola, you must either:
[40 CFR§63.1178(b)(3)]

(I) Maintain the operating temperature of the incinerator so that the average operating temperature for each three-hour block period never falls below the average temperature established during the performance test, or
[40 CFR§63.1178(b)(3)(I)]

(II) Maintain the percent excess oxygen in the cupola at or above the level established during the performance test. You must determine the percent excess oxygen using the following equation:
[40 CFR§63.1178(b)(3)(II)]

Percent excess oxygen = ((Oxygen available/Fuel demand for oxygen) - 1) * 100

Where:

Percent excess oxygen = Percentage of excess oxygen present above the stoichiometric balance of 1.00, (%).

1.00 = Ratio of oxygen in a cupola combustion chamber divided by the stoichiometric quantity of oxygen required to obtain complete combustion of fuel.

Oxygen available = Quantity of oxygen introduced into the cupola combustion zone.

Fuel demand for oxygen = Required quantity of oxygen for stoichiometric combustion of the quantity of fuel present.

4.1.5. Gutter Exhaust, Spinning Chamber, Curing Oven Hoods, Curing Oven, and Cooling Section

The Gutter Exhaust (GUT-EX), Spinning Chamber (SPN), Curing Oven Hoods (CO-HD), Curing Oven (CO), and Cooling Section (CS) shall meet the following requirements:

a. The Gutter Exhaust, Spinning Chamber, Curing Oven Hoods, Curing Oven, and Cooling Section shall not exceed the aggregate emission limits (as emitted from the Wet Electrostatic Precipitator (WESP) stack (HE01)), and each shall utilize the specified BACT Technology as given in the following table:

Table 4.1.5(a): Gutter Exhaust, Spinning Chamber, Curing Oven Hoods, Curing Oven, and Cooling Section Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
CO	n/a	n/a	1.82 (0.82)	7.97 (7.23)
NO_x	PPH Limit	LNB, Good Combustion Practices[(1)]	14.55 (6.60)	63.73 (57.82)
$PM_{2.5(2)}$	PPH Limit	WESP	19.22 (8.72)	84.20 (76.39)
$PM_{10(2)}$	PPH Limit	WESP	21.21 (9.62)	92.89 (84.27)
PM[(3)]	PPH Limit	WESP	21.21 (9.62)	92.89 (84.27)

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
SO_2		Use of Natural Gas	0.01 (4.89e-03)	0.05 (0.04)
VOCs		Afterburner Good Combustion Practices Subpart DDD Compliance(4)	78.02 (35.39)	341.73 (309.99)
Phenol	n/a	n/a(5)	19.37 (8.79)	84.84 (76.98)
Formaldehyde			12.79 (5.80)	56.02 (50.81)
Methanol			23.70 (10.75)	103.80 (94.17)
Mineral Fiber			21.21 (9.62)	92.89 (84.27)
Total HAPs			77.07 (34.96)	337.56 (306.23)
CO_2e	TPY Limit	Use of Natural Gas, Good Combustion Practices(1)	--	35,644 (32,336)

(1) Good combustion practices include, but are not limited to the following: Proper combustion tuning, temperature, and air/fuel mixing and activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.
(2) Includes condensables.
(3) Filterable only.
(4) BACT Technology: Gutter Exhaust - Subpart DDD Compliance, Curing Oven - Afterburner/Good Combustion Practices, Spinning Chamber - Subpart DDD Compliance, Curing Oven Hoods - Subpart DDD Compliance.
(5) While the Afterburner is required as a control on Phenol, Formaldehyde, and Methanol, as these pollutants are not subject to PSD, the Afterburner is not listed here as it is not a BACT technology for these pollutants.

b. *[Reserved for Binder Tracking/Max Percentage Language]*

c. **45CSR7**
The Gutter Exhaust, Curing Oven Hoods, Curing Oven, and Spinning Chamber shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) Mineral acids shall not be released from any type source operation or duplicate source operation or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity given in Table 45-7B found at the end of this rule.
[45CSR§7-4.2]

d. **40 CFR 63, Subpart DDD**
The Gutter Exhaust, Curing Oven Hoods, Curing Oven, and Spinning Chamber shall comply with all applicable requirements of 40 CFR 63, Subpart DDD including, but not limited to, the following:

(1) **§63.1178 For cupolas, what standards must I meet?**

(i) You must control emissions from each cupola as specified in Table 2 to this subpart.
[43 CFR§60.1178(a)]

Table 2 to Subpart DDD of Part 63—Emissions Limits and Compliance Dates

If your source is a:	And you commenced construction:	Your emission limits are:[1]	And you must comply by:[2]
24. Combined vertical collection/curing operation	After November 25, 2011	2.4 lb of formaldehyde per ton melt 0.92 lb of methanol per ton melt. 0.71 lb of phenol per ton melt.	July 29, 2015[4]

(1) The numeric emissions limits do not apply during startup and shutdown.
(2) Existing sources must demonstrate compliance by the compliance dates specified in this table. New sources have 180 days after the applicable compliance date to demonstrate compliance.
(4) Or upon initial startup, whichever is later.

4.1.6. **Fleece Application**
The Fleece Application operations shall meet the following requirements:

a. The maximum emissions of VOCs and HAPs from the Fleece Application operations each shall not exceed of 7.14 tons per month (6.48 tonnes/month) and a **BACT** limit (BACT limit is VOCs only) of 28.58 TPY (23.21 tonnes/year);

b. The BACT Technology for the Fleece Application operations is the use of low-VOC coatings and the utilization of Good Work Practices. "Low-VOC coatings" shall mean the monthly average of all coating materials used during fleece application operations shall not exceed 0.016 lb-VOC/lb-coating (0.016 kg-VOC/kg-coating) material as-applied on a monthly average basis. "Good Work Practices" shall mean storing VOC-containing materials in closed tanks or containers, cleaning up spills, and minimizing cleaning with VOC-containing cleaners; and

c. **40 CFR 63, Subpart JJJJ**
The fleece application operations shall comply with all applicable requirements of 40 CFR 63, Subpart JJJJ including, but not limited to, the following:

What emission standards must I meet?

(1) If you own or operate any affected source that is subject to the requirements of this subpart, you must comply with these requirements on and after the compliance dates as specified in §63.3330.
[40 CFR§63.3320(a)]

(2) You must limit organic HAP emissions to the level specified in paragraph (b)(1), (2), (3), or (4) of this section.
[40 CFR§63.3320(b)]

(i) No more than 5 percent of the organic HAP applied for each month (95 percent reduction) at existing affected sources, and no more than 2 percent of the organic HAP applied for each month (98 percent reduction) at new affected sources; or
[40 CFR§63.3320(b)(1)]

(ii) No more than 4 percent of the mass of coating materials applied for each month at existing affected sources, and no more than 1.6 percent of the mass of coating materials applied for each month at new affected sources; or
[40 CFR§63.3320(b)(2)]

(iii) No more than 20 percent of the mass of coating solids applied for each month at existing affected sources, and no more than 8 percent of the coating solids applied for each month at new affected sources.
[40 CFR§63.3320(b)(3)]

(iv) If you use an oxidizer to control organic HAP emissions, operate the oxidizer such that an outlet organic HAP concentration of no greater than 20 parts per million by volume (ppmv) by compound on a dry basis is achieved and the efficiency of the capture system is 100 percent.
[40 CFR§63.3320(b)(4)]

(3) You must demonstrate compliance with this subpart by following the procedures in §63.3370.
[40 CFR§63.3320(c)]

4.1.7. Rockfon Line

The Rockfon Line shall meet the following requirements:

a. The maximum aggregate VOC emissions from the application of glue and coatings in the Rockfon line shall not exceed 8.98 tons/month (8.15 tonne/month) and a **BACT** limit of 35.93 TPY (32.60 tonne/yr) ;

b. The **BACT** Technology for the application of glue and coatings in the Rockfon Line is the use of low-VOC materials and the utilization of Good Work Practices. "Low-VOC materials" shall mean the use of glue is limited to containing (**BACT** Limit) of a maximum VOC content of 0.57 lb-VOC/gallon-glue (70 g-VOC/L-material) and the use of coatings are limited to containing

(**BACT** Limit) a maximum VOC content of 0.67 lb-VOC/gallon-material (80 g-VOC/L-material). No HAP-containing glues or coatings shall be used in the Rockfon Line. "Good Work Practices" shall mean storing VOC-containing materials in closed tanks or containers, cleaning up spills, and minimizing cleaning with VOC-containing cleaners;

c. The ovens used in the Rockfon line shall only combust PNG and each not exceed the aggregate MDHI (of all burners) specified in the following table:

Table 4.1.7(c): Rockfon Line Ovens Maximum MDHI

Oven ID	MDHI
RFN-E3	2.73 mmBtu/hr (800 kW)
RFN-E4	2.05 mmBtu/hr (600 kW)
RFN-E6	4.78 mmBtu/hr (1,400 kW)
RFN-E9	2.73 mmBtu/hr (800 kW)

d. The Rockfon Line shall not exceed the emission limits, and each shall utilize the specified **BACT** Technology as given in the following tables:

(1) **British Units**

Table 4.1.7(d)(1): Rockfon Line Emission Limits in British Units

Pollutant	BACT Limit	BACT Technology	PPH	TPY
RFN-E1: IR Zone				
$PM_{2.5}$(1)	PPH	Low-Particulate Emitting Process	0.01	0.06
PM_{10}(1)			0.02	0.08
PM(2)			0.01	0.04
Phenol	n/a	n/a	0.01	0.03
Formaldehyde			0.01	0.03
Mineral Fiber			0.01	0.04
Total HAPs			0.02	0.10
RFN-E2: Hot Press				
$PM_{2.5}$(1)	PPH	Low-Particulate Emitting Process	0.01	0.06
PM_{10}(1)			0.02	0.08
PM(2)			0.01	0.04
Phenol	n/a	n/a	0.01	0.03
Formaldehyde			0.01	0.03

Pollutant	BACT Limit	BACT Technology	PPH	TPY
Mineral Fiber			0.01	0.04
Total HAPs			0.02	0.10
RFN-E3: High Oven A				
CO	n/a	n/a	0.22	0.98
NO_x	0.10 lb/mmBtu	Good Combustion Practices(3)	0.27	1.17
$PM_{2.5(1)}$	PPH	Use of Natural Gas, Good Combustion Practices(3)	0.09	0.38
$PM_{10(1)}$			0.12	0.51
PM(2)			0.06	0.25
SO_2	PPH	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	0.06
Phenol	n/a	n/a	0.02	0.08
Formaldehyde			0.02	0.08
Mineral Fiber			0.06	0.25
Total HAPs			0.10	0.43
CO_2e	TPY	Use of Natural Gas, Good Combustion Practices(3)	--	1,400
RFN-E4: Drying Oven 1				
CO	n/a	n/a	0.17	0.73
NO_x	0.10 lb/mmBtu	Good Combustion Practices(3)	0.20	0.87
$PM_{2.5(1)}$	PPH	Use of Natural Gas, Good Combustion Practices(3), Fabric Filter (RFNE4-FF)	0.06	0.27
$PM_{10(1)}$			0.08	0.36
PM(2)	0.0015 g/dscf		0.04	0.18
SO_2	PPH	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	0.05
Phenol	n/a	n/a	0.01	0.05
Formaldehyde			0.02	0.10
Mineral Fiber			0.04	0.18

Pollutant	BACT Limit	BACT Technology	PPH	TPY
Total HAPs			0.08	0.34
CO_2e	TPY	Use of Natural Gas, Good Combustion Practices(3)	--	1,050
RFN-E5: Spray Paint Cabin				
$PM_{2.5(1)}$	PPH	Fabric Filter (RFNE5-FF)	0.66	2.90
$PM_{10(1)}$			0.88	3.86
PM(2)	0.0081 g/dscf		0.44	1.93
Phenol	n/a	n/a	0.06	0.24
Formaldehyde			0.02	0.10
Mineral Fiber			0.44	1.93
Total HAPs			0.52	2.27
RFN-E6: Drying Oven 2/3				
CO	n/a	n/a	0.39	1.71
NO_x	0.10 lb/mmBtu	Good Combustion Practices(3)	0.47	2.04
$PM_{2.5(1)}$	PPH	Use of Natural Gas, Good Combustion Practices(3), Fabric Filter (RFNE6-FF)	0.09	0.41
$PM_{10(1)}$			0.13	0.55
PM(2)	0.001 g/dscf		0.06	0.28
SO_2	PPH	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.03	0.11
Phenol	n/a	n/a	0.03	0.12
Formaldehyde			0.05	0.23
Mineral Fiber			0.06	0.28
Total HAPs			0.15	0.66
CO_2e	TPY	Use of Natural Gas, Good Combustion Practices(3)	--	2,450
RFN-E7: Cooling Zone				
$PM_{2.5(1)}$	PPH	Low-Emitting Process	0.14	0.63
$PM_{10(1)}$			0.19	0.84

Pollutant	BACT Limit	BACT Technology	PPH	TPY
PM(2)			0.10	0.42
Phenol	n/a	n/a	0.06	0.24
Formaldehyde			0.06	0.24
Mineral Fiber			0.10	0.42
Total HAPs			0.21	0.91
RFN-E8: De-Dusting Baghouse				
$PM_{2.5}$(2)	PPH	Fabric Filter (RFNE8-FF)	0.17	0.75
PM_{10}(2)			0.34	1.49
PM(2)	0.00053 g/dscf		0.34	1.49
Mineral Fiber	n/a	n/a	0.34	1.49
Total HAPs			0.34	1.49
RFN-E9: High Oven B				
CO	n/a	n/a	0.22	0.98
NO_x	0.10 lb/mmBtu	Good Combustion Practices(3)	0.27	1.17
$PM_{2.5}$(1)	PPH	Use of Natural Gas, Good Combustion Practices(3)	0.09	0.38
PM_{10}(1)			0.12	0.51
PM(2)			0.06	0.25
SO_2	PPH	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	0.06
Phenol	n/a	n/a	0.02	0.08
Formaldehyde			0.02	0.08
Mineral Fiber			0.06	0.25
Total HAPs			0.10	0.43
CO_2e	TPY	Use of Natural Gas, Good Combustion Practices(3)	--	1,400

(1) Includes Condensables.
(2) Filterable Only.
(3) Good Combustion Practices shall mean activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.

(2) **Metric Units**

Table 4.1.7(d)(2): Rockfon Line Emission Limits in Metric Units

Pollutant	BACT Limit	BACT Technology	kg/hr	tonne/yr
RFN-E1: IR Zone				
$PM_{2.5(1)}$	kg/hr	Low-Particulate Emitting Process	6.30e-03	0.06
$PM_{10(1)}$			1.00e-02	0.07
PM(2)			4.20e-03	0.04
Phenol	n/a	n/a	3.00e-03	0.03
Formaldehyde			3.00e-03	0.03
Mineral Fiber			4.20e-03	0.04
Total HAPs			1.00e-02	0.09
RFN-E2: Hot Press				
$PM_{2.5(1)}$	kg/hr	Low-Particulate Emitting Process	6.30e-03	0.06
$PM_{10(1)}$			1.00e-02	0.07
PM(2)			4.20e-03	0.04
Phenol	n/a	n/a	3.00e-03	0.03
Formaldehyde			3.00e-03	0.03
Mineral Fiber			4.20e-03	0.04
Total HAPs			1.00e-02	0.09
RFN-E3: High Oven A				
CO	n/a	n/a	0.10	0.89
NO_x	1,602 kg/mmsm^3	Good Combustion Practices(3)	0.12	1.06
$PM_{2.5(1)}$	kg/hr	Use of Natural Gas, Good Combustion Practices(3)	0.04	0.35
$PM_{10(1)}$			0.05	0.46
PM(2)			0.03	0.23
SO_2	kg/hr	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	0.05
Phenol	n/a	n/a	0.01	0.07
Formaldehyde			0.01	0.07
Mineral Fiber			0.03	0.23
Total HAPs			0.04	0.39

Pollutant	BACT Limit	BACT Technology	kg/hr	tonne/yr
CO_2e	tonne/yr	Use of Natural Gas, Good Combustion Practices(3)	--	1,270
RFN-E4: Drying Oven 1				
CO	n/a	n/a	0.08	0.67
NO_x	1,602 kg/mmsm^3	Good Combustion Practices(3)	0.09	0.79
$PM_{2.5(1)}$	kg/hr	Use of Natural Gas, Good Combustion Practices(3), Fabric Filter (RFNE4-FF)	0.03	0.24
$PM_{10(1)}$	kg/hr		0.04	0.32
PM(2)	3.70 mg/Nm^3		0.02	0.16
SO_2	kg/hr	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	0.04
Phenol	n/a	n/a	0.01	0.04
Formaldehyde			0.01	0.09
Mineral Fiber			0.02	0.16
Total HAPs			0.04	0.31
CO_2e	tonne/yr	Use of Natural Gas, Good Combustion Practices(3)	--	953
RFN-E5: Spray Paint Cabin				
$PM_{2.5(1)}$	kg/hr	Fabric Filter (RFNE5-FF)	0.30	2.63
$PM_{10(1)}$			0.40	3.50
PM(2)	20 mg/Nm^3		0.20	1.75
Phenol	n/a	n/a	0.03	0.22
Formaldehyde			0.01	0.09
Mineral Fiber			0.20	1.75
Total HAPs			0.23	2.06
RFN-E6: Drying Oven 2/3				
CO	n/a	n/a	0.18	1.55
NO_x	1,602 kg/mmsm^3	Good Combustion Practices(3)	0.02	1.86

Pollutant	BACT Limit	BACT Technology	kg/hr	tonne/yr
$PM_{2.5(1)}$	kg/hr	Use of Natural Gas, Good Combustion Practices(3), Fabric Filter (RFNE6-FF)	0.04	0.38
$PM_{10(1)}$			0.06	0.50
PM(2)	2.38 mg/Nm^3		0.03	0.25
SO_2	kg/hr	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	0.05
Phenol	n/a	n/a	0.01	0.11
Formaldehyde			0.02	0.21
Mineral Fiber			0.03	0.25
Total HAPs			0.07	0.60
CO_2e	tonne/yr	Use of Natural Gas, Good Combustion Practices(3)	--	2,223
RFN-E7: Cooling Zone				
$PM_{2.5(1)}$	kg/hr	Low-Emitting Process	0.07	0.57
$PM_{10(1)}$			0.09	0.77
PM(2)			0.04	0.38
Phenol	n/a	n/a	0.03	0.22
Formaldehyde			0.03	0.22
Mineral Fiber			0.04	0.38
Total HAPs			0.09	0.82
RFN-E8: De-Dusting Baghouse				
$PM_{2.5(2)}$	kg/hr	Fabric Filter (RFNE8-FF)	0.08	0.68
$PM_{10(2)}$			0.15	1.35
PM(2)	1.30 mg/Nm^3		0.15	1.35
Mineral Fiber	n/a	n/a	0.15	1.35
Total HAPs			0.15	1.35
RFN-E9: High Oven B				
CO	n/a	n/a	0.10	0.89
NO_x	1,602 kg/mmsm^3	Good Combustion Practices(3)	0.12	1.06

Pollutant	BACT Limit	BACT Technology	kg/hr	tonne/yr
$PM_{2.5}$(1)	kg/hr	Use of Natural Gas, Good Combustion Practices(3)	0.04	0.35
PM_{10}(1)			0.05	0.46
PM(2)			0.03	0.23
SO_2		Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	0.05
Phenol	n/a	n/a	0.01	0.07
Formaldehyde			0.01	0.07
Mineral Fiber			0.03	0.23
Total HAPs			0.04	0.39
CO_2e	tonne/yr	Use of Natural Gas, Good Combustion Practices(3)	--	1,270

(1) Includes Condensables.
(2) Filterable Only.
(3) Good Combustion Practices shall mean activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.

e. As the annual emission limits of RFN-E3, RFN-E4, RFN-E6, and RFN-E9 listed under Table 4.1.7(d) are based on 8,760 hours of operation, there is no annual limit on hours of operation or natural gas combusted on an annual basis for these units.

f. **45CSR7**
The Rockfon Line shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) Mineral acids shall not be released from any type source operation or duplicate source operation or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity given in Table 45-7B found at the end of this rule.
[45CSR§7-4.2]

4.1.8. **Fuel Burning Units**

The Fuel Burning Units, identified as IMF24, CM03, CM04, and RFN10, shall meet the following requirements:

a. The units shall only combust PNG and each not exceed an aggregate MDHI (of all burners) of 5.1 mmBtu/hr (1,500 kW):

b. The units shall not exceed the emission limits given in the following table:

Table 4.1.8(b): Per-Fuel Burning Unit Emission Limits

<table>
<tr><th>Pollutant</th><th>BACT Limit</th><th>BACT Technology</th><th>PPH (kg/hr)</th><th>TPY (tonne/yr)</th></tr>
<tr><td>CO</td><td>n/a</td><td>n/a</td><td>0.42 (0.19)</td><td>1.84 (1.67)</td></tr>
<tr><td>NO_x</td><td>30 ppm$_v$d @ 3% O_2</td><td>LNB, Good Combustion Practices[1]</td><td>0.18 (0.08)</td><td>0.79 (0.40)</td></tr>
<tr><td>NO_x (IMF24 Only)</td><td>60 ppm$_v$d @ 3% O_2</td><td>LNB, Good Combustion Practices[1]</td><td>0.36 (0.16)</td><td>1.58 (1.44)</td></tr>
<tr><td>$PM_{2.5}$[2]</td><td rowspan="5">PPH</td><td rowspan="3">Use of Natural Gas, Good Combustion Practices[1]</td><td rowspan="2">0.04 (0.02)</td><td rowspan="2">0.17 (0.15)</td></tr>
<tr><td>PM_{10}[2]</td></tr>
<tr><td>PM[3]</td><td>0.01 (4.30e-03)</td><td>0.04 (0.04)</td></tr>
<tr><td>SO_2</td><td>Use of Natural Gas</td><td>3.00e-03 (1.36e-03)</td><td>0.01 (0.01)</td></tr>
<tr><td>VOCs</td><td>Good Combustion Practices[1]</td><td>0.03 (0.01)</td><td>0.12 (0.11)</td></tr>
<tr><td>CO_2e</td><td>TPY</td><td>Use of Natural Gas, Good Combustion Practices[1]</td><td>--</td><td>2,627 (2,384)</td></tr>
</table>

(1) LNB = Low-NO_x Burning Technology. Good Combustion Practices shall mean activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.
(2) Includes Condensables.
(3) Filterable Only.

c. As all the annual emissions of the units listed under Table 4.1.8(b) are based on 8,760 hours of operation, there is no annual limit on hours of operation or natural gas combusted on an annual basis for those units; and

d. **45CSR2**
No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any fuel burning unit which is greater than ten (10) percent opacity based on a six minute block average.
[40CSR§2-3.1]

4.1.9. **Storage Tanks**
Use of the volatile organic liquid (VOL) storage tanks shall be in accordance with the following:

a. Tank size shall be limited as specified under Table 1.0 of this permit;

b. The aggregate emissions of VOCs from all storage shall not exceed a **BACT** Limit of 0.19 tons/year (0.17 tonnes/yr); and

c. Material stored shall be as specified and the aggregate annual storage tank throughputs shall not exceed those given in the following table:

Table 4.1.9(c): Storage Tanks Throughput Limits

Tank ID	Material Stored	Gallons
TK-DF	Diesel	20,000
TK-UO	Used Motor and Gear Oil	15,000
TK-TO1	Thermal Oil	681
TK-TO2	Thermal Oil	681
TK-TO3	Thermal Oil	2,642
TK-TO4	Thermal Oil	2,642
TK-DO	De-Dust Oil	200,000
TK-RS1 through TK-RS7	Resin	8,400,000(1)
TK-CA	Coupling Agent Solution	16,000
TK-AD	Binder Additive	65,000
TK-BM	Binder Solution(2)	24,000,000
TK-BC	Binder Solution(2)	24,000,000
TK-BD	Binder Solution(2)	24,000,000
TK-BS1 through TK-BS3	Fleece Coating	1,479,999(1)
TK-DOD	De-Dust Oil	200,000

Tank ID	Material Stored	Gallons
TK-PD	Diluted Water-Based Paint	1,008,701
TK-PDD	Diluted Water-Based Paint	1,008,701

(1) This number represents the aggregate limit for all specified storage tanks.
(2) May refer to any type of Binder Solution that has an average vapor pressure less than XXXXX psia at 60 degrees Fahrenheit.

d. For **BACT** purposes, the permittee shall utilize good operating practices in the operation of the storage tanks. Good operating practices shall mean maintaining and operating the storage tanks according to manufacturers recommendations and regularly inspecting the tanks for areas of disrepair or failure that would allow the escape of VOC-containing vapors.

4.1.10. **Emergency Fire Pump Engine**

The Emergency Fire Pump Engine, identified as EFP1, shall meet the following requirements:

a. The unit shall not exceed 197 horsepower (150 kW), shall be fired only with Ultra-Low Sulfur Diesel (with a maximum sulfur content not to exceed 0.0015%), and shall not operate in excess of 100 hours per year nor 0.5 hours in any 24-hour period during times not defined as emergencies;

b. The maximum emissions from the Emergency Generator shall not exceed the limits given in the following table:

Table 4.1.10(b): Emergency Fire Pump Engine Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
CO	n/a	n/a	1.13 (0.51)	0.28 (0.26)
NO_x	4.0 g/kw-hr	Subpart IIII Certification, Annual Hrs of Op Limit	1.30 (0.59)	0.32 (0.29)
$PM_{2.5}$(1) PM_{10}(1)	PPH		0.08 (0.03)	0.02 (0.02)
PM(2)	0.20 g/kw-hr		0.06 (0.03)	0.02 (0.01)
SO_2	PPH	ULSD Fuel Annual Hrs of Op(3) Limit	2.14e-03 (9.72e-04)	5.36e-04 (4.86e-04)
VOCs		Subpart IIII Certification, Annual Hrs of Op(3) Limit	0.19 (0.09)	0.05 (0.04)
CO_2e	TPY	Annual Hrs of Op(3) Limit	--	56 (51)

(1) Includes Condensables.
(2) Filterable Only.

(3) Non-emergency hours of operation.

c. **40 CFR 60, Subpart IIII**
The Emergency Fire Pump Engine shall meet all applicable requirements under 40 CFR 60, Subpart IIII including the following:

(1) Owners and operators of fire pump engines with a displacement of less than 30 liters per cylinder must comply with the emission standards in table 4 to this subpart, for all pollutants. **[40 CFR §60.4205(c)]**

(2) As stated in §§60.4202(d) and 60.4205(c), you must comply with the following emission standards for stationary fire pump engines:

Table 4 to Subpart IIII of Part 60—Emission Standards for Stationary Fire Pump Engines

Maximum Engine Power	Model year(s)	NMHC + NOX	CO	PM
130≤KW<225 (175≤HP<300)	2009+(3)	4.0(3.0)	3.5(2.6)	0.20(0.15)

(3) In model years 2009-2011, manufacturers of fire pump stationary CI ICE in this engine power category with a rated speed of greater than 2,650 rpm may comply with the emission limitations for 2008 model year engines.

d. **40 CFR 63, Subpart ZZZZ**
An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part.
[40 CFR §63.6590(c)]

4.1.11. Miscellaneous Operations/Processes

a. **Dry Ice Cleaning**
The maximum design capacity of the dry ice production unit (DI) shall not exceed 4.37 tons/day (3.97 tonne/day), and the emissions of CO_2 from the use dry ice cleaning shall not exceed (**BACT** limit) 363.76 PPH (165 kg/hr) or 1,594 TPY (1,446 tonne/year).

b. **Cooling Towers**
The Cooling Towers shall operate in accordance with the following requirements:

(1) The Cooling Tower shall use the control device specified under Section 1.0 at all times in operation and not exceed the specified maximum design and operational limits in the following table:

Table 4.1.11(b)(1): Cooling Tower Specifications

ID No.	Max Design Capacity Water Circulation Pump (gal/min)	Total Dissolved Solids (ppm)	Mist Eliminator Max Drift Rate (%)(1)

IMF02	1,321 (300 m³/hr)	1,500	0.0010
HE02	308 (70 m³/hr)	1,500	0.0010

(1) As based on manufacturer or vendor guarantee or applicable product literature.

(2) The maximum emissions from the Cooling Towers shall not exceed the limits given in the following table:

Table 4.1.11(b)(2): Cooling Tower Emission Limits(1)

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
IMF02				
$PM_{2.5(1)}$	PPH	High Efficiency Drift Eliminator (@ 0.001% Drift)	4.96e-03 (2.25e-03)	0.02 (0.02)
$PM_{10(1)}$			0.01 (4.50e-03)	0.04 (0.04)
PM(2)				
HE02				
$PM_{2.5(1)}$	PPH	High Efficiency Drift Eliminator (@ 0.001% Drift)	1.16e-03 (5.25e-03)	0.01 (4.60e-03)
$PM_{10(1)}$			2.31e-03 (1.05e-03)	0.01 (9.19e-03)
PM				

c. **Product Marking**
The Product Marking Operations, identified as P_MARK, shall operate in accordance with the following requirements:

(1) The MDHI of the burners used with the branding wheels used in Product Marking shall not exceed 0.40 mmBtu/hr (120 kW) and shall only be fired with PNG. Combustion exhaust from the burners shall not exceed the following emissions:

Table 4.1.11(c)(1): Product Marking Burners Combustion Exhaust Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
CO	n/a	n/a	0.03 (0.01)	0.14 (0.13)
NO_x	PPH	Use of Natural Gas	0.04 (0.02)	0.17 (0.15)
$PM_{2.5(1)}$			2.96e-03 (1.34e-03)	0.01 (1.18e-03)
$PM_{10(1)}$				
PM(2)			7.41e-04 (3.36e-04)	0.01 (2.94e-03)

Pollutant	BACT Limit	BACT Technology	PPH (kg/hr)	TPY (tonne/yr)
SO_2			2.34e-04 (1.06e-04)	1.06e-04 (9.29e-04)
VOCs			2.14e-03 (9.73e-04)	9.39e-03 (8.52e-03)
CO_2e	TPY		--	205 (186)

(1) Includes Condensables.
(2) Filterable Only.

(2) As all the annual emissions listed under Table 4.1.11(c)(1) are based on 8,760 hours of operation, there is no annual limit on hours of operation or natural gas combusted on an annual basis for the unit; and

(3) The **BACT** Technology for the use of ink and cleaners during Product Marking Operations is the utilization of Good Work Practices. "Good Work Practices" shall mean storing VOC-containing materials in closed tanks or containers, cleaning up spills, and minimizing cleaning with VOC-containing cleaners. VOC emissions from the use of ink and cleaners during Product Marking operations shall not exceed 2.37 tons/month (2.15 tonne/month) and a **BACT** limit of 9.47 TPY (8.59 tonne/yr) and no HAP-containing inks or cleaners shall be used during Product Marking Operations.

4.1.12. Control Devices

a. **Operation and Maintenance of Air Pollution Control Equipment.** The permittee shall, to the extent practicable, install, maintain, and operate all pollution control equipment listed in Section 1.0 and associated monitoring equipment in a manner consistent with safety and good air pollution control practices for minimizing emissions, or comply with any more stringent limits set forth in this permit or as set forth by any State rule, Federal regulation, or alternative control plan approved by the Secretary.
[45CSR§13-5.11.]

b. **Inherent SNCR De-NO_x System**
The permittee shall design and operate the Melting Furnace so as to promote the inherent removal of NO_x from the exhaust gas stream. The permittee shall maintain a proper temperature profile for NO_x removal and inject aqueous ammonia as necessary to facilitate the SNCR process. Compliance with 4.1.12(b) shall be determined by showing compliance with the NO_x emission limits given under Table 4.1.4(a) using the CEMS as required under 4.2.6.

c. **Sorbent Injection**
The permittee shall utilize dry sorbent injection in conjunction with Baghouse IMF-01 so as to reduce the emissions of SO_2, H_2SO_4, HF, and HCl from the Melting Furnace. Compliance with 4.1.12(c) shall be determined by showing compliance with the SO_2 emission limits given under Table 4.1.4(a) using the CEMS as required under 4.2.6.

d. **Baghouse IMF01-BH**
Use of Baghouse IMF01-BH shall be in accordance with the following requirements:

(1) The permittee shall monitor the differential pressure drop of IMF01-BH so as to ensure proper continuous operation of the baghouse. The monitoring system shall include an alarm to notify the control room if the differential pressure drop indicates abnormal performance of the unit. The appropriate alarm set-point(s) shall be determined as given under 4.1.12(g).

(2) **40 CFR 63, Subpart DDD**
How do I comply with the particulate matter standards for existing, new, and reconstructed cupolas? To comply with the PM standards, you must meet all of the following:
[40 CFR §63.1181]

(i) Install, adjust, maintain, and continuously operate a bag leak detection system for each fabric filter.
[40 CFR §63.1181(a)]

(ii) Do a performance test as specified in §63.1188 of this subpart and show compliance with the PM emission limits while the bag leak detection system is installed, operational, and properly adjusted.
[40 CFR §63.1181(b)]

(iii) Begin corrective actions specified in your operations, maintenance, and monitoring plan required by §63.1187 of this subpart within one hour after the alarm on a bag leak detection system sounds. Complete the corrective actions in a timely manner.
[40 CFR §63.1181(c)]

(iv) Develop and implement a written QIP consistent with compliance assurance monitoring requirements of 40 CFR 64.8(b) through (d) when the alarm on a bag leak detection system sounds for more than five percent of the total operating time in a six-month reporting period.
[40 CFR §63.1181(d)]

e. **Wet Electrostatic Precipitator (WESP)**
The operation of the WESP shall be in accordance with the following requirements:

(1) The permittee shall utilize a WESP, identified as HE01, so as to reduce the particulate matter emissions from the Gutter Exhaust, Spinning Chamber, Curing Oven Hoods, the Afterburner, and the Cooling Section at all times Melting, Spinning, Curing and Cooling operations are ongoing; and

(2) The permittee shall monitor the secondary voltage and secondary amperage range of the WESP for optimum mitigation of particulate matter emissions from the sources listed under 4.1.12(e)(1). The monitoring system shall include an alarm to notify the control room if the secondary voltage or amperage indicates abnormal performance of the unit. The appropriate alarm set-point(s) shall be determined as given under 4.1.12(g).

f. **Curing Oven Afterburner**
The Curing Oven Afterburner, CO-AB, shall operate according to the following requirements:

(1) The Curing Oven Afterburner shall not exceed a burner capacity of 6.83 mmBtu/hr (2,000 kW) and shall be in operation at all times when the Curing Oven is in operation and is venting VOC-containing vapors;

(2) **45CSR6**
The Curing Oven Afterburner is subject to 45CSR6. The requirements of 45CSR6 include but are not limited to the following:

(i) The permittee shall not cause, suffer, allow or permit particulate matter to be discharged from the flares into the open air in excess of the quantity determined by use of the following formula:

Emissions (lb/hr) = F x Incinerator Capacity (tons/hr)

Where, the factor, F, is as indicated in Table I below:

Table I: Factor, F, for Determining Maximum Allowable Particulate Emissions

Incinerator Capacity	Factor F
A. Less than 15,000 lbs/hr	5.43
B. 15,000 lbs/hr or greater	2.72

[45CSR§6-4.1]

(ii) No person shall cause, suffer, allow or permit emission of smoke into the atmosphere from any incinerator which is twenty (20%) percent opacity or greater.
[45CSR6 §4.3]

(iii) The provisions of paragraph (i) shall not apply to smoke which is less than forty (40%) percent opacity, for a period or periods aggregating no more than eight (8) minutes per start-up.
[45CSR6 §4.4]

(iv) No person shall cause or allow the emission of particles of unburned or partially burned refuse or ash from any incinerator which are large enough to be individually distinguished in the open air.
[45CSR6 §4.5]

(v) Incinerators, including all associated equipment and grounds, shall be designed, operated and maintained so as to prevent the emission of objectionable odors.
[45CSR6 §4.6]

(vi) Due to unavoidable malfunction of equipment, emissions exceeding those provided for in this rule may be permitted by the Director for periods not to exceed five (5) days upon specific application to the Director. Such application shall be made within twenty-four (24) hours of the malfunction. In cases of major equipment failure, additional time periods may be granted by the Director provided a corrective program has been submitted by the owner or operator and approved by the Director.
[45CSR6 §8.2]

(3) **40 CFR 63, Subpart DDD**

(i) How do I comply with the formaldehyde, phenol, and methanol standards for existing, new, and reconstructed combined collection/curing operations? To comply with the formaldehyde, phenol, and methanol standards, you must meet all of the following:
[40 CFR §63.1183]

(A) Install, calibrate, maintain, and operate a device that continuously measures the operating temperature in the firebox of each thermal incinerator.
[40 CFR §63.1183(a)]

(B) Conduct a performance test as specified in §63.1188 while manufacturing the product that requires a binder formulation made with the resin containing the highest free-formaldehyde content specification range. Show compliance with the formaldehyde, phenol, and methanol emissions limits, specified in Table 2 to this subpart, while the device for measuring the control device operating parameter is installed, operational, and properly calibrated. Establish the average operating parameter based on the performance test as specified in §63.1185(a).
[40 CFR §63.1183(b)]

(C) During the performance test that uses the binder formulation made with the resin containing the highest free-formaldehyde content specification range, record the free-formaldehyde content specification range of the resin used, and the formulation of the binder used, including the formaldehyde content and binder specification.
[40 CFR §63.1183(c)]

(D) Following the performance test, monitor and record the free-formaldehyde content of each resin lot and the formulation of each batch of binder used, including the formaldehyde, phenol, and methanol content.
[40 CFR §63.1183(d)]

(E) Maintain the free-formaldehyde content of each resin lot and the formaldehyde content of each binder formulation at or below the specification ranges established during the performance test.
[40 CFR §63.1183(e)]

(F) Following the performance test, measure and record the average operating temperature of the incinerator as specified in §63.1185(b) of this subpart.
[40 CFR §63.1183(f)]

(G) Maintain the operating temperature of the incinerator so that the average operating temperature for each three-hour block period never falls below the average temperature established during the performance test.
[40 CFR §63.1183(g)]

(H) Operate and maintain the incinerator as specified in your operations, maintenance, and monitoring plan required by §63.1187 of this subpart.
[40 CFR §63.1183(h)]

g. The determination of appropriate alarm set-points under this section shall be based on data obtained from performance testing, manufacturing recommendations, or operational experience. The permittee shall maintain on-site, and update as necessary, a certified report listing the set-points and the basis for their selection. Any changes to the set-points shall be accompanied by the date of the change and reason for the change. The permittee shall, to the extent reasonably possible, operate the control devices within the operating ranges at all times the associated emission units are in operation and venting emissions. If an alarm occurs, the permittee shall attempt to immediately correct the problem and follow the record-keeping procedures under 4.4.3.

4.1.13. **Stack Parameters**
The emission point stack parameters (Inner Diameter, Emission Point Elevation, and UTM Coordinates) of each source identified under the Emission Units Table 1.0 shall be in accordance with the specifications as given on the Emission Points Data Sheet in the most updated version of Permit Application R14-0037.

4.1.14. The permittee shall meet all applicable requirements, including those not specified above, as given under 45CSR2, 45CSR6, 45CSR7, 45CSR10, 40 CFR 60, Subparts OOO and IIII, and 40 CFR 63, Subparts DDD, JJJ, ZZZZ, and DDDDD. Any final revisions made to the above rules will, where applicable, supercede those specifically cited in this permit.

4.2. Monitoring, Compliance Demonstration, Recording and Reporting Requirements

4.2.1. **Maximum Design Capacity Compliance**
Compliance with the maximum design capacity limitations as given under 4.1. shall be based on a clear and visible boilerplate rating or on product literature, manufacturer's data, or equivalent documentation that shows that the specific emission unit(s) or processing line in question is limited by design to a throughput or production rate that does not exceed the specified value under 4.1.

4.2.2. **Maximum Design Heat Input Compliance**
Compliance with the various combustion unit MDHI limitations as given under 4.1. shall be based on a clear and visible boilerplate rating or on product literature, manufacturer's data, or equivalent documentation that shows that the specific emission unit(s) in question is limited by design to an MDHI that does not exceed the specified value under 4.1.

4.2.3. **Material/Production Throughputs**
To determine continuous compliance with maximum production, throughputs, and combustion limits given under in 4.1 of the permit, the permittee shall monitor and record the following:

Table 4.2.3: Facility Quantities Monitored/Recorded

Quantity Monitored/Recorded	Emission Unit(s)	Measured Units
Portable Melt Crushing	Portable Melt Crusher	Hours of Operation/year
Emergency Fire Pump Hours of Operation(1)	EFP1	Hours of Operation/Year
Storage Tank Throughputs	Various	Gallons/year

(1) Non-emergency hours of operation.

4.2.4. **Baghouse/Filter Vents**
To determine continuous compliance with the filter/baghouse emission limits given under Section 4.1 of the permit, the permittee shall maintain and operate the control devices according to the requirements given under 4.1.12(a). The permittee shall keep a record of all significant maintenance or repair performed on these control devices (changing out bags, replacing filter material, etc.).

4.2.5. **Coal Fluidized Bed Dryer**
To determine continuous compliance with the maximum temperature requirement given under Table 4.1.3(d) - footnote (1), the permittee shall install and maintain instrumentation in the Coal Fluidized Bed Dryer so as to monitor and record the temperature in the drying zone of the dryer.

4.2.6. **Melting Furnace CEMS (IMF01)**
Within 60 days after achieving the maximum design mineral wool production rate at which the facility will be operated, but not later than 180 days after initial startup, the permittee shall, to show continuous compliance with the CO, NO_x, and SO_2 emission limits as given under 4.1.4(a), install and operate a Continuous Emissions Monitoring System (CEMS) for monitoring the emissions of CO, NO_x, and SO_2 from IMF01. The CEMS shall be installed, maintained and operated according to the manufacturers design, specifications, and recommendations, of which a protocol shall be developed by the permittee and approved by the Director prior to operation. The CEMS shall meet the applicable performance specifications required by 40 Part 60, Appendix B, the applicable quality assurance procedures required in 40 CFR Part 60, Appendix F, and the requirements of 40 CFR 60.13. In lieu of the requirements of 40 CFR Part 60, Appendix F, 5.1.1, 5.1.3, and 5.1.4, the permittee may conduct either a Relative Accuracy Audit (RAA) or a Relative Accuracy Test Audit (RATA) on the CEMS at least once every three (3) years. The permittee shall conduct Cylinder Gas Audits (CGA) each calendar quarter during which a RAA or a RATA is not performed. Data recorded by the CEMS shall be kept for a period not less than three (3) years and shall be made available to the Director or his/her representative upon request.

4.2.7. **Fleece Application Station**
To determine continuous compliance with the VOC/HAP emission limits and the low-VOC requirement given under 4.1.6(a) and (b), the permittee shall monitor and record the following:

(1) The monthly and twelve-month rolling total of the amount (in tons) of VOCs/HAPs used in the fleece application process. The amount shall be based on actual material properties (VOC/HAP contents and material densities) and the amount of material used during the applicable time period. The permittee shall assume a 100% volatilization of all VOCs/HAPs used in the fleece application process with no control percentage applied unless granted approval in writing by the Director to use an alternative calculation methodology. The material properties shall be based on applicable vendor data, MSDS, or Certified Product Data Sheets; and

(2) The average monthly as-applied VOC/HAP content (in lb-VOC/lb-coating and lb-HAP/lb-coating) as based on the procedures under 40 CFR 63, Subpart JJJJ, Section §63.3370(a)(2).

4.2.8. **Rockfon Line Coatings/Glue Usage**
To determine continuous compliance with the VOC emission limit and the low-VOC BACT requirements given under 4.1.7(a) and (b), the permittee shall monitor and record the monthly and twelve-month rolling total of the amount (in tons) of VOCs used in the Rockfon coating and gluing process. The amount shall be based on actual material properties (VOC contents and material densities) and the amount of material used during the applicable time period. The permittee shall assume a 100% volatilization of all VOCs used in the Rockfon coating and gluing process with no control percentage applied unless granted approval in writing by the Director to use an alternative calculation methodology. The material properties shall be based on applicable vendor data, MSDS, or Certified Product Data Sheets.

4.2.9. **Ultra Low Sulfur Fuel**
For the purposes of demonstrating continuing compliance with the maximum sulfur content limit under 4.1.10(a), the permittee shall, at a minimum of once per calendar year, obtain from the fuel oil supplier a certification of the sulfur content of the fuel combusted in the Emergency Fire Pump Engine. An alternative means of determining compliance with 4.2.10. will be subject to prior approval from the Director.

4.2.10. **Cooling Tower**

For the purposes of demonstrating initial and continuing compliance with the operational limits set forth in Table 4.1.11(b)(1), the permittee shall, for both cooling towers, within 180 days of startup, take an initial grab sample of the cooling tower circulating water and analyze such to determine the total solids content of the cooling tower circulating water. Thereafter, the permittee shall test for solids content on an annual basis (with no more than 14 months between tests).

4.2.11. **Product Marking**
To determine continuous compliance with the Product Marking (P_MARK) VOC emission limits and given under 4.1.11(c)(3), the permittee shall monitor and record the monthly and twelve-month rolling total of the amount (in tons) of VOCs used in the Product Marking process. The amount shall be based on actual material properties (VOC contents and material densities) and the amount of material used during the applicable time period. The permittee shall assume a 100% volatilization of all VOCs used in the Product Marking process with no control percentage applied unless granted approval in writing by the Director to use an alternative calculation methodology. The material properties shall be based on applicable vendor data, MSDS, or Certified Product Data Sheets.

4.2.12. **Control Device Monitoring**
The permittee shall install, maintain, and operate instrumentation to continuously monitor and record the control device parameters as required under 4.1.12 of this permit including, at a minimum, the following:

Table 4.2.13: Control Device Parameters Monitored/Recorded

Control Device	Control Device ID	Parameter(s)
Melting Furnace Baghouse	IMF01-BH	Pressure Drop
WESP	WESP	Secondary Voltage Secondary Amperage
Curing Oven Afterburner	CO-AB	Firebox Temperature(1)

(1) Pursuant to 40 CFR 63, Subpart DDD, §63.1182.

4.2.13. **Visible Emissions Compliance Demonstrations**
Visible emissions Monitoring, Compliance Demonstration, Recording and Reporting shall be in accordance with the following requirements:

a. **45CSR2**
Upon request by the Secretary, compliance with the visible emission requirements of 3.1 [of 45CSR2] shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 or by using measurements from continuous opacity monitoring systems approved by the Secretary. The Secretary may require the installation, calibration, maintenance and operation of continuous opacity monitoring systems and may establish policies for the evaluation of continuous opacity monitoring results and the determination of compliance with the visible emission requirements of 3.1 [of 45CSR2]. Continuous opacity monitors shall not be required on fuel burning units which employ wet scrubbing systems for emission control;
[40CSR§2-3.2]

b. **45CSR6**
Compliance with the afterburner opacity requirements given under 4.1.12(f)(2)(i) and (ii) shall be based on the compliance demonstrations required for emission point HE01 as given under 4.2.14(c) and (e);

c. **45CSR7**
At such reasonable time(s) as the Secretary may designate, compliance with the visible emission requirements of 4.1.2(i), 4.1.3(e), 4.1.4(b), 4.1.5(b), and 4.1.7(f) shall be determined in accordance with the procedures outlined under 45CSR7A;

d. **40 CFR 60, Subpart OOO**
The permittee shall meet all applicable visible emissions Monitoring, Compliance Demonstration, Recording and Reporting requirements as given under 40 CFR 60, Subpart OOO, Sections §60.674 through §60.676;

e. **IMF01, HE01, CE01, and IMF05.**
Emission Points IMF01, HE01, CE01, and IMF05 are subject to the following visible emissions monitoring and compliance demonstration requirements:

(1) In order to determine compliance with the opacity limits of 4.1.3(e), 4.1.4(b), 4.1.5(b), and 4.1.7(f) of this permit, the permittee shall conduct visible emission checks and/or opacity monitoring and recordkeeping for Emission Points IMF01, HE01, CE01, and IMF05 in accordance with the following:

(i) The visible emission check shall determine the presence or absence of visible emissions. At a minimum, the observer must be trained and knowledgeable regarding the effects of background contrast, ambient lighting, observer position relative to lighting, wind, and the presence of uncombined water (condensing water vapor) on the visibility of emissions. This training may be obtained from written materials found in the References 1 and 2 from 40CFR Part 60, Appendix A, Method 22 or from the lecture portion of the 40CFR Part 60, Appendix A, Method 9 certification course;

(ii) Visible emission checks shall be conducted at least once per calendar month with a maximum of forty-five (45) days between consecutive readings. These checks shall be performed for a sufficient time interval, but no less than one (1) minute, to determine if any visible emissions are present. Each observation must be recorded as either visible emissions observed or no visible emissions observed. Visible emission checks shall be performed during periods of normal facility operation and appropriate weather conditions;

(iii) If visible emissions are present at a source(s) the permittee shall perform Method 9 readings to confirm that visible emissions are within the limits of 4.1.10 of this permit. Said Method 9 readings shall be taken as soon as practicable, but within seventy-two (72) hours of the Method 22 emission check; and

(iv) If, one year of monthly Method 22 readings show that there are no visible emissions, then the frequency of observations can be reduced to quarterly. If, during quarterly checks, visible emissions are observed, then the frequency of observations shall be returned to monthly.

f. For the purpose of demonstrating compliance with the visible emissions and opacity requirements, the permittee shall maintain records of the visible emission opacity tests and checks. The permittee shall maintain records of all monitoring data required by 4.2.14 documenting the date and time of each visible emission check, the emission point or equipment/ source identification number, the name or means of identification of the observer, the results of the check(s), whether the visible emissions are normal for the process, and, if applicable, all corrective measures taken or planned. The permittee shall also record the general weather conditions (i.e. sunny, approximately 80°F, 6-10 mph NE wind) during the visual emission check(s). Should a visible emission observation be required to be performed per the requirements specified in Method 9, the data records of each observation shall be maintained per the requirements of Method 9. For an emission unit out of service during the evaluation, the record of observation may note "out of service" (O/S) or equivalent; and

g. Any deviation of the allowable visible emission requirement for any emission source discovered during observation using 40CFR Part 60, Appendix A, Method 9 must be reported in writing to the Director of the DAQ as soon as practicable, but within ten (10) calendar days, of the occurrence and shall include, at a minimum, the following information: the results of the visible determination of opacity of emissions, the cause or suspected cause of the violation(s), and any corrective measures taken or planned.

4.2.14. **Baghouse/Fabric Filter Compliance Demonstrations**
Unless specifically requested under 4.3.1. or listed in Table 4.3.2., compliance with all baghouse and fabric filter mass emission limits that have BACT outlet grain loading limits shall be based on vendor information or vendor guarantees that show the maximum outlet grain loading emissions from the baghouse/fabric filter is in compliance with the specific limit.

4.2.15 **Emission Point Map**
The permittee shall prepare and maintain an emission point map of the facility. This map shall consist of a diagram of the location and identification of all emission points at the facility that vent to ambient air. A legend shall be prepared with the map that identifies the emission point type and source(s) contributing to that emission point. This map shall be prepared within 180 days of startup and thereafter be updated as necessary to reflect current facility operations. The map(s) shall be retained on-site and be made available to the Director or his/her duly authorized representative upon request.

4.3. Performance Testing Requirements

4.3.1. At such reasonable time(s) as the Secretary may designate, in accordance with the provisions of 3.3 of this permit, the permittee shall conduct or have conducted test(s) to determine compliance with the emission limitations established in this permit and/or applicable regulations.

4.3.2. **Emissions Point Performance Testing**
Within 60 days after achieving the maximum mineral wool production rate at which the facility will be operated, but not later than 180 days after initial startup, the permittee shall conduct, or have conducted, in accordance with a protocol submitted pursuant to 3.3.1(c), performance tests on the emission units (as emitted from the listed emission points) to show compliance with the specified pollutants as given in the following table:

Table 4.3.2.: Performance Testing Requirements

Emission Unit(s)	Emission Point	Pollutants	Limit
Melting Furnace	IMF01	All Pollutants under Table 4.1.4(a) with the exception of Mineral Fiber, Total HAPs, and CO_2e.	PPH

Emission Unit(s)	Emission Point	Pollutants	Limit
Gutter Exhaust, Curing Oven Hoods, Curing Oven, and Spinning Chamber	HE01	All Pollutants under Table 4.1.5(a) with the exception of SO_2, Mineral Fiber, Total HAPs, and CO_2e.	PPH
Rockfon Line	RFNE8	$PM_{2.5(1)}$, $PM_{10(1)}$, $PM^{(1)}$	PPH g/dscf (PM only)
De-Dusting Baghouse (CE01-BH)	CE01	$PM_{2.5(1)}$, $PM_{10(1)}$, $PM^{(1)}$	PPH g/dscf
Recycle Building Vent 1	CM10	$PM_{2.5(1)}$, $PM_{10(1)}$, $PM^{(1)}$	PPH g/dscf

(1) Filterable Only.

4.3.3 With respect to the performance testing required above under Section 4.3.2, the permittee shall, after the initial performance test, periodically conduct additional performance testing on the specified sources according to the following schedule:

Table 4.3.3.: Performance Testing Schedule

Test	Test Results	Retesting Frequency
Initial Baseline	<50% of weight emission standard	Once/3 years
Initial Baseline	between 50% and 80 % of weight emission standard	Once/2 years
Initial Baseline	>80% of weight emission standard	Annual
Annual	after three successive tests indicate mass emission rates <50% of weight emission standard	Once/3 years
Annual	after two successive tests indicate mass emission rates <80 % of weight emission standard	Once/2 years
Annual	any tests indicates a mass emission rate >80% of weight emission standard	Annual
Once/2 years	After two successive tests indicate mass emission rates <50% of weight emission standard	Once/3 years
Once/2 years	any tests indicates a mass emission rate <80 % of weight emission standard	Once/2 years
Once/2 years	any tests indicates a mass emission rate >80% of weight emission standard	Annual
Once/3 years	any tests indicates a mass emission rate <50% of weight emission standard	Once/3 years
Once/3 years	any test indicates mass emission rates between 50% and 80 % of weight emission standard	Once/2 years
Once/3 years	any test indicates a mass emission rate >80% of weight emission standard	Annual

4.3.4. Performance testing for pollutants monitored by CEMS (CO, NO_x, and SO_2 emitted from the Melting Furnace) are not subject to the performance testing schedule given under Table 4.3.4 and any performance testing shall, unless at such other reasonable time(s) as the Secretary may designate, be conducted on a schedule consistent with the required RATA testing.

4.3.5. The permittee shall use the test methods specified in Table 4.3.6. unless granted approval in writing by the Director to use an alternative test method in a protocol submitted pursuant to 3.3.1(c).

Table 4.3.5: Performance Test Methods

Pollutant	Test Method(1)
CO	Method 10
NO_x	Method 7E
$PM_{2.5}$ (filterable only)	Method 201A
PM_{10}/PM (filterable only)	Method 5
$PM_{2.5}$/PM_{10} (condensable)	Method 202
SO_2	Method 6
VOCs	Method 18/25A
COS	Method 15
HF/HCl	Method 26
N_2O	Method 7B
H_2SO_4	Method 8

(1) All test methods refer to those given under 40 CFR 60, Appendix A

4.3.6. **40 CFR 60, Subpart OOO**
The permittee shall meet all applicable Performance Testing requirements as given under 40 CFR 60, Subpart A, Section §60.8 and Subpart OOO, Section §60.675.

4.3.7. **40 CFR 63, Subpart DDD**
The permittee shall meet all applicable Performance Testing requirements as given under 40 CFR 63, Subpart DDD, Sections §63.1188 through §63.1190.

4.4. Additional Recordkeeping Requirements

4.4.1. **Record of Monitoring.** The permittee shall keep records of monitoring information that include the following:

a. The date, place as defined in this permit and time of sampling or measurements;

b. The date(s) analyses were performed;

c. The company or entity that performed the analyses;

d. The analytical techniques or methods used;

e. The results of the analyses; and

f. The operating conditions existing at the time of sampling or measurement.

4.4.2. **Record of Maintenance of Air Pollution Control Equipment.** For all pollution control equipment listed in Section 1.0, the permittee shall maintain accurate records of all required pollution control equipment inspection and/or preventative maintenance procedures.

4.4.3. **Record of Malfunctions of Air Pollution Control Equipment.** For all air pollution control equipment listed in Section 1.0, the permittee shall maintain records of the occurrence and duration of any malfunction or operational shutdown of the air pollution control equipment during which excess emissions occur. For each such case, the following information shall be recorded:

a. The equipment involved.

b. Steps taken to minimize emissions during the event.

c. The duration of the event.

d. The estimated increase in emissions during the event.

For each such case associated with an equipment malfunction, the additional information shall also be recorded:

e. The cause of the malfunction.

f. Steps taken to correct the malfunction.

g. Any changes or modifications to equipment or procedures that would help prevent future recurrences of the malfunction.

4.5. Additional Reporting Requirements

4.5.1. The permittee shall submit the following information to the DAQ according to the specified schedules:

a. The permittee shall submit reports of all required monitoring on or before September 15 for the reporting period January 1 to June 30 and March 15 for the reporting period July 1 to December 31. All instances of deviation from permit requirements must be clearly identified in such reports; and

b. The permittee shall submit to the Director on or before March 15, a certification of compliance with all requirements of this permit for the previous calendar year ending on December 31. If, during the previous annual period, the permittee had been out of compliance with any part of this permit, it shall be noted along with the following information: 1) the source/equipment/process that was non-compliant and the specific requirement of this permit that was not met, 2) the date the permitted discovered that the source/ equipment/process was out of compliance, 3) the date the Director was notified, 4) the corrective measures to get the source/equipment/process back into compliance, and 5) the date the source began to operate in compliance. The submission of any non-compliance report shall give no enforcement action immunity to episodes of non-compliance contained therein.

CERTIFICATION OF DATA ACCURACY

I, the undersigned, hereby certify that, based on information and belief formed after reasonable inquiry, all information contained in the attached ______________________________, representing the period beginning ______________________ and ending ______________________, and any supporting documents appended hereto, is true, accurate, and complete.

Signature[1] ______________________________ ____________________
(please use blue ink) Responsible Official or Authorized Representative Date

Name and Title ______________________________ ____________________
(please print or type) Name Title

Telephone No. ______________________ Fax No. ______________________

---

[1] This form shall be signed by a "Responsible Official." "Responsible Official" means one of the following:

a. For a corporation: The president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either:

   (I) the facilities employ more than 250 persons or have a gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), or

   (ii) the delegation of authority to such representative is approved in advance by the Director;

b. For a partnership or sole proprietorship: a general partner or the proprietor, respectively;

c. For a municipality, State, Federal, or other public entity: either a principal executive officer or ranking elected official. For the purposes of this part, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of USEPA); or

d. The designated representative delegated with such authority and approved in advance by the Director.

Kessler, Joseph R

From: Kessler, Joseph R
Sent: Thursday, February 22, 2018 5:19 PM
To: 'grant.morgan@erm.com'
Cc: Kessler, Joseph R
Subject: Pre-Draft ROXUL R14-0037
Attachments: R14-0037_dpm.pdf

Grant, attached is a "pre-draft" version of R14-0037. Please provide to interested parties at ROXUL. Let me know when they would like to set up a time to discuss any questions or comments.

It is important to note that this pre-draft version of the permit has not yet been approved by my supervisor and therefore all language is subject to change. Further, the review of permit application is ongoing and the access provided to this pre-draft permit does not indicate that a preliminary determination has made regarding the application. ROXUL may be required to subsequently submit, in a timely manner, any additional or corrected information deemed necessary for a final permit determination.

Thanks,

Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x1219
Fax: (304) 926-0478
Joseph.r.kessler@wv.gov

Entire Document
NON-CONFIDENTIAL

I.D. No. 037-00108 Reg. R14-0037
Company ROXUL
Facility RAN Region
Initials JRK

West Virginia Department of Environmental Protection
Austin Caperton
Cabinet Secretary

Permit to Construct

R14-0037

This permit is issued in accordance with the West Virginia Air Pollution Control Act (West Virginia Code §§ 22-5-1 et seq.), 45 C.S.R. 13 — Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation, and 45 C.S.R. 14 - Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration. The permittee identified at the facility listed below is authorized to construct the stationary sources of air pollutants identified herein in accordance with all terms and conditions of this permit.

Issued to:
ROXUL USA, Inc.
RAN Facility
037-00108

____
William F. Durham
Director, Division of Air Quality

Issued: ***DRAFT***

Facility Location:	Ranson, Jefferson County, West Virginia
Mailing Address:	71 Edmond Road, Suite 6 Kearneysville, WV 25430
Facility Description:	Mineral Wool Manufacturing Facility
SIC/NAICS Code:	3296/327993
UTM Coordinates:	Easting: 252.06 km Northing: 4,362.62 km Zone: 18
Latitude/Longitude:	39.37754, -77.87844
Permit Type:	Major Source Construction
Desc. of Change:	Construction of a new mineral wool manufacturing facility defined as a major stationary source and subject to Prevention of Significant Deterioration (PSD) permitting requirements.

Any person whose interest may be affected, including, but not necessarily limited to, the applicant and any person who participated in the public comment process, by a permit issued, modified or denied by the Secretary may appeal such action of the Secretary to the Air Quality Board pursuant to article one [§§ 22B-1-1 et seq.], Chapter 22B of the Code of West Virginia. West Virginia Code §22-5-14.

As a result of this permit, the source is a major source subject to 45CSR30. The Title V (45CSR30) application will be due within twelve (12) months after the commencement date of any operation authorized by this permit.

Table of Contents

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity(1)	Control Device(2)
Raw Material Handling					
IMF11	IMF11	Conveyor Transfer Point	2018	CBI	IMF11-FF
B215	B215	Raw Material Loading Hopper	2018	CBI	PE
IMF12	IMF12	Conveyor Transfer Point	2018	CBI	IMF12-FF
IMF14	IMF12	Conveyor Transfer Point	2018	CBI	IMF14-FF
IMF15	IMF12	Conveyor Transfer Point	2018	CBI	IMF15-FF
IMF16	IMF12	Conveyor Transfer Point	2018	CBI	IMF16-FF
IMF21	IMF21	Charging Building Vacuum Cleaning Filter	2018	316 scfm	IMF21-FF
RM_REJ	RM_REJ	Raw Material Reject Bin	2018	CBI	PE
S_REJ	S_REJ	Sieve Reject Bin	2018	CBI	PE
B170	B170	Melting Furnace Portable Crusher & Storage	2018	<150 TPH	None
B210	B210	Raw Material Storage - Loading	2018	CBI	PE
IMF25	IMF25	Coal Feed Tank	2018	CBI	IMF25-FF
RMS	RMS	Raw Material Storage	2018	5,382 ft^2	PE
IMF17	IMF17	Charging Building Vent 1	2018	n/a	None
IMF18	IMF18	Charging Building Vent 2	2018	n/a	None
Coal Milling					
IMF03A	IMF03A	Coal Storage Silo A	2018	TBD	IMF03A-FF
IMF03B	IMF03B	Coal Storage Silo B	2018	TBD	IMF03B-FF
IMF03C	IMF03C	Coal Storage Silo C	2018	TBD	IMF03C-FF
IMF04	IMF04	Conveyor Transfer Point	2018	CBI	IMF04-FF
IMF05	IMF05	Coal Milling Burner & Baghouse	2018	CBI	IMF05-BH
IMF06	IMF06	Coal Milling De-Dusting Baghouse	2018	CBI	IMF06-BH
IMF13	IMF13	Conveyor Transfer Point	2018	CBI	IMF13-FF
B235	B235	Coal Milling Building	2018	n/a	None
B230	B230	Coal Unloading	2018	CBI	PE
B231	B231	Coal Unloading Hopper	2018	CBI	PE

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity(1)	Control Device(2)
Mineral Wool Line					
IMF01	IMF01	Melting Furnace	2018	CBI	IMF01-BH De-NO_x De-SO_x
IMF02	IMF02	Furnace Cooling Tower	2018	1,321 gpm	Drift Eliminator
IMF07A	IMF07A	Filter Fines Day Silo	2018	TBD	IMF07A-FF
IMF07B	IMF07B	Secondary Energy Materials Silo	2018	TBD	IMF07B-FF
IMF08	IMF08	Sorbent Silo	2018	TBD	IMF08-FF
IMF09	IMF09	Spent Sorbent Silo	2018	TBD	IMF09-FF
IMF10	IMF10	Filter Fines Receiving Silo	2018	TBD	IMF10-FF
IMF24	IMF24	Preheat Burner	2018	5.1 mmBtu/hr	None
CO	HE01	Curing Oven	2018	CBI	WESP (HE01) CO-AB
CO-HD	HE01	Curing Oven Hoods	2018	CBI	WESP (HE01)
GUT-EX	HE01	Gutter Exhaust	2018	CBI	WESP (HE01)
SPN	HE01	Spinning Chamber	2018	CBI	WESP (HE01)
CS	HE01	Cooling Section	2018	CBI	WESP (HE01)
HE02	HE02	Gutter Cooling Tower	2018	308 gpm	Drift Eliminator
CM12	CM12	Fleece Application Vent 1	2018	408 lb/hr	None
CM13	CM13	Fleece Application Vent 2	2018		None
CE01	CE01	De-dusting Baghouse	2018	44,217 scfm	CE01-BH
CE02	CE02	Vacuum Cleaning Baghouse	2018	12,633 scfm	CE02-BH
DI	DI	Dry Ice Cleaning	2018	165.3 lbs/hour	None
P_MARK	P_MARK	Product Marking	2018	0.04 mmBtu/hr	None
Recycling					
CM08	CM08	Recycle Plant Building Vent 1	2018	1,579 scfm	CM08-FF
CM09	CM09	Recycle Plant Building Vent 2	2018	1,579 scfm	CM09-FF

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity(1)	Control Device(2)
CM10	CM10	Recycle Plant Building Vent 3	2018	18,950 scfm	CM10-FF
CM11	CM11	Recycle Plant Building Vent 4	2018	18,950 scfm	CM11-FF
Rockfon Line					
RFNE1	RFNE1	IR Zone	2018	CBI	None
RFNE2	RFNE2	Hot Press	2018	CBI	None
RFNE3	RFNE3	High Oven A	2018	2.73 mmBtu/hr	None
RFNE4	RFNE4	Drying Oven 1	2018	2.05 mmBtu/hr	RFNE4-FF
RFNE5	RFNE5	Spraying Cabin	2018	CBI	RFNE5-FF
RFNE6	RFNE6	Drying Oven 2 & 3	2018	4.78 mmBtu/hr	RFNE6-FF
RFNE7	RFNE7	Cooling Zone	2018	CBI	None
RFNE8	RFNE8	Rockfon De-dusting Baghouse	2018	CBI	RFNE8-BH
RFNE9	RFN9	High Oven B	2018	2.73 mmBtu/hr	None
Miscellaneous Emission Units					
CM03	CM03	Natural Gas Boiler 1	2018	5.1 mmBtu/hr	None
CM04	CM04	Natural Gas Boiler 2	2018	5.1 mmBtu/hr	None
EFP1	EFP1	Emergency Fire Pump Engine	2018	197 hp	None
RFN10	RFN10	Rockfon Building Heater	2018	5.1 mmBtu/hr	None
Storage Tanks					
TK-DF	TK-DF	Diesel Fuel Tank	2018	2,642 gallons	None
TK-UO	TK-UO	Used Oil Tank	2018	581 gallons	None
TK-TO1	TK-TO1	Thermal Oil Expansion Tank - Rockfon	2018	212 gallons	None
TK-TO2	TK-TO2	Thermal Oil Drain Tank - Rockfon	2018	159 gallons	None
TK-TO3	TK-TO3	Thermal Oil Tank - IMF	2018	2,642 gallons	None
TK-TO4	TK-TO4	Thermal Oil Expansion Tank - IMF	2018	1,321 gallons	None
TK-DO	TK-DO	De-dust Oil Storage Tank	2018	15,850 gallons	None
TK-RS1	TK-RS1	Resin Storage Tank	2018	15,850 gallons	None
TK-RS2	TK-RS2	Resin Storage Tank	2018	15,850 gallons	None
TK-RS3	TK-RS3	Resin Storage Tank	2018	15,850 gallons	None
TK-RS4	TK-RS4	Resin Storage Tank	2018	15,850 gallons	None

1.0 Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity(1)	Control Device(2)
TK-RS5	TK-RS5	Resin Storage Tank	2018	15,850 gallons	None
TK-RS6	TK-RS6	Resin Storage Tank	2018	15,850 gallons	None
TK-RS7	TK-RS7	Resin Storage Tank	2018	15,850 gallons	None
TK-CA	TK-CA	Coupling Agent Storage Tank	2018	264 gallons	None
TK-AD	TK-AD	Additive Storage Tank	2018	53 gallons	None
TK-BM	TK-BM	Binder Mix Tank	2018	2,642 gallons	None
TK-BC	TK-BC	Binder Circulation Tank	2018	4,227 gallons	None
TK-BD	TK-BD	Binder Day Tank	2018	793 gallons	None
TK-BS1	TK-BS1	Binder Storage Container	2018	264 gallons	None
TK-BS2	TK-BS2	Binder Storage Container	2018	264 gallons	None
TK0-BS3	TK-BS3	Binder Storage Container	2018	264 gallons	None
TK-DOD	TK-DOD	De-dust Oil Day Tank	2018	264 gallons	None
TK-PD	TK-PD	Paint Dilution Storage Tank	2018	793 gallons	None
TK-PDD	TK-PDD	Paint Dilution Day Tank	2018	397 gallons	None

(1) CBI = Confidential Business Information.

(2) AB = Afterburner; BH = Baghouse; FF = Fabric Filter; PE = Partial Enclosure; WESP = Wet Electrostatic Precipitator.

2.0. General Conditions

2.1. Definitions

2.1.1. All references to the "West Virginia Air Pollution Control Act" or the "Air Pollution Control Act" mean those provisions contained in W.Va. Code §§ 22-5-1 to 22-5-18.

2.1.2. The "Clean Air Act" means those provisions contained in 42 U.S.C. §§ 7401 to 7671q, and regulations promulgated thereunder.

2.1.3. "Secretary" means the Secretary of the Department of Environmental Protection or such other person to whom the Secretary has delegated authority or duties pursuant to W.Va. Code §§ 22-1-6 or 22-1-8 (45 CSR § 30-2.12.). The Director of the Division of Air Quality is the Secretary's designated representative for the purposes of this permit.

2.2. Acronyms

CAAA	Clean Air Act Amendments	**NSPS**	New Source Performance Standards
CBI	Confidential Business Information	**PM**	Particulate Matter
CEM	Continuous Emission Monitor	**$PM_{2.5}$**	Particulate Matter less than 2.5μm in diameter
CES	Certified Emission Statement	**PM_{10}**	Particulate Matter less than 10μm in diameter
C.F.R. ***or*** **CFR**	Code of Federal Regulations	**Ppb**	Pounds per Batch
CO	Carbon Monoxide	**pph**	Pounds per Hour
C.S.R. ***or*** **CSR**	Codes of State Rules	**ppm**	Parts per Million
DAQ	Division of Air Quality	**Ppmv or ppmv**	Parts per million by volume
DEP	Department of Environmental Protection	**PSD**	Prevention of Significant Deterioration
dscm	Dry Standard Cubic Meter	**psi**	Pounds per Square Inch
FOIA	Freedom of Information Act	**SIC**	Standard Industrial Classification
HAP	Hazardous Air Pollutant	**SIP**	State Implementation Plan
HON	Hazardous Organic NESHAP	**SO_2**	Sulfur Dioxide
HP	Horsepower	**TAP**	Toxic Air Pollutant
lbs/hr	Pounds per Hour	**TPY**	Tons per Year
LDAR	Leak Detection and Repair	**TRS**	Total Reduced Sulfur
M	Thousand	**TSP**	Total Suspended Particulate
MACT	Maximum Achievable Control Technology	**USEPA**	United States Environmental Protection Agency
MDHI	Maximum Design Heat Input	**UTM**	Universal Transverse Mercator
MM	Million	**VEE**	Visual Emissions Evaluation
MMBtu/hr ***or*** **mmbtu/hr**	Million British Thermal Units per Hour	**VOC**	Volatile Organic Compounds
MMCF/hr ***or*** **mmcf/hr**	Million Cubic Feet per Hour	**VOL**	Volatile Organic Liquids
NA	Not Applicable		
NAAQS	National Ambient Air Quality Standards		
NESHAPS	National Emissions Standards for Hazardous Air Pollutants		
NO_x	Nitrogen Oxides		

2.3. Authority

This permit is issued in accordance with West Virginia Air Pollution Control Law W.Va. Code §§22-5-1 et seq. and the following Legislative Rules promulgated thereunder:

2.3.1. 45CSR13 – *Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation; and*

2.3.2. *45CSR14 – Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration.*

2.4. Term and Renewal

2.4.1. This permit shall remain valid, continuous and in effect unless it is revised, suspended, revoked or otherwise changed under an applicable provision of 45CSR13 or any applicable legislative rule.

2.5. Duty to Comply

2.5.1. The permitted facility shall be constructed and operated in accordance with the plans and specifications filed in Permit Applications R14-0037 and any modifications, administrative updates, or amendments thereto. The Secretary may suspend or revoke a permit if the plans and specifications upon which the approval was based are not adhered to;
[45CSR§§13-5.11 and 13-10.3]

2.5.2. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the West Virginia Code and the Clean Air Act and is grounds for enforcement action by the Secretary or USEPA;

2.5.3. Violations of any of the conditions contained in this permit, or incorporated herein by reference, may subject the permittee to civil and/or criminal penalties for each violation and further action or remedies as provided by West Virginia Code 22-5-6 and 22-5-7;

2.5.4. Approval of this permit does not relieve the permittee herein of the responsibility to apply for and obtain all other permits, licenses and/or approvals from other agencies; i.e., local, state and federal, which may have jurisdiction over the construction and/or operation of the source(s) and/or facility herein permitted.

2.6. Duty to Provide Information

The permittee shall furnish to the Secretary within a reasonable time any information the Secretary may request in writing to determine whether cause exists for administratively updating, modifying, revoking or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Secretary copies of records to be kept by the permittee. For information claimed to be confidential, the permittee shall furnish such records to the Secretary along with a claim of confidentiality in accordance with 45CSR31. If confidential information is to be sent to USEPA, the permittee shall directly provide such information to USEPA along with a claim of confidentiality in accordance with 40 C.F.R. Part 2.

2.7. Duty to Supplement and Correct Information

Upon becoming aware of a failure to submit any relevant facts or a submittal of incorrect information in any permit application, the permittee shall promptly submit to the Secretary such supplemental facts or corrected information.

2.8. Administrative Update

The permittee may request an administrative update to this permit as defined in and according to the procedures specified in 45CSR13.
[45CSR§13-4]

2.9. Permit Modification

The permittee may request a minor modification to this permit as defined in and according to the procedures specified in 45CSR13.
[45CSR§13-5.4.]

2.10. Major Permit Modification

The permittee may request a major modification as defined in and according to the procedures specified in 45CSR14 or 45CSR19, as appropriate.
[45CSR§13-5.1]

2.11. Inspection and Entry

The permittee shall allow any authorized representative of the Secretary, upon the presentation of credentials and other documents as may be required by law, to perform the following:

a. At all reasonable times (including all times in which the facility is in operation) enter upon the permittee's premises where a source is located or emissions related activity is conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times (including all times in which the facility is in operation) any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit;

d. Sample or monitor at reasonable times substances or parameters to determine compliance with the permit or applicable requirements or ascertain the amounts and types of air pollutants discharged.

2.12. Emergency

2.12.1. An "emergency" means any situation arising from sudden and reasonable unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission

limitation under the permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

2.12.2. Effect of any emergency. An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if the conditions of Section 2.12.3 are met.

2.12.3. The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:

a. An emergency occurred and that the permittee can identify the cause(s) of the emergency;

b. The permitted facility was at the time being properly operated;

c. During the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in the permit; and,

d. The permittee submitted notice of the emergency to the Secretary within one (1) working day of the time when emission limitations were exceeded due to the emergency and made a request for variance, and as applicable rules provide. This notice must contain a detailed description of the emergency, any steps taken to mitigate emission, and corrective actions taken.

2.12.4. In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency has the burden of proof.

2.12.5. The provisions of this section are in addition to any emergency or upset provision contained in any applicable requirement.

2.13. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it should have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. However, nothing in this paragraph shall be construed as precluding consideration of a need to halt or reduce activity as a mitigating factor in determining penalties for noncompliance if the health, safety, or environmental impacts of halting or reducing operations would be more serious than the impacts of continued operations.

2.14. Suspension of Activities

In the event the permittee should deem it necessary to suspend, for a period in excess of sixty (60) consecutive calendar days, the operations authorized by this permit, the permittee shall notify the Secretary, in writing, within two (2) calendar weeks of the passing of the sixtieth (60) day of the suspension period.

2.15. Property Rights

This permit does not convey any property rights of any sort or any exclusive privilege.

2.16. Severability

The provisions of this permit are severable and should any provision(s) be declared by a court of competent jurisdiction to be invalid or unenforceable, all other provisions shall remain in full force and effect.

2.17. Transferability

This permit is transferable in accordance with the requirements outlined in Section 10.1 of 45CSR13. **[45CSR§13-10.1]**

2.18. Notification Requirements

The permittee shall notify the Secretary, in writing, no later than thirty (30) calendar days after the actual startup of the operations authorized under this permit.

2.19. Credible Evidence

Nothing in this permit shall alter or affect the ability of any person to establish compliance with, or a violation of, any applicable requirement through the use of credible evidence to the extent authorized by law. Nothing in this permit shall be construed to waive any defense otherwise available to the permittee including, but not limited to, any challenge to the credible evidence rule in the context of any future proceeding.

3.0. Facility-Wide Requirements

3.1. Limitations and Standards

3.1.1. **Open burning.** The open burning of refuse by any person, firm, corporation, association or public agency is prohibited except as noted in 45CSR§6-3.1.
[45CSR§6-3.1.]

3.1.2. **Open burning exemptions.** The exemptions listed in 45CSR§6-3.1 are subject to the following stipulation: Upon notification by the Secretary, no person shall cause, suffer, allow or permit any form of open burning during existing or predicted periods of atmospheric stagnation. Notification shall be made by such means as the Secretary may deem necessary and feasible.
[45CSR§6-3.2.]

3.1.3. **Asbestos.** The permittee is responsible for thoroughly inspecting the facility, or part of the facility, prior to commencement of demolition or renovation for the presence of asbestos and complying with 40 C.F.R. § 61.145, 40 C.F.R. § 61.148, and 40 C.F.R. § 61.150. The permittee, owner, or operator must notify the Secretary at least ten (10) working days prior to the commencement of any asbestos removal on the forms prescribed by the Secretary if the permittee is subject to the notification requirements of 40 C.F.R. § 61.145(b)(3)(i). The USEPA, the Division of Waste Management and the Bureau for Public Health - Environmental Health require a copy of this notice to be sent to them.
[40CFR§61.145(b) and 45CSR§34]

3.1.4. **Odor.** No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public.
[45CSR§4-3.1 State-Enforceable only.]

3.1.5. **Permanent shutdown.** A source which has not operated at least 500 hours in one 12-month period within the previous five (5) year time period may be considered permanently shutdown, unless such source can provide to the Secretary, with reasonable specificity, information to the contrary. All permits may be modified or revoked and/or reapplication or application for new permits may be required for any source determined to be permanently shutdown.
[45CSR§13-10.5.]

3.1.6. **Standby plan for reducing emissions.** When requested by the Secretary, the permittee shall prepare standby plans for reducing the emissions of air pollutants in accordance with the objectives set forth in Tables I, II, and III of 45 C.S.R. 11.
[45CSR§11-5.2.]

3.2. Monitoring Requirements

3.2.1. **Emission Limit Averaging Time.** Unless otherwise specified, compliance with all annual limits shall be based on a rolling twelve month total. A rolling twelve month total shall be the sum of the measured parameter of the previous twelve calendar months. Unless otherwise specified, compliance with all hourly emission limits shall be based on the applicable NAAQS averaging times or, where applicable, as given in any approved performance test method. However, nothing under 3.2.1. requires that continuous performance testing take place for the entire averaging period time frame (e.g., performance testing to show compliance with a PM_{10} emission limit is not necessarily required for 24 consecutive hours). The required length of time of a performance test will be determined by th appropriate test method and compliance procedures as approved under a protocol submitted pursuant to 3.3.1(c).

3.3. Testing Requirements

3.3.1. **Stack testing.** As per provisions set forth in this permit or as otherwise required by the Secretary, in accordance with the West Virginia Code, underlying regulations, permits and orders, the permittee shall conduct test(s) to determine compliance with the emission limitations set forth in this permit and/or established or set forth in underlying documents. The Secretary, or his duly authorized representative, may at his option witness or conduct such test(s). Should the Secretary exercise his option to conduct such test(s), the operator shall provide all necessary sampling connections and sampling ports to be located in such manner as the Secretary may require, power for test equipment and the required safety equipment, such as scaffolding, railings and ladders, to comply with generally accepted good safety practices. Such tests shall be conducted in accordance with the methods and procedures set forth in this permit or as otherwise approved or specified by the Secretary in accordance with the following:

a. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with 40 C.F.R. Parts 60, 61, and 63 in accordance with the Secretary's delegated authority and any established equivalency determination methods which are applicable. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4 or 45CSR§13-5.4 as applicable.

b. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with applicable requirements which do not involve federal delegation. In specifying or approving such alternative testing to the test methods, the Secretary, to the extent possible, shall utilize the same equivalency criteria as would be used in approving such changes under Section 3.3.1.a. of this permit. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4 or -5.4 as applicable.

c. All periodic tests to determine mass emission limits from or air pollutant concentrations in discharge stacks and such other tests as specified in this permit shall be conducted in accordance with an approved test protocol. Unless previously approved, such protocols shall be submitted to the Secretary in writing at least thirty (30) days prior to any testing and shall contain the information set forth by the Secretary. In addition, the permittee shall notify the Secretary at least fifteen (15) days prior to any testing so the Secretary may have the opportunity to observe such tests. This notification shall include the actual date and time during which the test will be conducted and, if appropriate, verification that the tests will fully conform to a referenced protocol previously approved by the Secretary.

d. The permittee shall submit a report of the results of the stack test within sixty (60) days of completion of the test. The test report shall provide the information necessary to document the objectives of the test and to determine whether proper procedures were used to accomplish these objectives. The report shall include the following: the certification described in paragraph 3.5.1.; a statement of compliance status, also signed by a responsible official; and, a summary of conditions which form the basis for the compliance status evaluation. The summary of conditions shall include the following:

1. The permit or rule evaluated, with the citation number and language;
2. The result of the test for each permit or rule condition; and,
3. A statement of compliance or noncompliance with each permit or rule condition.

[WV Code § 22-5-4(a)(14-15) and 45CSR13]

3.4. Recordkeeping Requirements

3.4.1. **Retention of records.** The permittee shall maintain records of all information (including monitoring data, support information, reports and notifications) required by this permit recorded in a form suitable and readily available for expeditious inspection and review. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation. The files shall be maintained for at least five (5) years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. At a minimum, the most recent two (2) years of data shall be maintained on site. The remaining three (3) years of data may be maintained off site, but must remain accessible within a reasonable time. Where appropriate, the permittee may maintain records electronically (on a computer, on computer floppy disks, CDs, DVDs, or magnetic tape disks), on microfilm, or on microfiche.

3.4.2. **Odors.** For the purposes of 45CSR4, the permittee shall maintain a record of all odor complaints received, any investigation performed in response to such a complaint, and any responsive action(s) taken.
[45CSR§4. *State-Enforceable only.*]

3.5. Reporting Requirements

3.5.1. **Responsible official.** Any application form, report, or compliance certification required by this permit to be submitted to the DAQ and/or USEPA shall contain a certification by the responsible official that states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate and complete.

3.5.2. **Confidential information.** A permittee may request confidential treatment for the submission of reporting required by this permit pursuant to the limitations and procedures of W.Va. Code § 22-5-10 and 45CSR31.

3.5.3. **Correspondence.** All notices, requests, demands, submissions and other communications required or permitted to be made to the Secretary of DEP and/or USEPA shall be made in writing and shall be deemed to have been duly given when delivered by hand, or mailed first class or by private carrier with postage prepaid to the address(es), or submitted in electronic format by email as set forth below or to such other person or address as the Secretary of the Department of Environmental Protection may designate:

Table 3.5.3.: Correspondence Addresses

If to the DAQ:	If to the US EPA:
Director WVDEP Division of Air Quality 601 57th Street, SE Charleston, WV 25304-2345 **DAQ Compliance and Enforcement[1]:** **DEPAirQualityReports@wv.gov**	Associate Director Office of Air Enforcement and Compliance Assistance - (3AP20) U. S. Environmental Protection Agency Region III 1650 Arch Street Philadelphia, PA 19103-2029

[1] For all self-monitoring reports (MACT, GACT, NSPS, etc.), stack tests and protocols, notice of Compliance Status Reports, Initial Notifications, etc.

3.5.4. **Operating Fee.**

3.5.4.1. In accordance with 45CSR30 – Operating Permit Program, the permittee shall submit a Certified Emissions Statement (CES) and pay fees on an annual basis in accordance with the submittal requirements of the Division of Air Quality. A receipt for the appropriate fee shall be maintained on the premises for which the receipt has been issued, and shall be made immediately available for inspection by the Secretary or his/her duly authorized representative.

3.5.4.2. In accordance with 45CSR30 – Operating Permit Program, enclosed with this permit is a Certified Emissions Statement (CES) Invoice, from the date of initial startup through the following June 30. Said invoice and the appropriate fee shall be submitted to this office no later than 30 days prior to the date of initial startup. For any startup date other than July 1, the permittee shall pay a fee or prorated fee in accordance with the Section 4.5 of 45CSR22. A copy of this schedule may be found attached to the Certified Emissions Statement (CES) Invoice.

3.5.5. **Emission inventory.** At such time(s) as the Secretary may designate, the permittee herein shall prepare and submit an emission inventory for the previous year, addressing the emissions from the facility and/or process(es) authorized herein, in accordance with the emission inventory submittal requirements of the Division of Air Quality. After the initial submittal, the Secretary may, based upon the type and quantity of the pollutants emitted, establish a frequency other than on an annual basis.

4.0. Source-Specific Requirements

4.1. Limitations and Standards

4.1.1. Only those emission units/sources as identified in Table 1.0, with the exception of any *de minimis* sources as identified under Table 45-13B of 45CSR13, are authorized at the permitted facility by this permit. In accordance with the information filed in Permit Application R14-0037, the emission units/sources identified under Table 1.0 of this permit shall be installed, maintained, and operated so as to minimize any fugitive escape of pollutants, shall not exceed the listed maximum design capacities, shall use the specified control devices, and comply with any other information provided under Table 1.0.

4.1.2. **Material Handling Operations**
The handling of raw materials used in the production of mineral wool (including but not limited to igneous rocks, slags, dolomite/limestone, and mineral additives), coal milling material handling operations, recycling operations, and all other operations involved in the handling or processing of friable materials with a potential of producing particulate matter emissions, shall be in accordance with the following requirements:

a. The permittee shall not exceed the specified maximum design capacities of the following operations:

Table 4.1.2(a): Maximum Design Capacities

Parameter	Limit	Units
Raw Materials(1)	716(2) (650)	Ton/Day (Tonne/Day)
Lump Coal/Pet Coke	93(3) (84)	Ton/Day (Tonne/Day)
Portable Melt Crushing	<150 (<136)	TPH (Tonne/Hour)

(1) Rock, Slag, and Minerals
(2) As based on the Charging Building (B220) Conveyer Belt.
(3) As based on the Coal Mill Feed Conveyer Belt.

b. The permittee shall not exceed the specified maximum annual throughputs or hours of operation of the following operations:

Table 4.1.2(b): Maximum Annual Throughputs

Parameter	Limit	Units
Portable Melt Crushing	540	Hours of Operation

c. The permittee shall not exceed the maximum emission limits for the specified emission points given in the following table:

Table 4.1.2(c): Material Handling Operations Stack Emission Limits

Emission Point ID	Source Description	Filter Outlet (gr/dscf)(1)	Pollutant(2)	PPH(3)	TPY
IMF03A	Coal Storage Silo 1	0.001	$PM_{2.5}$	0.006	0.03
		0.002	PM/PM_{10}	0.013	0.06
IMF03B	Coal Storage Silo 2	0.001	$PM_{2.5}$	0.006	0.03
		0.002	PM/PM_{10}	0.013	0.06
IMF03C	Coal Storage Silo 3	0.001	$PM_{2.5}$	0.006	0.03
		0.002	PM/PM_{10}	0.013	0.06
IMF04	Conveyer TP (B231 to B235)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.019	0.09
IMF06	Coal Milling Building (B235) De-Dusting Baghouse(4)	0.002	$PM_{2.5}$	0.108	0.47
		0.004	PM/PM_{10}	0.217	0.95
IMF07A	Filter Fines Day Silo	0.001	$PM_{2.5}$	0.007	0.03
		0.002	PM/PM_{10}	0.014	0.06
IMF07B	Secondary Energy Materials Silo	0.001	$PM_{2.5}$	0.007	0.03
		0.002	PM/PM_{10}	0.014	0.06
IMF08	Sorbent Silo	0.001	$PM_{2.5}$	0.006	0.03
		0.002	PM/PM_{10}	0.013	0.06
IMF09	Spent Sorbent Silo	0.001	$PM_{2.5}$	0.006	0.03
		0.002	PM/PM_{10}	0.013	0.06
IMF10	Filter Fines Receiving Silo	0.001	$PM_{2.5}$	0.006	0.03
		0.002	PM/PM_{10}	0.013	0.06
IMF11	Conveyer TP (B215 to B220)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.019	0.09
IMF12	Conveyer TP (B210 to B220)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.019	0.09
IMF13	Bin-Conveyer TP (B231 to Conveyer)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.019	0.09
IMF14	Conveyer TP (B220 No. 1)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.019	0.09
IMF15	Conveyer TP (B220 No. 2)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.019	0.09

Emission Point ID	Source Description	Filter Outlet (gr/dscf)(1)	Pollutant(2)	PPH(3)	TPY
IMF16	Conveyer TP (B220 to B300)	0.001	$PM_{2.5}$	0.010	0.04
		0.002	PM/PM_{10}	0.019	0.09
IMF17	Charging Building Vent 1	n/a(5)	$PM_{2.5}$	0.009	0.04
			PM/PM_{10}	0.019	0.08
IMF18	Charging Building Vent 2	n/a(5)	$PM_{2.5}$	0.009	0.04
			PM/PM_{10}	0.019	0.08
IMF21	Charging Building Vacuum Cleaning	0.001	$PM_{2.5}$	0.003	0.01
		0.002	PM/PM_{10}	0.005	0.02
IMF25	Coal Feed Tank	0.001	$PM_{2.5}$	0.006	0.03
		0.002	PM/PM_{10}	0.013	0.06
B235	Coal Milling Building	n/a(5)	$PM_{2.5}$	0.010	0.04
			PM/PM_{10}	0.019	0.09
CE01	De-Dusting Baghouse	0.0020	$PM_{10}/PM_{2.5}$	0.220	0.97
		0.0041	PM	0.440	1.93
		n/a	Mineral Fiber	0.220	0.97
CE02	Vacuum Cleaning Baghouse	0.0020	$PM_{10}/PM_{2.5}$	0.220	0.97
		0.0041	PM	0.440	1.93
		n/a	Mineral Fiber	0.220	0.97
CM08	Recycle Building Vent 3	0.002	$PM_{2.5}$	0.027	0.12
		0.004	PM/PM_{10}	0.054	0.24
CM09	Recycle Building Vent 4	0.002	$PM_{2.5}$	0.027	0.12
		0.004	PM/PM_{10}	0.054	0.24
CM10	Recycle Building Vent 1	0.002	$PM_{2.5}$	0.330	1.45
		0.004	PM/PM_{10}	0.660	2.90
CM11	Recycle Building Vent 2	0.002	$PM_{2.5}$	0.330	1.45
		0.004	PM/PM_{10}	0.660	2.90

(1) gr/dscf = grains/dry standard cubic feet. This represents the PM/PM_{10} **BACT** limit for the specified emission points where applicable. Where a filter outlet limit is not specified, **BACT** is the PPH limit.

(2) Particulate Matter limits are filterable only. With the exception of CE01 and CE02, PM/PM_{10} limits are the same.
(3) Hourly emission limits are based on a 24-hour average.
(4) This baghouse is optional and not required but if installed will be subject to the given emission limits.
(5) This is an uncontrolled building opening.

d. The permittee shall not exceed the maximum emission limits and shall utilize the control methods for the specified fugitive emission sources given in the following table:

Table 4.1.2(d): Material Handling Operations Fugitive Emission Limits

Emission Unit ID	Source Description	Control Technology	Pollutant[1]	PPH[2]	TPY
B215	Drop into Raw Material Loading Hopper	3-sided enclosure w/cover	$PM_{2.5}$	9.08e-04	3.98e-03
			PM_{10}	6.00e-03	2.63e-02
			PM	1.27e-02	5.55e-02
RMS	Drop onto Raw Material Stockpile	3-sided enclosure	$PM_{2.5}$	2.48e-03	1.08e-03
			PM_{10}	1.64e-02	7.13e-03
			PM	3.46e-02	1.51e-02
RM_REJ	Drop into Raw Material Reject Collection Bin	4-sided rubber drop guard	$PM_{2.5}$	8.99e-06	3.35e-06
			PM_{10}	5.94e-05	2.21e-05
			PM	1.25e-04	4.67e-05
S_REJ	Drop into Sieve Reject Collection Bin	4-sided rubber drop guard	$PM_{2.5}$	8.99e-06	3.35e-06
			PM_{10}	5.94e-05	2.21e-05
			PM	1.25e-04	4.67e-05
B170	Drop from Portable Crusher into Pit Waste Storage Pile	3-sided enclosure	$PM_{2.5}$	5.89e-03	3.18e-03
			PM_{10}	3.89e-02	2.10e-02
			PM	8.21e-02	4.43e-02
B210	Drop into B210	3-sided enclosure w/cover	$PM_{2.5}$	4.68e-03	2.05e-02
			PM_{10}	3.09e-02	1.35e-01
			PM	6.52e-02	2.86e-01
	Truck or FEL Drop into B210	None	$PM_{2.5}$	1.17e-03	5.13e-03
			PM_{10}	7.74e-03	3.39e-02
			PM	1.63e-02	7.15e-02
B230	Truck Dump to Coal Bunker	3-sided enclosure w/cover	$PM_{2.5}$	1.57e-06	6.90e-06
			PM_{10}	1.04e-05	4.56e-05
			PM	2.19e-05	9.61e-05

Emission Unit ID	Source Description	Control Technology	Pollutant(1)	PPH(2)	TPY
B231	Drop into Covered Coal Unloading Hopper	3-sided enclosure w/cover	$PM_{2.5}$	1.57e-06	6.90e-06
			PM_{10}	1.04e-05	4.56e-05
			PM	2.19e-05	9.61e-05

(1) Particulate Matter limits are filterable only.
(2) Hourly emission limits are based on a 24-hour average and are the **BACT** limits for the listed fugitive emission sources.

e. **Melting Furnace Portable Crusher**
Emissions from the Melting Furnace Portable Crusher (not including associated storage pile) shall not exceed the limits given in the following table:

Table 4.1.2(e): Melting Furnace Portable Crusher Emission Limits

Pollutant(1)	PPH(2)	TPY
$PM_{2.5}$	0.12	0.03
PM_{10}	0.36	0.10
PM	0.81	0.22

(1) Particulate Matter limits are filterable only.
(2) Hourly emission limits are based on a 24-hour average and are the **BACT** limits.

f. In addition to the particulate matter controls as required in the Emission Units Table 1.0, the raw material mixer and crusher located in the Charging Building (B220) and the coal conveyer transfer point located inside the Coal Milling Building (B235) shall be equipped with fabric filters to control particulate matter emissions from these sources. The maximum outlet grain loading concentration for each of these fabric filters shall not exceed 0.002 gr/dscf of filterable PM/PM_{10} and 0.001 gr/dscf filterable $PM_{2.5}$;.

g. **Outdoor Material Storage Areas**
All outdoor raw material, coal, waste, or recycled material storage shall be in accordance with the following:

(1) The permittee is authorized to operate one (1) raw material stockpile (RMS) that shall not exceed a base of 5,382 ft^2 and shall utilize 3-sided enclosures to minimize the potential fugitive emissions of particulate matter from wind erosion and pile activity;

(2) The permittee is authorized to operate Building 210 and 211 for raw material storage. These buildings shall utilize 3-sided enclosures and a roof to minimize the potential fugitive emissions of particulate matter from wind erosion and pile activity;

(3) The permittee is authorized to operate one (1) coal bunker (B230) that shall utilize a 3-sided enclosure, a roof, and a closeable bay door (or equivalent design) to minimize the potential fugitive emissions of particulate matter from wind erosion and pile activity;

(4) The permittee is authorized to operate one (1) recycled material stockpile. The material in this storage area is limited to the slag-like material tapped from the Melting Furnace that is of such a physical nature so as to limit any significant generation of fugitive matter from wind erosion and pile activity;

(5) The permittee is authorized to operate one (1) pit waste (crushed recycled material) storage area (B170) that shall not exceed a base of 19,375 ft^2 and shall utilize a 3-sided enclosure to minimize the potential fugitive emissions of particulate matter from wind erosion and pile activity;

(6) For all storage piles, the permittee shall manage on-pile activity so as to minimize the release of emissions; and

(7) All storage area enclosures shall be reasonably maintained and any significant holes shall be repaired immediately.

h. **Haulroads and Mobile Work Areas**
Fugitive particulate emissions resulting from use of haulroads and mobile work areas shall be minimized by the following:

(1) The permittee shall pave, and maintain such pavement, on all haulroads and mobile work areas (including a reasonable shoulder area) within the plant boundary;

(2) The permittee shall maintain access to a vacuum sweeper truck in good operating condition, and shall utilize same as needed to remove excess dirt and dust from all haulroads and mobile work areas. The haulroads and mobile work areas shall be flushed with water immediately prior to each vacuum sweeping (flushing may be part of vacuum sweeper truck); and

(3) The permittee shall collect, in a timely fashion, material spilled on haulroads that could become airborne if it dried or were subject to vehicle traffic.

i. **45CSR7**
The handling of raw materials used in the production of mineral wool and coal milling material handling operations shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) No person shall cause, suffer, allow or permit any manufacturing process or storage structure generating fugitive particulate matter to operate that is not equipped with a system, which may include, but not be limited to, process equipment design, control equipment design or

operation and maintenance procedures, to minimize the emissions of fugitive particulate matter. To minimize means such system shall be installed, maintained and operated to ensure the lowest fugitive particulate matter emissions reasonably achievable.
[45CSR§7-5.1]

j. **40 CFR 60, Subpart OOO**
The non-metallic mineral handling operations prior to the furnace building (B300) are subject to the applicable limitations and standards under 40 CFR 60, Subpart OOO including, but not limited to, the following:

(1) Affected facilities must meet the stack emission limits and compliance requirements in Table 2 of Subpart OOO within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup as required under §60.8. The requirements in Table 2 of Subpart OOO apply for affected facilities with capture systems used to capture and transport particulate matter to a control device.
[40 CFR §60.672(a)]

(2) Affected facilities must meet the fugitive emission limits and compliance requirements in Table 3 of Subpart OOO within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup as required under §60.11. The requirements in Table 3 of Subpart OOO apply for fugitive emissions from affected facilities without capture systems and for fugitive emissions escaping capture systems.
[40 CFR §60.672(b)]

(3) Truck dumping of nonmetallic minerals into any screening operation, feed hopper, or crusher is exempt from the requirements of this section.
[40 CFR §60.672(d)]

(4) If any transfer point on a conveyor belt or any other affected facility is enclosed in a building, then each enclosed affected facility must comply with the emission limits in 40 CFR §60.672(a) and (b), or the building enclosing the affected facility or facilities must comply with the following emission limits:

(1) Fugitive emissions from the building openings (except for vents as defined in §60.671) must not exceed 7 percent opacity; and

(2) Vents (as defined in §60.671) in the building must meet the applicable stack emission limits and compliance requirements in Table 2 of Subpart OOO.
[40 CFR §60.672(e)]

(5) Any baghouse that controls emissions from only an individual, enclosed storage bin is exempt from the applicable stack PM concentration limit (and associated performance testing) in Table 2 of Subpart OOO but must meet the applicable stack opacity limit and compliance requirements in Table 2 of Subpart OOO. This exemption from the stack PM concentration limit does not apply for multiple storage bins with combined stack emissions.
[40 CFR §60.672(f)]

4.1.3. Coal Mill Burner and Fluidized Bed Dryer
The Coal Mill Burner and Fluidized Bed Dryer, identified as IMF05, shall meet the following requirements:

a. The Coal Mill Burner shall not exceed an MDHI of 6.00 mmBtu/hr shall only be fired by pipeline-quality natural gas (PNG);

b. The Fluidized Bed Dryer shall have a design capacity not to exceed 200 tons per day;

c. The combined exhaust from the Coal Mill Burner and Fluidized Bed Dryer shall be vented to first a separator and then to a baghouse (IMF05-BH) for control of filterable particulate matter, the baghouse shall not exceed a maximum outlet grain limit of 0.005 gr/dscf of filterable PM/PM_{10} and 0.0025 gr/dscf filterable $PM_{2.5}$;

d. The combined exhaust of the Coal Mill Burner and Fluidized Bed Dryer shall not exceed the emission limits, and shall utilize the specified BACT Technology, as given in the following table:

Table 4.1.3(d): Coal Mill Burner and Fluidized Bed Dryer Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH	TPY
CO	n/a	n/a	0.49	2.15
NO_x	60 ppmvd @ 3% O_2	LNB, Temperature Control(1)	0.42	1.86
$PM_{2.5(2)}$	PPH Limit	Baghouse	0.26	1.06
$PM_{10(2)}$			0.32	1.33
PM(3)			0.12	0.54
SO_2		Use of Natural Gas	3.51e-03	0.02
VOCs		Good Combustion Practices(4)	0.41	1.65
CO_2e	117 lb/mmBtu	Use of Natural Gas, Good Combustion Practices(4)	703.10	3,080

(1) Drying in the Fluidized Bed Dryer shall take place at a temperature of less than 180 degrees Fahrenheit so as to prevent any combustion of the coal.
(2) Includes condensables.
(3) Filterable only.
(4) Good Combustion Practices shall mean activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.

e. **45CSR7**
The Coal Mill Burner and Fluidized Bed Dryer shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period

or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

4.1.4. **Melting Furnace**

The Melting Furnace, identified as IMF01, shall meet the following requirements:

a. The Melting Furnace shall not exceed the emission limits, and shall utilize the specified **BACT** Technology, as given in the following table:

Table 4.1.4(a): Melting Furnace Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH	TPY
CO	n/a	n/a	11.21(1)	49.10
NO_x	PPH Limit	Integrated SNCR, Oxy-Fired Burners(2)	37.37(1)	163.67
$PM_{2.5}$(3)		Baghouse	7.47	32.73
PM_{10}(3)			8.22	36.01
PM(4)	0.013 gr/dscf		2.32	10.15
SO_2	PPH Limit	Sorbent Injection in the Baghouse	33.63(1)	147.31
VOCs		Good Combustion Practices(5)	11.66	51.07
H_2SO_4	PPH Limit	Sorbent Injection in the Baghouse	3.74	16.37
Mineral Fiber	n/a	n/a	2.32	10.15
HF			0.37	1.62
HCl			0.29	1.29
COS			0.37	1.64
Total HAPs			3.43	15.04
CO_2e	PPH Limit	Energy Efficiency(6)	21,814	95,547

(1) Compliance based on a 30-day rolling average.
(2) Integrated SNCR system utilizes ammonia injection to promote a de-NOx reaction to occur. The oxy-fuel burners are specially designed to fire with O_2 instead of ambient air.
(3) Includes condensables.
(4) Filterable only.
(5) Good combustion practices include, but are not limited to the following: Proper combustion tuning, temperature, and air/fuel mixing and activities such as maintaining operating logs and

record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.

(6) Energy Efficiency measures listed in Table D-9-2 (pp. 554) of the permit application.

b. **45CSR7**
The Melting Furnace shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) Mineral acids shall not be released from any type source operation or duplicate source operation or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity given in Table 45-7B found at the end of this rule.
[45CSR§7-4.2]

c. **45CSR10**
The Melting Furnace shall comply with all applicable requirements of 45CSR10 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit the emission into the open air from any source operation an in-stack sulfur dioxide concentration exceeding 2,000 parts per million by volume from existing source operations, except as provided in subdivisions 4.1.a through 4.1.e.
[45CSR§10-3.1]

e. **40 CFR 63, Subpart DDD**
The Melting Furnace shall comply with all applicable requirements of 40 CFR 63, Subpart DDD including, but not limited to, the following:

(1) **§63.1178 For cupolas, what standards must I meet?**

(i) You must control emissions from each cupola as specified in Table 2 to this subpart.
[40 CFR§63.1178(a)]

Table 2 to Subpart DDD of Part 63—Emissions Limits and Compliance Dates

If your source is a:	And you commenced construction:	Your emission limits are:[1]	And you must comply by:[2]
2. Cupola	After May 8, 1997	0.10 lb PM per ton of melt	June 1, 1999
8. Open-top cupola	After November 25, 2011	3.2 lb of COS per ton melt	July 29, 2015[4]
10. Cupola using slag as a raw material	After November 25, 2011	0.015 lb of HF per ton melt 0.012 lb of HCl per ton melt.	July 29, 2015[4]

(1) The numeric emissions limits do not apply during startup and shutdown.
(2) Existing sources must demonstrate compliance by the compliance dates specified in this table. New sources have 180 days after the applicable compliance date to demonstrate compliance.
(4) Or upon initial startup, whichever is later.

(ii) You must meet the following operating limits for each cupola:
[40 CFR§63.1178(b)]

(A) Begin within one hour after the alarm on a bag leak detection system sounds, and complete in a timely manner, corrective actions as specified in your operations, maintenance, and monitoring plan required by §63.1187 of this subpart.
[40 CFR§63.1178(b)(1)]

(B) When the alarm on a bag leak detection system sounds for more than five percent of the total operating time in a six-month reporting period, develop and implement a written quality improvement plan (QIP) consistent with the compliance assurance monitoring requirements of §64.8(b)-(d) of 40 CFR part 64.
[40 CFR§63.1178(b)(2)]

(C) Additionally, on or after the applicable compliance date for each new or reconstructed cupola, you must either:
[40 CFR§63.1178(b)(3)]

(I) Maintain the operating temperature of the incinerator so that the average operating temperature for each three-hour block period never falls below the average temperature established during the performance test, or
[40 CFR§63.1178(b)(3)(I)]

(II) Maintain the percent excess oxygen in the cupola at or above the level established during the performance test. You must determine the percent excess oxygen using the following equation:
[40 CFR§63.1178(b)(3)(II)]

Percent excess oxygen = ((Oxygen available/Fuel demand for oxygen) - 1) * 100

Where:

Percent excess oxygen = Percentage of excess oxygen present above the stoichiometric balance of 1.00, (%).

1.00 = Ratio of oxygen in a cupola combustion chamber divided by the stoichiometric quantity of oxygen required to obtain complete combustion of fuel.

Oxygen available = Quantity of oxygen introduced into the cupola combustion zone.

Fuel demand for oxygen = Required quantity of oxygen for stoichiometric combustion of the quantity of fuel present.

4.1.5. Gutter Exhaust, Spinning Chamber, Curing Oven Hoods, Curing Oven, and Cooling Section

The Gutter Exhaust (GUT-EX), Spinning Chamber (SPN), Curing Oven Hoods (CO-HD), Curing Oven (CO), and Cooling Section (CS) shall meet the following requirements:

a. The Gutter Exhaust, Spinning Chamber, Curing Oven Hoods, Curing Oven, and Cooling Section shall not exceed the aggregate emission limits (as emitted from the Wet Electrostatic Precipitator (WESP) stack (HE01)), and each shall utilize the specified BACT Technology as given in the following table:

Table 4.1.5(a): Gutter Exhaust, Spinning Chamber, Curing Oven Hoods, Curing Oven, and Cooling Section Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH	TPY
CO	n/a	n/a	1.82	7.97
NO_x	PPH Limit	LNB, Good Combustion Practices(1)	14.55	63.73
$PM_{2.5(2)}$		WESP	19.22	84.20
$PM_{10(2)}$			21.21	92.89
PM(3)			21.21	92.89
SO_2		Use of Natural Gas	0.01	0.05
VOCs		Afterburner/ Good Combustion Practices(4)	78.02	341.73
Phenol	n/a	n/a(5)	19.37	84.84
Formaldehyde			12.79	56.02
Methanol			23.70	103.81
Mineral Fiber			21.21	92.89
Total HAPs			77.07	337.57
CO_2e	PPH Limit	Use of Natural Gas, Good Combustion Practices(1)	8,138	35,644

(1) Good combustion practices include, but are not limited to the following: Proper combustion tuning, temperature, and air/fuel mixing and activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.
(2) Includes condensables.
(3) Filterable only.
(4) The Afterburner only represents the BACT Technology for the Curing Ovens, all other sources under this table will utilize Good Combustion Practices as BACT.
(5) While the Afterburner is required as a control on Phenol, Formaldehyde, and Methanol, as these pollutants are not subject to PSD, the Afterburner is not listed here as it is not a BACT technology for these pollutants.

b. **45CSR7**
The Gutter Exhaust, Curing Oven Hoods, Curing Oven, and Spinning Chamber shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) Mineral acids shall not be released from any type source operation or duplicate source operation or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity given in Table 45-7B found at the end of this rule.
[45CSR§7-4.2]

d. **40 CFR 63, Subpart DDD**
The Gutter Exhaust, Curing Oven Hoods, Curing Oven, and Spinning Chamber shall comply with all applicable requirements of 40 CFR 63, Subpart DDD including, but not limited to, the following:

(1) **§63.1178 For cupolas, what standards must I meet?**

(i) You must control emissions from each cupola as specified in Table 2 to this subpart.
[43 CFR§60.1178(a)]

Table 2 to Subpart DDD of Part 63—Emissions Limits and Compliance Dates

If your source is a:	And you commenced construction:	Your emission limits are:[1]	And you must comply by:[2]
24. Combined vertical collection/curing operation	After November 25, 2011	2.4 lb of formaldehyde per ton melt 0.92 lb of methanol per ton melt. 0.71 lb of phenol per ton melt.	July 29, 2015[4]

(1) The numeric emissions limits do not apply during startup and shutdown.
(2) Existing sources must demonstrate compliance by the compliance dates specified in this table. New sources have 180 days after the applicable compliance date to demonstrate compliance.
(4) Or upon initial startup, whichever is later.

4.1.6. **Fleece Application**

The Fleece Application operations shall meet the following requirements:

a. The maximum emissions of VOCs and HAPs from the Fleece Application operations each shall not exceed 2.38 tons per month (BACT limit for VOCs) and 28.58 TPY; and

b. The BACT Technology for the Fleece Application operations is the use of low-VOC coatings. The monthly average of all coating materials used during fleece application operations shall not exceed 0.016 lb-VOC/lb-coating (0.016 kg-VOC/kg-coating) material as-applied on a monthly average basis; and

c. **40 CFR 63, Subpart JJJJ**

The fleece application operations shall comply with all applicable requirements of 40 CFR 63, Subpart JJJJ including, but not limited to, the following:

What emission standards must I meet?

(1) If you own or operate any affected source that is subject to the requirements of this subpart, you must comply with these requirements on and after the compliance dates as specified in §63.3330.
[40 CFR§63.3320(a)]

(2) You must limit organic HAP emissions to the level specified in paragraph (b)(1), (2), (3), or (4) of this section.
[40 CFR§63.3320(b)]

(i) No more than 5 percent of the organic HAP applied for each month (95 percent reduction) at existing affected sources, and no more than 2 percent of the organic HAP applied for each month (98 percent reduction) at new affected sources; or
[40 CFR§63.3320(b)(1)]

(ii) No more than 4 percent of the mass of coating materials applied for each month at existing affected sources, and no more than 1.6 percent of the mass of coating materials applied for each month at new affected sources; or
[40 CFR§63.3320(b)(2)]

(iii) No more than 20 percent of the mass of coating solids applied for each month at existing affected sources, and no more than 8 percent of the coating solids applied for each month at new affected sources.
[40 CFR§63.3320(b)(3)]

(iv) If you use an oxidizer to control organic HAP emissions, operate the oxidizer such that an outlet organic HAP concentration of no greater than 20 parts per million by volume (ppmv) by compound on a dry basis is achieved and the efficiency of the capture system is 100 percent.
[40 CFR§63.3320(b)(4)]

(3) You must demonstrate compliance with this subpart by following the procedures in §63.3370.
[40 CFR§63.3320(c)]

4.1.7. **Rockfon Line**

The Rockfon Line shall meet the following requirements:

a. The maximum aggregate VOC emissions from the application of glue and coatings in the Rockfon line shall not exceed 8.97 tons/month (BACT limit for VOCs) and 35.93 TPY.

b. The BACT Technology for the application of glue and coatings in the Rockfon Line is the use of low-VOC materials. The use of glue is limited to containing a maximum VOC content of 0.57 lb-VOC/gallon-glue (BACT Limit). The use of coatings are limited to containing a maximum VOC content of 0.67 lb-VOC/gallon-material (BACT Limit). No HAP-containing glues or coatings shall be used in the Rockfon Line.

c. The ovens used in the Rockfon line shall only combust PNG and each not exceed the aggregate MDHI (of all burners) specified in the following table:

Table 4.1.7(b): Rockfon Line Ovens Maximum MDHI

Oven ID	MDHI (mmBtu/hr)
RFN-E3	2.73
RFN-E4	2.05
RFN-E6	4.78
RFN-E9	2.73

d. The Rockfon Line shall not exceed the emission limits, and each shall utilize the specified **BACT** Technology as given in the following table:

Table 4.1.7(d): Rockfon Line Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH	TPY
RFN-E1: IR Zone				
$PM_{2.5(1)}$	PPH	Low-Emitting Process	0.01	0.06
$PM_{10(1)}$			0.02	0.08
$PM^{(2)}$			0.01	0.04
Total HAPs	n/a	n/a	0.02	0.10
RFN-E2: Hot Press				
$PM_{2.5(1)}$	PPH	Low-Emitting Process	0.01	0.06
$PM_{10(1)}$			0.02	0.08
$PM^{(2)}$			0.01	0.04
Total HAPs	n/a	n/a	0.02	0.10
RFN-E3: High Oven A				
CO	n/a	n/a	0.22	0.98

Pollutant	BACT Limit	BACT Technology	PPH	TPY
NO_x	0.10 lb/mmBtu	Good Combustion Practices(3)	0.27	1.17
$PM_{2.5(1)}$	PPH	Low-Emitting Process	0.09	0.38
$PM_{10(1)}$			0.12	0.51
PM(2)			0.06	0.25
SO_2	PPH	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	0.06
Total HAPs	n/a	n/a	0.10	0.43
CO_2e	PPH	Use of Natural Gas, Good Combustion Practices(3)	319.64	1,400
RFN-E4: Drying Oven 1				
CO	n/a	n/a	0.17	0.73
NO_x	0.10 lb/mmBtu	Good Combustion Practices(3)	0.20	0.87
$PM_{2.5(1)}$	PPH	Fabric Filter (RFNE4-FF)	0.06	0.27
$PM_{10(1)}$			0.08	0.36
PM(2)	0.0015 g/dscf		0.04	0.18
SO_2	PPH	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	0.05
Total HAPs	n/a	n/a	0.08	0.34
CO_2e	PPH	Use of Natural Gas, Good Combustion Practices(3)	239.73	1,050
RFN-E5: Spray Paint Cabin				
$PM_{2.5(1)}$	PPH	Fabric Filter (RFNE5-FF)	0.66	2.90
$PM_{10(1)}$			0.88	3.86
PM(2)	0.0081 g/dscf		0.44	1.93
Total HAPs	n/a	n/a	0.52	2.27
RFN-E6: Drying Oven 2/3				
CO	n/a	n/a	0.39	1.71
NO_x	0.10 lb/mmBtu	Good Combustion Practices(3)	0.47	2.04

Pollutant	BACT Limit	BACT Technology	PPH	TPY
$PM_{2.5(1)}$	PPH	Fabric Filter (RFNE6-FF)	0.09	0.41
$PM_{10(1)}$			0.13	0.55
PM(2)	0.001 g/dscf		0.06	0.28
SO_2	PPH	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.03	0.11
Total HAPs	n/a	n/a	0.15	0.66
CO_2e	PPH	Use of Natural Gas, Good Combustion Practices(3)	559.38	2,450
RFN-E7: Cooling Zone				
$PM_{2.5(1)}$	PPH	Low-Emitting Process	0.14	0.63
$PM_{10(1)}$			0.19	0.84
PM(2)			0.10	0.42
Total HAPs	n/a	n/a	0.21	0.91
RFN-E8: De-Dusting Baghouse				
$PM_{2.5(2)}$	PPH	Fabric Filter (RFNE8-FF)	0.17	0.75
$PM_{10(2)}$			0.34	1.49
PM(2)	0.0081 g/dscf		0.34	1.49
Total HAPs	n/a	n/a	0.34	1.49
RFN-E3: High Oven B				
CO	n/a	n/a	0.22	0.98
NO_x	0.10 lb/mmBtu	Good Combustion Practices(3)	0.27	1.17
$PM_{2.5(1)}$	PPH	Low-Emitting Process	0.09	0.38
$PM_{10(1)}$			0.12	0.51
PM(2)			0.06	0.25
SO_2	PPH	Use of Natural Gas	0.01	0.01
VOCs		Good Combustion Practices(3)	0.01	0.06
Total HAPs	n/a	n/a	0.10	0.43
CO_2e	PPH	Use of Natural Gas, Good Combustion Practices(3)	319.64	1,400

(1) Includes Condensables.
(2) Filterable Only.
(3) Good Combustion Practices shall mean activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.

e. As the annual emission limits of RFN-E3, RFN-E4, RFN-E6, and RFN-E9 listed under Table 4.1.7(d) are based on 8,760 hours of operation, there is no annual limit on hours of operation or natural gas combusted on an annual basis for these units.

f. **45CSR7**
The Rockfon Line shall comply with all applicable requirements of 45CSR7 including, but not limited to, the following:

(1) No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.
[45CSR§7-3.1]

(2) The provisions of subsection 3.1 shall not apply to smoke and/or particulate matter emitted from any process source operation which is less than forty (40) percent opacity for any period or periods aggregating no more than five (5) minutes in any sixty (60) minute period.
[45CSR§7-3.2]

(3) No person shall cause, suffer, allow or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.
[45CSR§7-4.1]

(4) Mineral acids shall not be released from any type source operation or duplicate source operation or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity given in Table 45-7B found at the end of this rule.
[45CSR§7-4.2]

4.1.8. **Fuel Burning Units**
The Fuel Burning Units, identified as IMF24, CM03, CM04, and RFN10, shall meet the following requirements:

a. The units shall only combust PNG and each not exceed an aggregate MDHI (of all burners) of 5.1 mmBtu/hr (1,500 kW):

b. The units shall not exceed the emission limits given in the following table:

Table 4.1.8(b): Per-Fuel Burning Unit Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH	TPY
CO	n/a	n/a	0.42	1.84
NO_x	30 ppm_vd @ 3% O_2	LNB, Good Combustion Practices[1]	0.18	0.79
NO_x (IMF24 Only)	60 ppm_vd @ 3% O_2	LNB, Good Combustion Practices[1]	0.36	1.58
$PM_{2.5(2)}$	PPH	Use of Natural Gas, Good Combustion Practices[1]	0.01	0.01
$PM_{10(2)}$				
PM[3]			0.01	0.04
SO_2		Use of Natural Gas	0.01	0.01
VOCs	PPH Limit	Good Combustion Practices[1]	0.03	0.12
CO_2e	PPH Limit	Use of Natural Gas, Good Combustion Practices[1]	600	2,627

(1) LNB = Low-NO_x Burning Technology. Good Combustion Practices shall mean activities such as maintaining operating logs and record-keeping, conducting training, ensuring maintenance knowledge, performing routine and preventive maintenance, conducting burner and control adjustments, monitoring fuel quality, etc.
(2) Includes Condensables.
(3) Filterable Only.

c. As all the annual emissions of the units listed under Table 4.1.8(b) are based on 8,760 hours of operation, there is no annual limit on hours of operation or natural gas combusted on an annual basis for those units; and

d. **45CSR2**
No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any fuel burning unit which is greater than ten (10) percent opacity based on a six minute block average.
[40CSR§2-3.1]

4.1.9. **Storage Tanks**
Use of the volatile organic liquid (VOL) storage tanks shall be in accordance with the following:

a. Tank size shall be limited as specified under Table 1.0 of this permit;

b. The aggregate emissions of VOCs from all storage shall not exceed 0.19 tons/year (**BACT** Limit); and

c. Material stored shall be as specified and the aggregate annual storage tank throughputs (in gallons) shall not exceed those given in the following table:

Table 4.1.9(c): Storage Tanks Throughput Limits

Tank ID	Material Stored	Throughput
TK-DF	Diesel	20,000
TK-UO	Used Motor and Gear Oil	15,000
TK-TO1	Thermal Oil	681
TK-TO2	Thermal Oil	681
TK-TO3	Thermal Oil	2,642
TK-TO4	Thermal Oil	2,642
TK-DO	De-Dust Oil	200,000
TK-RS1 through TK-RS7	Resin	8,400,000(1)
TK-CA	Coupling Agent Solution	16,000
TK-AD	Binder Additive	65,000
TK-BM	Binder Solution(2)	24,000,000
TK-BC	Binder Solution(2)	24,000,000
TK-BD	Binder Solution(2)	24,000,000
TK-BS1 through TK-BS3	Fleece Coating	1,479,999(1)
TK-DOD	De-Dust Oil	200,000
TK-PD	Diluted Water-Based Paint	1,008,701
TK-PDD	Diluted Water-Based Paint	1,008,701

(1) This number represents the aggregate limit for all specified storage tanks.
(2) May refer to any type of Binder Solution that has an average vapor pressure less than 0.239 psia at 60 degrees Fahrenheit.

d. For **BACT** purposes, the permittee shall utilize good operating practices in the operation of the storage tanks. Good operating practices shall mean maintaining and operating the storage tanks according to manufacturers recommendations and regularly inspecting the tanks for areas of disrepair or failure that would allow the escape of VOC-containing vapors.

4.1.10. **Emergency Fire Pump Engine**

The Emergency Fire Pump Engine, identified as EFP1, shall meet the following requirements:

a. The unit shall not exceed 197 horsepower (hp), shall be fired only with Ultra-Low Sulfur Diesel (with a maximum sulfur content not to exceed 0.0015%), and shall not operate in excess of 100 hours per year during periods not defined as emergencies;

b. The maximum emissions from the Emergency Generator shall not exceed the limits given in the following table:

Table 4.1.10(b): Emergency Fire Pump Engine Emission Limits

Pollutant	BACT Limit	BACT Technology	PPH	TPY
CO	n/a	n/a	1.13	0.28
NO_x	4.0 g/kw-hr	Subpart IIII Certification, Annual Hrs of Op Limit	1.30	0.32
$PM_{2.5(1)}$	PPH		0.08	0.02
$PM_{10(1)}$				
$PM^{(2)}$	0.20 g/kw-hr		0.06	0.02
SO_2	PPH Limit	Annual Hrs of Op(3) Limit ULSD Fuel	0.01	0.01
VOCs	PPH Limit	Subpart IIII Certification, Annual Hrs of Op Limit	0.19	0.05
CO_2e	PPH Limit	Annual Hrs of Op(3) Limit	225	56

(1) Includes Condensables.
(2) Filterable Only.
(3) Non-emergency hours of operation.

c. **40 CFR 60, Subpart IIII**
The Emergency Fire Pump Engine shall meet all applicable requirements under 40 CFR 60, Subpart IIII including the following:

(1) Owners and operators of fire pump engines with a displacement of less than 30 liters per cylinder must comply with the emission standards in table 4 to this subpart, for all pollutants. **[40 CFR §60.4205(c)]**

(2) As stated in §§60.4202(d) and 60.4205(c), you must comply with the following emission standards for stationary fire pump engines:

Table 4 to Subpart IIII of Part 60—Emission Standards for Stationary Fire Pump Engines

Maximum Engine Power	Model year(s)	NMHC + NOX	CO	PM
130≤KW<225 (175≤HP<300)	2009+(3)	4.0(3.0)	3.5(2.6)	0.20(0.15)

(3) In model years 2009-2011, manufacturers of fire pump stationary CI ICE in this engine power category with a rated speed of greater than 2,650 rpm may comply with the emission limitations for 2008 model year engines.

d. **40 CFR 63, Subpart ZZZZ**
An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part.
[40 CFR §63.6590(c)]

4.1.11. Miscellaneous Operations/Processes

a. **Dry Ice Cleaning**
The maximum design capacity of the dry ice production unit (DI) shall not exceed 4.37 tons/day (3.97 tonne/day), and the emissions of CO_2 from the use dry ice cleaning shall not exceed (**BACT** limit) 363.76 PPH (165 kg/hr) or 1,594 TPY (1,446 tonne/year).

b. **Cooling Towers**
The Cooling Towers shall operate in accordance with the following requirements:

(1) The Cooling Tower shall use the control device specified under Section 1.0 at all times in operation and not exceed the specified maximum design and operational limits in the following table:

Table 4.1.11(b)(1): Cooling Tower Specifications

ID No.	Max Design Capacity Water Circulation Pump (gal/min)	Total Dissolved Solids (ppm)	Mist Eliminator Max Drift Rate (%)
IMF02	1,321 (300 m^3/hr)	1,500	0.0010
HE02	308 (70 m^3/hr)	1,500	0.0010

(2) The maximum emissions from the Cooling Towers shall not exceed the limits given in the following table:

Table 4.1.11(b)(2): Cooling Tower Emission Limits[1]

Pollutant	BACT Limit	BACT Technology	PPH	TPY
IMF02				
$PM_{2.5(1)}$	PPH	High Efficiency Drift Eliminator (@ 0.001% Drift)	4.96e-03	0.02
$PM_{10(1)}$			0.01	0.04
PM[2]			0.01	0.04
HE02				
$PM_{2.5(1)}$	PPH	High Efficiency Drift Eliminator (@ 0.001% Drift)	1.16e-03	0.01
$PM_{10(1)}$			2.31e-03	0.01
PM			2.31e-03	0.01

c. **Product Marking**
The Product Marking Operations, identified as P_MARK, shall operate in accordance with the following requirements:

(1) The MDHI of the burners used with the branding wheels used in Product Marking shall not exceed 0.40 mmBtu/hr and shall only be fired with PNG. Combustion exhaust from the burners shall not exceed the following emissions:

Table 4.1.11(c)(1): Product Marking Burners Combustion Exhaust Emission Limits

<table>
<tr><th>Pollutant</th><th>BACT Limit</th><th>BACT Technology</th><th>PPH</th><th>TPY</th></tr>
<tr><td>CO</td><td>n/a</td><td>n/a</td><td>0.03</td><td>0.14</td></tr>
<tr><td>NO_x</td><td rowspan="8">PPH</td><td rowspan="8">Use of Natural Gas</td><td>0.04</td><td>0.17</td></tr>
<tr><td>$PM_{2.5(1)}$</td><td rowspan="2">2.96e-03</td><td rowspan="2">0.01</td></tr>
<tr><td>$PM_{10(1)}$</td></tr>
<tr><td>$PM^{(2)}$</td><td>7.41e-04</td><td>0.01</td></tr>
<tr><td>SO_2</td><td>2.34e-04</td><td>0.01</td></tr>
<tr><td>VOCs</td><td>2.14e-03</td><td>0.01</td></tr>
<tr><td>CO_2e</td><td>600</td><td>2,627</td></tr>
</table>

(1) Includes Condensables.
(2) Filterable Only.

(2) As all the annual emissions listed under Table 4.1.11(c)(1) are based on 8,760 hours of operation, there is no annual limit on hours of operation or natural gas combusted on an annual basis for the unit; and

(3) VOC emissions from the Product Marking operations shall not exceed 9.47 TPY **(BACT** Limit) and no HAP-containing inks or cleaners shall be used in the Product Marking Operations.

4.1.12. Control Devices

a. **Operation and Maintenance of Air Pollution Control Equipment.** The permittee shall, to the extent practicable, install, maintain, and operate all pollution control equipment listed in Section 1.0 and associated monitoring equipment in a manner consistent with safety and good air pollution control practices for minimizing emissions, or comply with any more stringent limits set forth in this permit or as set forth by any State rule, Federal regulation, or alternative control plan approved by the Secretary.
[45CSR§13-5.11.]

b. **Inherent SNCR De-NO_x System**
The permittee shall design and operate the Melting Furnace so as to promote the inherent removal of NO_x from the exhaust gas stream. The permittee shall maintain a proper temperature profile for NO_x removal and inject aqueous ammonia as necessary to facilitate the SNCR process. Compliance with 4.1.12(b) shall be determined by showing compliance with the NO_x emission limits given under Table 4.1.4(a) using the CEMS as required under 4.2.6.

c. **Sorbent Injection**
The permittee shall utilize dry sorbent injection in conjunction with Baghouse IMF-01 so as to reduce the emissions of SO_2, H_2SO_4, HF, and HCl from the Melting Furnace. *[**Reserved**]* Compliance with 4.1.12(c) shall be determined by showing compliance with the SO_2 emission limits given under Table 4.1.4(a) using the CEMS as required under 4.2.6.

d. **Baghouse IMF01-BH**
Use of Baghouse IMF01-BH shall be in accordance with the following requirements:

(1) The permittee shall monitor the differential pressure drop of IMF01-BH so as to ensure proper continuous operation of the baghouse. The monitoring system shall include an alarm to notify the control room if the differential pressure drop indicates abnormal performance of the unit. The appropriate alarm set-point(s) shall be determined as given under 4.1.12(g).

(2) **40 CFR 63, Subpart DDD**
How do I comply with the particulate matter standards for existing, new, and reconstructed cupolas? To comply with the PM standards, you must meet all of the following:
[40 CFR §63.1181]

(i) Install, adjust, maintain, and continuously operate a bag leak detection system for each fabric filter.
[40 CFR §63.1181(a)]

(ii) Do a performance test as specified in §63.1188 of this subpart and show compliance with the PM emission limits while the bag leak detection system is installed, operational, and properly adjusted.
[40 CFR §63.1181(b)]

(iii) Begin corrective actions specified in your operations, maintenance, and monitoring plan required by §63.1187 of this subpart within one hour after the alarm on a bag leak detection system sounds. Complete the corrective actions in a timely manner.
[40 CFR §63.1181(c)]

(iv) Develop and implement a written QIP consistent with compliance assurance monitoring requirements of 40 CFR 64.8(b) through (d) when the alarm on a bag leak detection system sounds for more than five percent of the total operating time in a six-month reporting period.
[40 CFR §63.1181(d)]

e. **Wet Electrostatic Precipitator (WESP)**
The operation of the WESP shall be in accordance with the following requirements:

(1) The permittee shall utilize a WESP, identified as HE01, so as to reduce the particulate matter emissions from the Gutter Exhaust, Spinning Chamber, Curing Oven Hoods, the Afterburner, and the Cooling Section at all times Melting, Spinning, Curing and Cooling operations are ongoing; and

(2) The permittee shall monitor the secondary voltage range of the WESP for optimum mitigation of particulate matter emissions from the sources listed under 4.1.12(e)(1). The monitoring system shall include an alarm to notify the control room if the secondary voltage indicates abnormal performance of the unit. The appropriate alarm set-point(s) shall be determined as given under 4.1.12(g).

f. **Curing Oven Afterburner**
The Curing Oven Afterburner, CO-AB, shall operate according to the following requirements:

(1) The Curing Oven Afterburner shall not exceed a burner capacity of 6.83 mmBtu/hr and shall be in operation at all times when the Curing Oven is in operation and is venting VOC-containing vapors;

(2) **45CSR6**
The Curing Oven Afterburner is subject to 45CSR6. The requirements of 45CSR6 include but are not limited to the following:

(i) The permittee shall not cause, suffer, allow or permit particulate matter to be discharged from the flares into the open air in excess of the quantity determined by use of the following formula:

Emissions (lb/hr) = F x Incinerator Capacity (tons/hr)

Where, the factor, F, is as indicated in Table I below:

Table I: Factor, F, for Determining Maximum Allowable Particulate Emissions

Incinerator Capacity	Factor F
A. Less than 15,000 lbs/hr	5.43
B. 15,000 lbs/hr or greater	2.72

[45CSR§6-4.1]

(ii) No person shall cause, suffer, allow or permit emission of smoke into the atmosphere from any incinerator which is twenty (20%) percent opacity or greater.
[45CSR6 §4.3]

(iii) The provisions of paragraph (i) shall not apply to smoke which is less than forty (40%) percent opacity, for a period or periods aggregating no more than eight (8) minutes per start-up.
[45CSR6 §4.4]

(iv) No person shall cause or allow the emission of particles of unburned or partially burned refuse or ash from any incinerator which are large enough to be individually distinguished in the open air.
[45CSR6 §4.5]

(v) Incinerators, including all associated equipment and grounds, shall be designed, operated and maintained so as to prevent the emission of objectionable odors.
[45CSR6 §4.6]

(vi) Due to unavoidable malfunction of equipment, emissions exceeding those provided for in this rule may be permitted by the Director for periods not to exceed five (5) days upon specific application to the Director. Such application shall be made within twenty-four (24) hours of the malfunction. In cases of major equipment failure, additional time periods may be granted by the Director provided a corrective program has been submitted by the owner or operator and approved by the Director.
[45CSR6 §8.2]

(3) **40 CFR 63, Subpart DDD**

(i) How do I comply with the formaldehyde, phenol, and methanol standards for existing, new, and reconstructed combined collection/curing operations? To comply with the formaldehyde, phenol, and methanol standards, you must meet all of the following: **[40 CFR §63.1183]**

(A) Install, calibrate, maintain, and operate a device that continuously measures the operating temperature in the firebox of each thermal incinerator. **[40 CFR §63.1183(a)]**

(B) Conduct a performance test as specified in §63.1188 while manufacturing the product that requires a binder formulation made with the resin containing the highest free-formaldehyde content specification range. Show compliance with the formaldehyde, phenol, and methanol emissions limits, specified in Table 2 to this subpart, while the device for measuring the control device operating parameter is installed, operational, and properly calibrated. Establish the average operating parameter based on the performance test as specified in §63.1185(a). **[40 CFR §63.1183(b)]**

(C) During the performance test that uses the binder formulation made with the resin containing the highest free-formaldehyde content specification range, record the free-formaldehyde content specification range of the resin used, and the formulation of the binder used, including the formaldehyde content and binder specification. **[40 CFR §63.1183(c)]**

(D) Following the performance test, monitor and record the free-formaldehyde content of each resin lot and the formulation of each batch of binder used, including the formaldehyde, phenol, and methanol content. **[40 CFR §63.1183(d)]**

(E) Maintain the free-formaldehyde content of each resin lot and the formaldehyde content of each binder formulation at or below the specification ranges established during the performance test. **[40 CFR §63.1183(e)]**

(F) Following the performance test, measure and record the average operating temperature of the incinerator as specified in §63.1185(b) of this subpart. **[40 CFR §63.1183(f)]**

(G) Maintain the operating temperature of the incinerator so that the average operating temperature for each three-hour block period never falls below the average temperature established during the performance test. **[40 CFR §63.1183(g)]**

(H) Operate and maintain the incinerator as specified in your operations, maintenance, and monitoring plan required by §63.1187 of this subpart. **[40 CFR §63.1183(h)]**

g. The determination of appropriate alarm set-points under this section shall be based on data obtained from performance testing, manufacturing recommendations, or operational experience. The permittee shall maintain on-site, and update as necessary, a certified report listing the set-points and the basis for their selection. Any changes to the set-points shall be accompanied by the date of the change and reason for the change. The permittee shall, to the extent reasonably possible, operate the control devices within the operating ranges at all times the associated emission units are in operation and venting emissions. If an alarm occurs, the permittee shall attempt to immediately correct the problem and follow the record-keeping procedures under 4.4.3.

4.1.13. **Stack Parameters**
The emission point stack parameters (Inner Diameter, Emission Point Elevation, and UTM Coordinates) of each source identified under the Emission Units Table 1.0 shall be in accordance with the specifications as given on the Emission Points Data Sheet in the most updated version of Permit Application R14-0037.

4.1.14. The permittee shall meet all applicable requirements, including those not specified above, as given under 45CSR2, 45CSR6, 45CSR7, 45CSR10, 40 CFR 60, Subparts OOO and IIII, and 40 CFR 63, Subparts DDD, JJJ, ZZZZ, and DDDDD. Any final revisions made to the above rules will, where applicable, supercede those specifically cited in this permit.

4.2. Monitoring, Compliance Demonstration, Recording and Reporting Requirements

4.2.1. **Maximum Design Capacity Compliance**
Compliance with the maximum design capacity limitations as given under 4.1. shall be based on a clear and visible boilerplate rating or on product literature, manufacturer's data, or equivalent documentation that shows that the specific emission unit(s) or processing line in question is limited by design to a throughput or production rate that does not exceed the specified value under 4.1.

4.2.2. **Maximum Design Heat Input Compliance**
Compliance with the various combustion unit MDHI limitations as given under 4.1. shall be based on a clear and visible boilerplate rating or on product literature, manufacturer's data, or equivalent documentation that shows that the specific emission unit(s) in question is limited by design to an MDHI that does not exceed the specified value under 4.1.

4.2.3. **Material/Production Throughputs**
To determine continuous compliance with maximum production, throughputs, and combustion limits given under in 4.1 of the permit, the permittee shall monitor and record the following:

Table 4.2.3: Facility Quantities Monitored/Recorded

Quantity Monitored/Recorded	Emission Unit(s)	Measured Units
Portable Melt Crushing	Portable Melt Crusher	hours of operation/year
Emergency Fire Pump Hours of Operation(1)	EFP1	Hours of Operation/Year
Storage Tank Throughputs	Various	gallons/year

(1) Non-emergency hours of operation.

4.2.4. **Baghouse/Filter Vents**
To determine continuous compliance with the filter/baghouse emission limits given under Section 4.1 of the permit, the permittee shall maintain and operate the control devices according to the requirements given under 4.1.12(a). The permittee shall keep a record of all significant maintenance or repair performed on these control devices (changing out bags, replacing filter material, etc.).

4.2.5. **Coal Fluidized Bed Dryer**
To determine continuous compliance with the maximum temperature requirement given under Table 4.1.3(d) - footnote (1), the permittee shall install and maintain instrumentation in the Coal Fluidized Bed Dryer so as to monitor and record the temperature in the drying zone of the dryer.

4.2.6. **Melting Furnace CEMS (IMF01)**
Within 60 days after achieving the maximum design mineral wool production rate at which the facility will be operated, but not later than 180 days after initial startup, the permittee shall, to show continuous compliance with the CO, NO_x, and SO_2 emission limits as given under 4.1.4(a), install and operate a Continuous Emissions Monitoring System (CEMS) for monitoring the emissions of CO, NO_x, and SO_2 from IMF01. The CEMS shall be installed, maintained and operated according to the manufacturers design, specifications, and recommendations, of which a protocol shall be developed by the permittee and approved by the Director prior to operation. The CEMS shall meet the applicable performance specifications required by 40 Part 60, Appendix B, the applicable quality assurance procedures required in 40 CFR Part 60, Appendix F, and the requirements of 40 CFR 60.13. In lieu of the requirements of 40 CFR Part 60, Appendix F, 5.1.1, 5.1.3, and 5.1.4, the permittee may conduct either a Relative Accuracy Audit (RAA) or a Relative Accuracy Test Audit (RATA) on the CEMS at least once every three (3) years. The permittee shall conduct Cylinder Gas Audits (CGA) each calendar quarter during which a RAA or a RATA is not performed. Data recorded by the CEMS shall be kept for a period not less than three (3) years and shall be made available to the Director or his/her representative upon request.

4.2.7. **Fleece Application Station**
To determine continuous compliance with the VOC/HAP emission limits and the low-VOC requirement given under 4.1.6(a) and (b), the permittee shall monitor and record the following:

(1) The monthly and twelve-month rolling total of the amount (in tons) of VOCs/HAPs used in the fleece application process. The amount shall be based on actual material properties (VOC/HAP contents and material densities) and the amount of material used during the applicable time period. The permittee shall assume a 100% volatilization of all VOCs/HAPs used in the fleece application process and no control percentage applied. The material properties shall be based on applicable vendor data, MSDS, or Certified Product Data Sheets; and

(2) The average monthly as-applied VOC/HAP content (in lb-VOC/lb-coating and lb-HAP/lb-coating) as based on the procedures under 40 CFR 63, Subpart JJJJ, Section §63.3370(a)(2).

4.2.9. **Rockfon Line Coatings/Glue Usage**
To determine continuous compliance with the VOC emission limit and the low-VOC BACT requirements given under 4.1.7(a) and (b), the permittee shall monitor and record the monthly and twelve-month rolling total of the amount (in tons) of VOCs used in the Rockfon coating and gluing process. The amount shall be based on actual material properties (VOC contents and material densities) and the amount of material used during the applicable time period. The permittee shall assume a 100% volatilization of all VOCs used in the Rockfon coating and gluing process and no control percentage applied. The material properties shall be based on applicable vendor data, MSDS, or Certified Product Data Sheets.

4.2.10. **Ultra Low Sulfur Fuel**
For the purposes of demonstrating continuing compliance with the maximum sulfur content limit under 4.1.10(a), the permittee shall, at a minimum of once per calendar year, obtain from the fuel oil supplier a certification of the sulfur content of the fuel combusted in the Emergency Fire Pump Engine. An alternative means of determining compliance with 4.2.10. will be subject to prior approval from the Director.

4.2.11. **Cooling Tower**

For the purposes of demonstrating initial and continuing compliance with the operational limits set forth in Table 4.1.11(b)(1), the permittee shall, for both cooling towers, within 180 days of startup, take an initial grab sample of the cooling tower circulating water and analyze such to determine the total solids content of the cooling tower circulating water. Thereafter, the permittee shall test for solids content on an annual basis (with no more than 14 months between tests).

4.2.12. **Product Marking**

To determine continuous compliance with the Product Marking (P_MARK) VOC emission limits and given under 4.1.11(c)(3), the permittee shall monitor and record the monthly and twelve-month rolling total of the amount (in tons) of VOCs used in the Product Marking process. The amount shall be based on actual material properties (VOC contents and material densities) and the amount of material used during the applicable time period. The permittee shall assume a 100% volatilization of all VOCs used in the Product Marking process and no control percentage applied. The material properties shall be based on applicable vendor data, MSDS, or Certified Product Data Sheets.

4.2.13. **Control Device Monitoring**

The permittee shall install, maintain, and operate instrumentation to continuously monitor and record the control device parameters as required under 4.1.12 of this permit including, at a minimum, the following:

Table 4.2.13: Control Device Parameters Monitored/Recorded

Control Device	Control Device ID	Parameter
Melting Furnace Baghouse	IMF01-BH	Pressure Drop
WESP	WESP	Secondary Voltage
Curing Oven Afterburner	CO-AB	Firebox Temperature(1)

(1) Pursuant to 40 CFR 63, Subpart DDD, §63.1182.

4.2.14. **Visible Emissions Compliance Demonstrations**

Visible emissions Monitoring, Compliance Demonstration, Recording and Reporting shall be in accordance with the following requirements:

a. **45CSR2**

Upon request by the Secretary, compliance with the visible emission requirements of 3.1 [of 45CSR2] shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 or by using measurements from continuous opacity monitoring systems approved by the Secretary. The Secretary may require the installation, calibration, maintenance and operation of continuous opacity monitoring systems and may establish policies for the evaluation of continuous opacity monitoring results and the determination of compliance with the visible emission requirements of 3.1 [of 45CSR2]. Continuous opacity monitors shall not be required on fuel burning units which employ wet scrubbing systems for emission control;
[40CSR§2-3.2]

b. **45CSR6**

Compliance with the afterburner opacity requirements given under 4.1.12(f)(2)(i) and (ii) shall be based on the compliance demonstrations required for emission point HE01 as given under 4.2.14(c) and (e);

c. **45CSR7**
At such reasonable time(s) as the Secretary may designate, compliance with the visible emission requirements of 4.1.2(i), 4.1.3(e), 4.1.4(b), 4.1.5(b), and 4.1.7(f) shall be determined in accordance with the procedures outlined under 45CSR7A;

d. **40 CFR 60, Subpart OOO**
The permittee shall meet all applicable visible emissions Monitoring, Compliance Demonstration, Recording and Reporting requirements as given under 40 CFR 60, Subpart OOO, Sections §60.674 through §60.676;

e. **IMF01, HE01, CE01, and IMF05.**
Emission Points IMF01, HE01, CE01, and IMF05 are subject to the following visible emissions monitoring and compliance demonstration requirements:

(1) In order to determine compliance with the opacity limits of 4.1.3(e), 4.1.4(b), 4.1.5(b), and 4.1.7(f) of this permit, the permittee shall conduct visible emission checks and/or opacity monitoring and recordkeeping for Emission Points IMF01, HE01, CE01, and IMF05 in accordance with the following:

(i) The visible emission check shall determine the presence or absence of visible emissions. At a minimum, the observer must be trained and knowledgeable regarding the effects of background contrast, ambient lighting, observer position relative to lighting, wind, and the presence of uncombined water (condensing water vapor) on the visibility of emissions. This training may be obtained from written materials found in the References 1 and 2 from 40CFR Part 60, Appendix A, Method 22 or from the lecture portion of the 40CFR Part 60, Appendix A, Method 9 certification course;

(ii) Visible emission checks shall be conducted at least once per calendar month with a maximum of forty-five (45) days between consecutive readings. These checks shall be performed for a sufficient time interval, but no less than one (1) minute, to determine if any visible emissions are present. Each observation must be recorded as either visible emissions observed or no visible emissions observed. Visible emission checks shall be performed during periods of normal facility operation and appropriate weather conditions;

(iii) If visible emissions are present at a source(s) the permittee shall perform Method 9 readings to confirm that visible emissions are within the limits of 4.1.10 of this permit. Said Method 9 readings shall be taken as soon as practicable, but within seventy-two (72) hours of the Method 22 emission check; and

(iv) If, one year of monthly Method 22 readings show that there are no visible emissions, then the frequency of observations can be reduced to quarterly. If, during quarterly checks, visible emissions are observed, then the frequency of observations shall be returned to monthly.

f. For the purpose of demonstrating compliance with the visible emissions and opacity requirements, the permittee shall maintain records of the visible emission opacity tests and checks. The permittee shall maintain records of all monitoring data required by 4.2.14 documenting the date and time of each visible emission check, the emission point or equipment/ source identification number, the name or means of identification of the observer, the results of the check(s), whether the visible emissions are normal for the process, and, if applicable, all corrective measures taken or planned. The permittee shall also record the general weather conditions (i.e. sunny, approximately 80°F, 6-10 mph NE wind) during the visual emission check(s). Should a visible emission observation be required to be performed per the requirements specified in Method 9, the data records of each observation shall be maintained per the requirements of Method 9. For an emission unit out of service during the evaluation, the record of observation may note "out of service" (O/S) or equivalent; and

g. Any deviation of the allowable visible emission requirement for any emission source discovered during observation using 40CFR Part 60, Appendix A, Method 9 must be reported in writing to the Director of the DAQ as soon as practicable, but within ten (10) calendar days, of the occurrence and shall include, at a minimum, the following information: the results of the visible determination of opacity of emissions, the cause or suspected cause of the violation(s), and any corrective measures taken or planned.

4.2.15 **Emission Point Map**
The permittee shall prepare and maintain an emission point map of the facility. This map shall consist of a diagram of the location and identification of all emission points at the facility that vent to ambient air. A legend shall be prepared with the map that identifies the emission point type and source(s) contributing to that emission point. This map shall be prepared within ninety (90) days of permit issuance and thereafter be updated as necessary to reflect current facility operations. The map(s) shall be retained on-site and be made available to the Director or his/her duly authorized representative upon request.

4.3. Performance Testing Requirements

4.3.1. At such reasonable time(s) as the Secretary may designate, in accordance with the provisions of 3.3 of this permit, the permittee shall conduct or have conducted test(s) to determine compliance with the emission limitations established in this permit and/or applicable regulations.

4.3.2. **Emissions Point Performance Testing**
Within 60 days after achieving the maximum mineral wool production rate at which the facility will be operated, but not later than 180 days after initial startup, the permittee shall conduct, or have conducted, in accordance with a protocol submitted pursuant to 3.3.1(c), performance tests on the emission units (as emitted from the listed emission points) to show compliance with the specified pollutants as given in the following table:

Table 4.3.2.: Performance Testing Requirements

Emission Unit(s)	Emission Point	Pollutants	Limit
Melting Furnace	IMF01	All Pollutants under Table 4.1.4(a) with the exception of CO_2e.	PPH
Gutter Exhaust, Curing Oven Hoods, Curing Oven, and Spinning Chamber	HE01	All Pollutants under Table 4.1.5(a) with the exception of SO_2.(1)	PPH
Coal Mill Burner and Fluidized Bed Dryer	IMF05	$PM_{2.5(2)}$, $PM_{10(2)}$, $PM^{(3)}$	PPH
Rockfon Line	RFNE8	$PM_{2.5(3)}$, $PM_{10(3)}$, $PM^{(3)}$	PPH g/dscf (PM only)

Emission Unit(s)	Emission Point	Pollutants	Limit
De-Dusting Baghouse (CE01-BH)	CE01	$PM_{2.5(3)}$, $PM_{10(3)}$, $PM^{(3)}$	PPH g/dscf
Recycle Building Vent 1	CM10	$PM_{2.5(3)}$, $PM_{10(3)}$, $PM^{(3)}$	PPH g/dscf

(1) Compliance with the CO_2e emission limit will be based on the same methodology as the calculations included in the permit application with the exception, however, that the permittee shall conduct a performance test for N_2O and substitute actual data into the calculations methodology in place of the N_2O testing data acquired from another facility.
(2) Includes Condensables.
(3) Filterable Only.

4.3.3 With respect to the performance testing required above under Section 4.3.2, the permittee shall, after the initial performance test, periodically conduct additional performance testing on the specified sources according to the following schedule:

Table 4.3.3.: Performance Testing Schedule

Test	Test Results	Retesting Frequency
Initial Baseline	<50% of weight emission standard	Once/3 years
Initial Baseline	between 50% and 80 % of weight emission standard	Once/2 years
Initial Baseline	>80% of weight emission standard	Annual
Annual	after three successive tests indicate mass emission rates <50% of weight emission standard	Once/3 years
Annual	after two successive tests indicate mass emission rates <80 % of weight emission standard	Once/2 years
Annual	any tests indicates a mass emission rate >80% of weight emission standard	Annual
Once/2 years	After two successive tests indicate mass emission rates <50% of weight emission standard	Once/3 years
Once/2 years	any tests indicates a mass emission rate <80 % of weight emission standard	Once/2 years
Once/2 years	any tests indicates a mass emission rate >80% of weight emission standard	Annual
Once/3 years	any tests indicates a mass emission rate <50% of weight emission standard	Once/3 years
Once/3 years	any test indicates mass emission rates between 50% and 80 % of weight emission standard	Once/2 years
Once/3 years	any test indicates a mass emission rate >80% of weight emission standard	Annual

4.3.4. Performance testing for pollutants monitored by CEMS (CO, NO_x, and SO_2 emitted from the Melting Furnace) are not subject to the performance testing schedule given under Table 4.3.4 and any performance testing shall, unless at such other reasonable time(s) as the Secretary may designate, be conducted on a schedule consistent with the required RATA testing.

4.3.5. The permittee shall use the test methods specified in Table 4.3.6. unless granted approval in writing by the Director to use an alternative test method in a protocol submitted pursuant to 3.3.1(c).

Table 4.3.5: Performance Test Methods

Pollutant	Test Method[(1)]
CO	Method 10
NO_x	Method 7E
$PM_{2.5}$ (filterable only)	Method 201A
PM_{10}/PM (filterable only)	Method 5
$PM_{2.5}$/PM_{10} (condensable)	Method 202
SO_2	Method 6
VOCs	Method 18/25A
COS	Method 15
HF/HCl	Method 26
N_2O	Method 7B
H_2SO_4	Method 8

(1) All test methods refer to those given under 40 CFR 60, Appendix A

4.4. Additional Recordkeeping Requirements

4.4.1. **Record of Monitoring.** The permittee shall keep records of monitoring information that include the following:

a. The date, place as defined in this permit and time of sampling or measurements;

b. The date(s) analyses were performed;

c. The company or entity that performed the analyses;

d. The analytical techniques or methods used;

e. The results of the analyses; and

f. The operating conditions existing at the time of sampling or measurement.

4.4.2. **Record of Maintenance of Air Pollution Control Equipment.** For all pollution control equipment listed in Section 1.0, the permittee shall maintain accurate records of all required pollution control equipment inspection and/or preventative maintenance procedures.

4.4.3. **Record of Malfunctions of Air Pollution Control Equipment.** For all air pollution control equipment listed in Section 1.0, the permittee shall maintain records of the occurrence and duration of any malfunction or operational shutdown of the air pollution control equipment during which excess emissions occur. For each such case, the following information shall be recorded:

a. The equipment involved.

b. Steps taken to minimize emissions during the event.

c. The duration of the event.

d. The estimated increase in emissions during the event.

For each such case associated with an equipment malfunction, the additional information shall also be recorded:

e. The cause of the malfunction.

f. Steps taken to correct the malfunction.

g. Any changes or modifications to equipment or procedures that would help prevent future recurrences of the malfunction.

4.5. Additional Reporting Requirements

4.5.1. The permittee shall submit the following information to the DAQ according to the specified schedules:

a. The permittee shall submit reports of all required monitoring on or before September 15 for the reporting period January 1 to June 30 and March 15 for the reporting period July 1 to December 31. All instances of deviation from permit requirements must be clearly identified in such reports; and

b. The permittee shall submit to the Director on or before March 15, a certification of compliance with all requirements of this permit for the previous calendar year ending on December 31. If, during the previous annual period, the permittee had been out of compliance with any part of this permit, it shall be noted along with the following information: 1) the source/equipment/process that was non-compliant and the specific requirement of this permit that was not met, 2) the date the permitted discovered that the source/ equipment/process was out of compliance, 3) the date the Director was notified, 4) the corrective measures to get the source/equipment/process back into compliance, and 5) the date the source began to operate in compliance. The submission of any non-compliance report shall give no enforcement action immunity to episodes of non-compliance contained therein.

CERTIFICATION OF DATA ACCURACY

I, the undersigned, hereby certify that, based on information and belief formed after reasonable inquiry, all information contained in the attached ______________________________, representing the period beginning ______________________ and ending ______________________, and any supporting documents appended hereto, is true, accurate, and complete.

Signature[1] ______________________________ ________________
(please use blue ink) Responsible Official or Authorized Representative Date

Name and Title ______________________________ ________________
(please print or type) Name Title

Telephone No. ______________________ Fax No. ______________________

---

[1] This form shall be signed by a "Responsible Official." "Responsible Official" means one of the following:

a. For a corporation: The president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either:

   (I) the facilities employ more than 250 persons or have a gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), or

   (ii) the delegation of authority to such representative is approved in advance by the Director;

b. For a partnership or sole proprietorship: a general partner or the proprietor, respectively;

c. For a municipality, State, Federal, or other public entity: either a principal executive officer or ranking elected official. For the purposes of this part, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of USEPA); or

d. The designated representative delegated with such authority and approved in advance by the Director.

Kessler, Joseph R

From:	Grant Morgan <Grant.Morgan@erm.com>
Sent:	Monday, February 5, 2018 2:32 PM
To:	Kessler, Joseph R
Subject:	FW: Brochure for RANSON
Attachments:	roxul002829_01 Rockwool 11x6 Bifold Brochure_Print.pdf

Joe,

Please find the attached brochure that Roxul is distributing in the area of the proposed facility. Roxul would like to provide this to DEP in the event that comments/questions are generated from the public, as it applies to the air permitting process.

Thank you,

Grant Morgan, P.E.
ERM I 204 Chase Drive I Hurricane, WV I 25526
voice: 304.757.4777 ext. 109 I mobile: 304.590.6160
mail: grant.morgan@erm.com I www.erm.com

ERM
The business of sustainability

ROCKWOOL™

During the past year, we've visited and explored the Panhandle. The welcome we've received has been inspiring. It's become obvious – selecting West Virginia as our new home was the perfect choice.

ROCKWOOL is the world's largest stone wool insulation manufacturer, and we're proud to become part of this community.

The ROCKWOOL family is thrilled to build a brand-new, state-of-the-art facility in Ranson. It's a $150 million investment, and it will expand our ability to meet the growing needs of our customers.

But it's not just an investment in ROCKWOOL – it's an investment in this community. Once we're fully operational, the facility will employ about 150 folks from this region. That's 150 new jobs. That's a boost for the local economy. And it's incredibly rewarding.

Proud to be in Almost Heaven

We support local charities.

Our insulation products may foster comfort and safety for buildings and people, but it's our commitment to our communities that builds the strongest foundations.

Supporting causes that make a difference in our community is important to us.

ROCKWOOL recently sponsored the 8th annual Christmas for Charities, helping the Rotary Club of Charles Town give thousands of dollars to local charities. We've also supported the Ranson Tree Lighting Ceremony, which included the Fire Truck Train for kids.

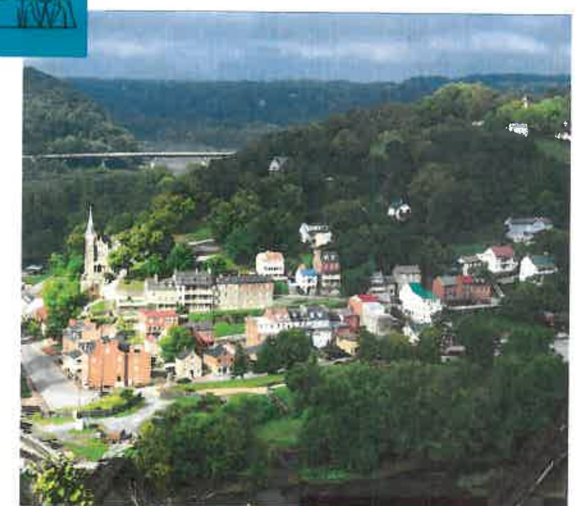
And we are just getting started.

We believe in protecting the environment.

ROCKWOOL's products are environmentally sound, made with natural rock and recycled slag. Any production waste we create in our facilities is recycled – with no waste going to the landfill.

Recycling and waste reduction are vital pieces of our environmental policies, which also include reusing storm water in our manufacturing process, using the heat from our process to help heat the factory and warehouse, using motion sensor lighting, recycling all pallets and a no idling policy.

Our production line is fitted with state-of-the-art technologies that provide the most effective controls on plant emissions. While we are well within the EPA's stringent guidelines, we are proud to consistently surpass air quality standards.



A new chapter in Ranson

Just last year, we were known as ROXUL, and our products had always contributed to the energy efficiency of spaces. As of January 1, we are doing business as ROCKWOOL, and that legacy will continue. With the world's energy consumption expected to rise 50% by 2050, we can address that trend with more sustainable solutions. It's a bold leap forward and a major milestone in our 80-year history. Ranson is an important part of our future.

ROCKWOOL will continue to be the world's leader in stone wool solutions. We will continue to deliver superior quality and performance. Our vision remains creating value for our customers as they address the challenges of modern living. Our commitment to delivering product solutions, innovation, education and market growth to our customers will be just as strong.

With the help of this community, we'll strive to enrich the lives of those around us.

We're happy to answer your questions.

ROCKWOOL is committed to sharing information about this project with our new neighbors throughout the entire process. If you have any questions, please contact us.

Leslie McLaren, NA Manager, Government Affairs & Corporate Communications
800.265.6878 ext 4307
905.875.9307
leslie.mclaren@rockwool.com

Learn more at www.rockwool.com

ROXUL

Roxul 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 Roxul to have the opportunity to object to such release and/or defend its claim of confidentiality.

If you have any questions, please contact Grant Morgan, with Environmental Resources Management, Inc., at 304-757-4777 x 109.

Sincerely,

Ken Cammarato
Vice President and General Legal Counsel
Roxul USA, Inc.

RECEIVED
05 2018
WV DEP / DIV OF AIR QUALITY

Entire Document
NON-CONFIDENTIAL

I.D. No. 037-00108 Reg. R14-0037
Company Roxul
Facility RAN Region
Initials

Kessler, Joseph R

From:	Stacy, Andrea <andrea_stacy@nps.gov>
Sent:	Thursday, January 18, 2018 12:33 PM
To:	Kessler, Joseph R
Cc:	Jalyn Cummings (jalyn_cummings@nps.gov); Holly Salazer (holly_salazer@nps.gov); Jackson, Bill -FS (bjackson02@fs.fed.us); Pitrolo, Melanie -FS (mpitrolo@fs.fed.us); Ash, Jeremy - FS; McClung, Jon D; McKeone, Beverly D; Don Shepherd
Subject:	Re: WV PSD Application Notification (R14-0037 ROXUL USA, Inc.)

Thanks for the quick response Joe.

I want to confirm that a Class I analysis will not be necessary for Shenandoah NP, as it is unlikely this facility would result in any adverse impacts in the Park. Thank you for notifying the NPS of the proposed ROXUL, US facility. Please feel free to contact me if you have any questions.

Regards,
Andrea

On Wed, Jan 17, 2018 at 1:23 PM, Kessler, Joseph R <Joseph.R.Kessler@wv.gov> wrote:

OK, let me attempt to clarify. The hourly and annual emissions I put on the form are not the hourly or annual emissions that were used as the basis for calculating the Q/D. As I send out the notification as soon as I can after receiving the app, I grab the given facility-wide PTE (and if they include a facility-wide hourly emission number I use that as well) and put it into the form. As there was no facility-wide hourly emission number given, I just calculated the hourly emissions for the form based on 8,760 hours of operation. But, for this facility, as most annual PTE were calculated at 8,760, the numbers should be pretty close to those used for the Q/D calculation (and, in fact, the PTE on the form gives a q/d of 9.26 as opposed to the official q/d of 9.40).

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I will see if I can get a copy of the excel spreadsheet, but I think the only formula in it will be the summing of the pollutants.

Let me know if you have any other questions or need further clarification.

Entire Document
NON-CONFIDENTIAL

I.D. No. 037-00108 Reg. R14-0037
Company Roxul
Facility RAN Region
Initials JRK

Thanks,

Joe Kessler, PE

Engineer

West Virginia Division of Air Quality

601-57th St., SE

Charleston, WV 25304

Phone: (304) 926-0499 x1219

Fax: (304) 926-0478

Joseph.r.kessler@wv.gov

From: Stacy, Andrea [mailto:andrea_stacy@nps.gov]
Sent: Wednesday, January 17, 2018 2:23 PM
To: Kessler, Joseph R <Joseph.R.Kessler@wv.gov>
Cc: Jalyn Cummings (jalyn_cummings@nps.gov) <jalyn_cummings@nps.gov>; Holly Salazer (holly_salazer@nps.gov) <holly_salazer@nps.gov>; Jackson, Bill -FS (bjackson02@fs.fed.us) <bjackson02@fs.fed.us>; Pitrolo, Melanie -FS (mpitrolo@fs.fed.us) <mpitrolo@fs.fed.us>; Ash, Jeremy - FS <jash@fs.fed.us>; McClung, Jon D <Jon.D.McClung@wv.gov>; McKeone, Beverly D <Beverly.D.Mckeone@wv.gov>; Don Shepherd <don_shepherd@nps.gov>
Subject: Re: WV PSD Application Notification (R14-0037 ROXUL USA, Inc.)

Hi Joe,

I wanted to follow up with this permit & ensure I understand how the Q/d was calculated, particularly for the facility's larger sources such as the melting furnace (source ID IMF01). In your email you note that "the maximum facility-wide hourly emissions given in the FLM Information Form ***are calculated from the annual emissions and averaged over 8,760 hours***. This method was used as there was no aggregate facility-wide hourly emission numbers given in the permit application."

The attached pdf of the emissions spreadsheet indicates that there is "no difference in maximum 24-hr and annual for TPY basis" for the melting furnace. Can we have a copy of the excel version of this pdf spreadsheet?

Also, I understand that not all sources at the facility will have short-term limits, which is why facility-wide annual limits for Q were calculated in this way, however, can you please clarify what the maximum short-term emissions (in lb/hr) for emission sources IMF01 and HE01 are likely to be?

Thanks!

On Wed, Nov 29, 2017 at 9:43 AM, Kessler, Joseph R <Joseph.R.Kessler@wv.gov> wrote:

Attached is the FLM Notification Form for the following PSD Permit Application submitted on November 21, 2017:

Permit Number:	**R14-0037**
Applicant:	**ROXUL USA, Inc.**
Facility:	**Ran Facility**
Location:	**Ranson, Jefferson County, WV**
Facility ID Number:	**037-00108**

The permit application is available online at:
http://dep.wv.gov/daq/Documents/November%202017%20Applications/037-00108_APPL_R14-0037.pdf

The WV DAQ is providing notification that a PSD application has been filed for construction of a new major source in Jefferson County, WV. The proposed facility is a stone wool manufacturing facility. The application was submitted on November 21, 2017 and has not yet been deemed complete. The applicant has stated the highest Q/D (based on Shenandoah NP) has been calculated to be 9.6. In Appendix A of the permit application, the applicant provides individual emission unit Q/D TPY calculations where the annual emissions were not based on operating 8,760 hours. See the attached spreadsheet for a summary of the Q/D calculations. Additionally, due to late changes to the design of the facility, CO is still listed as a PSD pollutant when in fact the proposed PTE of CO has fallen below 100 TPY. A revision to the application removing CO as a PSD pollutant will be submitted in the coming weeks. As a final note, the maximum facility-wide hourly emissions given in the FLM Information Form are calculated from the annual emissions and averaged over 8,760 hours. This method was used as there was no aggregate facility-wide hourly emission numbers given in the permit application.

Let me know if you have any questions or comments.

Thank You,

Joe Kessler, PE

Engineer

West Virginia Division of Air Quality

601-57th St., SE

Charleston, WV 25304

Phone: (304) 926-0499 x1219

Fax: (304) 926-0478

Joseph.r.kessler@wv.gov

--

Andrea Stacy

National Park Service

Air Resources Division

12795 W. Alameda Pkwy

P.O. Box 25287

Denver, CO 80225

andrea_stacy@nps.gov

303-969-2816 (phone)

303-969-2822 (Fax)

--

Andrea Stacy
National Park Service

Air Resources Division
12795 W. Alameda Pkwy
P.O. Box 25287
Denver, CO 80225
andrea_stacy@nps.gov
303-969-2816 (phone)
303-969-2822 (Fax)

Kessler, Joseph R

From:	Ash, Jeremy - FS <jash@fs.fed.us>
Sent:	Thursday, January 18, 2018 1:09 PM
To:	'Stacy, Andrea'; Kessler, Joseph R
Cc:	Jalyn Cummings (jalyn_cummings@nps.gov); Holly Salazer (holly_salazer@nps.gov); Jackson, Bill -FS; Pitrolo, Melanie -FS; McClung, Jon D; McKeone, Beverly D; Don Shepherd
Subject:	RE: WV PSD Application Notification (R14-0037 ROXUL USA, Inc.)

Hello Joe,

Similar to NPS, we anticipate no significant impacts to any air quality related values (AQRVs) at Class I Areas administered by the Forest Service (based on the estimated emissions and the FLM information form you provided).

Should the nature of this project change such that maximum emissions increase, please let us know so that we can re-evaluate the proposal. Also, please send us a copy of the draft permit when it becomes available.

Thank you again for keeping the Forest Service informed about permit applications for facilities that may impact Forest Service Class I Areas. Should you have any questions about this determination, please let me know.

Best,
Jeremy

Jeremy Ash
Air Resource Specialist
Forest Service
Eastern Region (R9)
p: 414-297-1902
jash@fs.fed.us
626 E. Wisconsin Ave.
Milwaukee, WI 53202
www.fs.fed.us
Caring for the land and serving people

From: Stacy, Andrea [mailto:andrea_stacy@nps.gov]
Sent: Thursday, January 18, 2018 11:33 AM
To: Kessler, Joseph R <Joseph.R.Kessler@wv.gov>
Cc: Jalyn Cummings (jalyn_cummings@nps.gov) <jalyn_cummings@nps.gov>; Holly Salazer (holly_salazer@nps.gov) <holly_salazer@nps.gov>; Jackson, Bill -FS <bjackson02@fs.fed.us>; Pitrolo, Melanie -FS <mpitrolo@fs.fed.us>; Ash, Jeremy - FS <jash@fs.fed.us>; McClung, Jon D <Jon.D.McClung@wv.gov>; McKeone, Beverly D <Beverly.D.Mckeone@wv.gov>; Don Shepherd <don_shepherd@nps.gov>
Subject: Re: WV PSD Application Notification (R14-0037 ROXUL USA, Inc.)

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Engineer

West Virginia Division of Air Quality

601-57th St., SE

Charleston, WV 25304

Phone: (304) 926-0499 x1219

Fax: (304) 926-0478

Joseph.r.kessler@wv.gov

From: Stacy, Andrea [mailto:andrea_stacy@nps.gov]
Sent: Wednesday, January 17, 2018 2:23 PM
To: Kessler, Joseph R <Joseph.R.Kessler@wv.gov>
Cc: Jalyn Cummings (jalyn_cummings@nps.gov) <jalyn_cummings@nps.gov>; Holly Salazer (holly_salazer@nps.gov) <holly_salazer@nps.gov>; Jackson, Bill -FS (bjackson02@fs.fed.us) <bjackson02@fs.fed.us>; Pitrolo, Melanie -FS (mpitrolo@fs.fed.us) <mpitrolo@fs.fed.us>; Ash, Jeremy - FS <jash@fs.fed.us>; McClung, Jon D <Jon.D.McClung@wv.gov>; McKeone, Beverly D <Beverly.D.Mckeone@wv.gov>; Don Shepherd <don_shepherd@nps.gov>
Subject: Re: WV PSD Application Notification (R14-0037 ROXUL USA, Inc.)

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Applicant: **ROXUL USA, Inc.**

Facility: **Ran Facility**

Location: **Ranson, Jefferson County, WV**

Facility ID Number: **037-00108**

The permit application is available online at:
http://dep.wv.gov/daq/Documents/November%202017%20Applications/037-00108_APPL_R14-0037.pdf

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Thank You,

Joe Kessler, PE

Engineer

West Virginia Division of Air Quality

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Joseph.r.kessler@wv.gov

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subject the violator to civil or criminal penalties. If you believe you have received this message in error, please notify the sender and delete the email immediately.

dep

west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone (304) 926-0475 • FAX: (304) 926-0479

Jim Justice, Governor
Austin Caperton, Cabinet Secretary
www.dep.wv.gov

January 8, 2018

Mr. Jeffrey Adels
4878 Paynes Ford Road
Kearneysville, WV 25340

RE: **Response to Comments**
ROXUL USA, Inc.
RAN Facility
Permit No. R14-0037
Plant ID No. 037-00108

Entire Document
NON-CONFIDENTIAL

Dear Mr. Adels:

This letter acknowledges that the WV Department of Environmental Protection, Division of Air Quality (DAQ), received from you on December 7, 2017 a comment letter regarding the proposed ROXUL stone wool manufacturing facility (Permit Application R14-0037). The DAQ, pursuant to WV Legislative Rule 45CSR14, is currently reviewing ROXUL's application and has not made a final determination regarding the proposed facility. Prior to making a final determination, the DAQ will first make a preliminary determination and publish a Class I Legal Advertisement providing the public notice of the DAQ's intent with regard to R14-0037. At this time, the DAQ will accept and respond to comments on air quality issues related to the permit application. This public comment period will last a minimum of thirty (30) days from the date the advertisement is published. Also at this time, the DAQ will make available documentation to justify the preliminary determination.

Additionally, in response to your comments on the local air quality, it is noted that the quality of the air of a defined area - in this case for Jefferson County - is largely determined by its status with respect to the National Ambient Air Quality Standards (NAAQS). The Clean Air Act (CAA), which was last amended in 1990, requires the Environmental Protection Agency (EPA) to set NAAQS for pollutants considered harmful to public health and the environment. The CAA established two types of national air quality standards: (1) Primary standards set limits to protect public health (including the health of "sensitive" populations such as asthmatics, children, and the elderly and (2) Secondary standards set limits to protect public welfare (including protection against decreased visibility, damage to animals, crops, vegetation, and buildings).

The EPA Office of Air Quality Planning and Standards (OAQPS) has set NAAQS for six principal pollutants, which are called "criteria" pollutants. They are discussed on the EPA website at: https://www.epa.gov/criteria-air-pollutants.

Counties that are known to be violating these standards are, for specific pollutants, designated by the EPA as in "non-attainment" with the NAAQS. Counties that are not known to be violating these standards are, for specific pollutants, designated by the EPA as in "attainment" with the NAAQS. Jefferson County (and Berkeley County as well) is designated by EPA as in attainment with the NAAQS.

As the proposed ROXUL facility is defined as a "major stationary source," it is required to use complex computer modeling to verify that the new emissions associated with the facility would not cause significant deterioration of the air quality around the proposed site or cause any area to fall into non-attainment with the NAAQS.

Again, thank you for your comment on this permitting action. The permit application may be accessed at: http://dep.wv.gov/daq/Pages/NSRPermitsforReview.aspx. If you have any questions, please feel free to contact me at (304) 926-0499 ext. 1219.

Sincerely,

Joe Kessler, PE
Engineer

Kessler, Joseph R

From:	Kessler, Joseph R
Sent:	Thursday, December 21, 2017 2:09 PM
To:	Ken Cammarato; Mette Drejstel
Cc:	'grant.morgan@erm.com'; Kasey Harrington (Kasey.Harrington@erm.com); Jeff Twaddle (Jeff.Twaddle@erm.com)
Subject:	Permit Application R14-0037 Review Status: Complete

RE: Application Status: Complete
ROXUL USA, Inc.
RAN Facility
Permit Application: R14-0037
Plant ID No.: 037-00108

Mr. Cammarato,

Your application for a Prevention of Significant Deterioration (PSD) construction permit was received by the Division of Air Quality (DAQ) on November 21, 2017 and assigned to the writer for review. Pursuant to §45-14-7.4, upon an initial review, the DAQ has made a determination that the permit application (including the submission of the modeling report and associated files on December 21, 2017) is now complete. The statutory review time, therefore, began on the day the last of the required information was submitted - December 21, 2017. However, pursuant to §45-14-2.19, this determination of completeness shall not relieve the permit applicant of the requirement to subsequently submit, in a timely manner, any additional or corrected information deemed necessary for a final permit determination. Further, this determination is made with the understanding that a revised/corrected permit application will be submitted at a later date that will remove CO as a PSD pollutant and include other corrections and additions as are warranted.

Should you have any questions, please contact me at (304) 926-0499 ext. 1219 or reply to this email.

Thank You,

Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x1219
Fax: (304) 926-0478
Joseph.r.kessler@wv.gov

UC Defaulted Accounts Search Results

Sorry, no records matching your criteria were found.

FEIN:
Business name: ROXUL USA INC.
Doing business as/Trading as:

Please use your browsers back button to try again.

WorkforceWV	Unemployment Compensation	Offices of the Insurance Commissioner

UC Defaulted Accounts Search Results

Sorry, no records matching your criteria were found.

FEIN: 990378111
Business name:
Doing business as/Trading as:

Please use your browsers back button to try again.

WorkforceWV	Unemployment Compensation	Offices of the Insurance Commissioner

Kessler, Joseph R

From:	Scott, Kimberly A (DEP)
Sent:	Tuesday, November 28, 2017 11:19 AM
To:	Kessler, Joseph R
Cc:	Adkins, Sandra K
Subject:	ROXUL USA INC (RAN FACILITY) PERMIT APPLICATION FEE

This is the receipt for payment received from:

ROXUL USA INC - $14,500.00 – paid by credit card
Ran Facility R14-0037 ID 037-00108

CR 1800056891 will be deposited 11/28/20017

Kim Scott
WV Dept. of Environmental Protection
BTO / Fiscal Services
601 57th Street SE
Charleston, WV 25304
Email: Kimberly.A.Scott@wv.gov
Telephone: 304-926-0499 ext 1846

RECEIVED
DEC 18 2017
WV DEP / DIV OF AIR QUALITY

AFFIDAVIT OF INSERTION- LEGALS

This is to certify that the insertion for Environmental Resource Management
(Advertiser Name)

titled RAN Air Permit - Roxul USA appeared in the
(Headline)

Spirit of Jefferson on 11/22/2017
(City, Paper Name) (Date)

Cost Of Legal: $ 60.86

Advertising Manager: Toni Head

Sworn to and subscribed before me this 4 day of December, 20 17.

Notary Public: Don Smith

Entire Document
NON-CONFIDENTIAL

Seal:

Official Seal
Notary Public, State of West Virginia
Don Smith
West Virginia Press Association
3422 Pennsylvania Ave

STATE OF WEST VIRGINIA

I.D. No. ~~037-00108~~ Reg. R14-0037
Company Roxul
Facility RAN Region
Initials

IRGINIA NATIONAL POLLUTANT
STEM WATER POLLUTION CON-

lic Notice Date: November 22, 2017

VV NPDES Water Pollution Control

L LIABILITY PARTNERS WV, LLC
OLLEGE AVENUE, SUITE A
63040

JEFFERSON COUNTY

Longitude: 77:59:36

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1-8(a))," and the "West Virginia Leg-
Virginia will act on the above appli-

ubmit written comments on the draft
hearing by addressing such to the
and Waste Management within 30
otice. Such comments or requests

ter and Waste Management, DEP
Permitting Section

-2345

egins November 22, 2017 and ends

s period will be considered prior to
Correspondence should include the
e number of the writer and a concise
ues raised. The Director shall hold a
g is made, on the basis of requests,
of public interest on issues relevant
l persons may contact the public in-
information.

and any required fact sheet may be
e Division of Water and Waste Man-
ce, at 601 57th Street SE, Charles-
:00 a.m. and 4:00 p.m. on business
may be obtained from the Division

EDA, ARC, or HUD SCBG funding. All work will be performed in accordance with the regulations issued by these agencies and the State of West Virginia as pertaining hereto. The selected firm will be required to comply with the Civil Rights Act of 1964, Executive Order 112467, Section 109 of the Housing and Urban Development Act of 1968, Conflict of Interest Statement and Access to Records provisions, where applicable.

The City of Charles Town, by and through its Utility Board will afford full opportunity for minority business enterprise to submit a show of interest in response to this invitation and will not discriminate against any interested firm or individual on the grounds of race, creed, color, sex, age handicap or national origin in the contract award and reserves the right to accept or reject any/or all proposals.

11/15/2t

AIR QUALITY PERMIT NOTICE
Notice of Application

Notice is given that Roxul USA, Inc. has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a PSD Construction Permit for a mineral wool insulation manufacturing facility to be located at 365 Granny Smith Lane, Kearneysville, WV 25430. The latitude and longitude coordinates are: 39.37754, -77.87844.

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

Nitrogen Oxides (NOx): 239 tons per year
Sulfur Dioxide (SO2): 148 tons per year
Carbon Monoxide (CO): 74.1 tons per year
Volatile Organic Compounds (VOCs): 470 tons per year
Filterable Particulate Matter (PMFil): 129 tons per year
Particulate Matter <10 microns (PM10): 154 tons per year
Particulate Matter <2.5 microns (PM2.5): 134 tons per year
Carbon Dioxide Equivalents (CO2e): 153,000 tons per year
Sulfuric Acid Mist (H2SO4): 16.4 tons per year
Lead (Pb): <0.01 tons per year
Total Hazardous Air Pollutants (HAPs): 393 tons per year
Mineral Fiber HAPs: 113 tons per year
Methanol (CH4O): 104 tons per year
Phenol (C6H5O): 98.9 tons per year
Formaldehyde (HCHO): 67.6 tons per year
Carbonyl Sulfide (COS): 1.7 tons per year
Hydrogen Fluoride (HF): 1.7 tons per year
Hydrochloric Acid (HCL): 1.3 tons per year
Hexane (C6H14): 0.3 tons per year
Benzene (C6H6): 0.1 tons per year

RECEIVED
DEC 18 2017
WV DEP / DIV OF AIR QUALITY

Startup of operation is planned to begin on or about October 2019. 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.

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1250, during normal business hours.

Dated this the 22th day of November, 2017.

By: Roxul USA, Inc.
Ken Cammarato
Vice President and General Legal Counsel
4594 Cayce Road
Byhalia, MS 38611

11/22/1t

Kessler, Joseph R

From:	Grant Morgan <Grant.Morgan@erm.com>
Sent:	Thursday, December 14, 2017 10:27 AM
To:	Kessler, Joseph R
Cc:	Lillian Nielsen
Subject:	Roxul (R14-0037) Public Notice and Affidavit
Attachments:	Roxul Public Notice and Affidavit.pdf

Joe,

Please find an electronic copy of the attached public notice and affidavit for R14-0037. A hard-copy will be mailed to your attention and you should receive in the next few days.

Thank you,

Grant Morgan, P.E.
ERM I 204 Chase Drive I Hurricane, WV I 25526
voice: 304.757.4777 ext. 109 I mobile: 304.590.6160
mail: grant.morgan@erm.com I www.erm.com

ERM
The business of sustainability

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I.D. No. 037-00108 Reg. R14-0037
Company Roxul
Facility Roxul Region
Initials JM

IRGINIA NATIONAL POLLUTANT
STEM WATER POLLUTION CON-

lic Notice Date: November 22, 2017

VV NPDES Water Pollution Control

- LIABILITY PARTNERS WV, LLC
OLLEGE AVENUE, SUITE A
63040

JEFFERSON COUNTY

Longitude: 77:59:36

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-2345

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EDA, ARC, or HUD SCBG funding. All work will be performed in accordance with the regulations issued by these agencies and the State of West Virginia as pertaining hereto. The selected firm will be required to comply with the Civil Rights Act of 1964, Executive Order 112467, Section 109 of the Housing and Urban Development Act of 1968, Conflict of Interest Statement and Access to Records provisions, where applicable.

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11/15/2t

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Notice of Application

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Benzene (C6H6): 0.1 tons per year

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Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1250, during normal business hours.

Dated this the 22th day of November, 2017.

By: Roxul USA, Inc.
Ken Cammarato
Vice President and General Legal Counsel
4594 Cayce Road
Byhalia, MS 38611

11/22/1t

AFFIDAVIT OF INSERTION- LEGALS

This is to certify that the insertion for Environmental Resource Management
(Advertiser Name)

titled RAN Air Permit - Roxul USA appeared in the
(Headline)

Spirit of Jefferson on 11/22/2017
(City, Paper Name) (Date)

Cost Of Legal: $ 60.86

Advertising Manager: Tom Heady

Sworn to and subscribed before me this 4 day of December, 20 17.

Notary Public: Don Smith

Seal:

Official Seal
Notary Public, State of West Virginia
Don Smith
West Virginia Press Association
3422 Pennsylvania Ave

Jeffrey Adels
4878 Paynes Ford Road
Kearneysville, WV 25430

December 1, 2017

RE: Proposed manufacturing facility

To Whom It May Concern:

This letter is in regard to the proposed PSD Construction Permit for a mineral wool insulation manufacturing facility to be located at 365 Granny Smith Lane, Kearneysville, WV.

I live approximately 2 miles from the above site and am greatly dismayed at the proposed allowable Regulated Air Pollutants (many poisonous) that will be discharged into the atmosphere. It's incomprehensible that the pollutants are measured in TONS.

The air quality in this area is already mediocre and this would contribute greatly to diminishing what healthy air we breathe. I strenuously OPPOSE the construction of this facility anywhere in the Jefferson/Berkeley County area. Thank you.

Sincerely,

Jeffrey Adels

Jeffrey Adels

JEFFREY & PATRICIA ADELS
Munchin Hill Farm
4878 Paynes Ford Road
Kearneysville, WV 25430

Joe

WV DEPT OF ENVIRONMENTAL PROTECTION
DIVISION OF AIR QUALITY
601 57th STREET, SE
CHARLESTON, WV
25304

Permitting

25304-230099

Kessler, Joseph R

From: Grant Morgan <Grant.Morgan@erm.com>
Sent: Tuesday, November 28, 2017 5:26 PM
To: Kessler, Joseph R
Subject: Application No. R14-0037 - Q-D Summary
Attachments: FORMATTED FINAL - Roxul RAN Q-d.pdf

Joe,

Please find the attached Q/D summary, including a breakdown of each source and a comment as to how the maximum 24-emission rate is calculated.

Thank you,

Grant Morgan, P.E.
ERM | 204 Chase Drive | Hurricane, WV | 25526
voice: 304.757.4777 ext. 109 | mobile: 304.590.6160
mail: grant.morgan@erm.com | www.erm.com

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The business of sustainability

Entire Document
NON-CONFIDENTIAL

I.D. No. 037-00108 Reg. R14-0037
Company ROXUL
Facility RAN Region
Initials JKR

Roxul USA Inc.
Ranson, West Virginia
Summary of Q/d Screening Emissions

Source ID	Source Description	US				Comment
		NOx (ton/yr)	SO2 (ton/yr)	PM10 (ton/yr)	H2SO4 (ton/yr)	
Minwool Line						
B210	Raw Material Storage (B210)	–	–	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)	–	–	0.09	–	No difference in maximum 24-hour and annual for tpy basis
IMF12	Conveyor Transition Point (B210 to B220)	–	–	0.09	–	No difference in maximum 24-hour and annual for tpy basis
IMF14	Conveyor Transition Point (B220 No. 1)	–	–	0.09	–	No difference in maximum 24-hour and annual for tpy basis
IMF15	Conveyor Transition Point (B220 No. 2)	–	–	0.09	–	No difference in maximum 24-hour and annual for tpy basis
IMF16	Conveyor Transition Point (B220 to B300)	–	–	0.09	–	No difference in maximum 24-hour and annual for tpy basis
IMF17	Charging Material Handling Building Vent 1	–	–	0.08	–	No difference in maximum 24-hour and annual for tpy basis
IMF18	Charging Material Handling Building Vent 2	–	–	0.08	–	No difference in maximum 24-hour and annual for tpy basis
RM_REJ	Raw Material Reject Collection Bin	–	–	5.32E-04	–	Maximum 24-hour emissions in tpy (max ton/day * 365 day/yr)
S_REJ	Sieve Reject Collection Bin	–	–	5.32E-04	–	Maximum 24-hour emissions in tpy (max ton/day * 365 day/yr)
IMF21	Charging Building Vacuum Cleaning Filter	–	–	0.02	–	No difference in maximum 24-hour and annual for tpy basis
IMF03	Three (3) Coal Storage Silos	–	–	0.17	–	No difference in maximum 24-hour and annual for tpy basis
IMF25	Coal Feed Tank	–	–	0.06	–	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	Two (2) Storage Silos (Filter Fines Day/ Seco	–	–	0.12	–	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
IMF02	Melting Furnace Cooling Tower	–	–	0.04	–	No difference in maximum 24-hour and annual for tpy basis
HE02	Gutter Cooling Tower	–	–	0.01	–	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	92.89	–	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)
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	0.79	0.01	0.17	–	No difference in maximum 24-hour and annual for tpy basis
CM04	Natural Gas Boiler 2	0.79	0.01	0.17	–	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	5.67	9.39E-03	0.33	–	Maximum annual steady-state (8760 hr/yr / 500 hr/yr) [Note 1]
Rd_RM	Raw Material Paved Haul Roads	–	–	0.97	–	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)
Rd_CM	FEL - Coal/PET Coke from Bunker to Feed H	–	–	3.24E-03	–	Maximum 24-hour emissions in tpy (max ton/day * 365 day/yr)
TKS	Facility Storage Tanks	–	–	–	–	-
Coal Milling						
IMF05	Coal Mill Burner & Baghouse	1.86	0.02	1.33	–	No difference in maximum 24-hour and annual for tpy basis
IMF06	Coal Milling De-Dusting Baghouse	–	–	0.97	–	No difference in maximum 24-hour and annual for tpy basis
IMF04	Coal Conveyor Transition Point (B231 to B23	–	–	0.09	–	No difference in maximum 24-hour and annual for tpy basis
B231	Coal Loading Hopper	–	–	3.98E-04	–	Maximum 24-hour emissions in tpy (max ton/day * 365 day/yr)
IMF13	Coal Conveyor Transition Point (B231 to B23	–	–	0.09	–	No difference in maximum 24-hour and annual for tpy basis
B235	Coal Milling Building	–	–	0.04	–	Maximum 24-hour emissions in tpy (max ton/day * 365 day/yr)
B230	Coal Unloading	–	–	3.98E-04	–	Maximum 24-hour emissions in tpy (max ton/day * 365 day/yr)
	Totals	**244.31**	**147.46**	**155.59**	**16.37**	

	Q	d	Q/d
Total Emissions, Q (tpy)	563.73	60	9.40

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).

Kessler, Joseph R

From: wentworth, paul <wentworth.paul@epa.gov>
Sent: Monday, November 27, 2017 2:28 PM
To: Kessler, Joseph R
Subject: RE: WV PSD Application Notification (R14-0037 ROXUL USA, Inc.)

Thanks Joe
Regards

From: Kessler, Joseph R [mailto:Joseph.R.Kessler@wv.gov]
Sent: Monday, November 27, 2017 2:19 PM
To: wentworth, paul <wentworth.paul@epa.gov>
Cc: Kessler, Joseph R <Joseph.R.Kessler@wv.gov>
Subject: WV PSD Application Notification (R14-0037 ROXUL USA, Inc.)

Permit Number: **R14-0037**
Applicant: **ROXUL USA, Inc.**
Facility: **Ran Facility**
Location: **Ranson, Jefferson County, WV**
Facility ID Number: **037-00108**

The permit application is available online at:
http://dep.wv.gov/daq/Documents/November%202017%20Applications/037-00108_APPL_R14-0037.pdf

The WV DAQ is providing notification that a PSD application has been filed for construction of a new major source in Jefferson County, WV. The proposed facility is a stone wool manufacturing facility. The application was submitted on November 21, 2017 and has not yet been deemed complete. Additionally, due to late changes to the design of the facility, CO is still listed as a PSD pollutant when in fact the proposed PTE of CO has fallen below 100 TPY. A revision to the application removing CO as a PSD pollutant will be submitted in the coming weeks.

Let me know if you have any questions or comments.

Thank You,

Joe Kessler, PE
Engineer
West Virginia Division of Air Quality
601-57th St., SE
Charleston, WV 25304
Phone: (304) 926-0499 x1219
Fax: (304) 926-0478
Joseph.r.kessler@wv.gov

Entire Document
NON-CONFIDENTIAL

Adkins, Sandra K

From: Adkins, Sandra K
Sent: Tuesday, November 21, 2017 3:49 PM
To: 'ken.cammarato@roxul.com'; 'mette.drejstel@rockwool.com'; 'grant.morgan@erm.com'
Cc: McKeone, Beverly D; Kessler, Joseph R; Norvell, Carolyn G; Scott, Kimberly A (DEP)
Subject: WV DAQ Permit Application Status for ROXUL USA Inc.; RAN Facility

RE: Application Status
ROXUL USA INC.
RAN Facility
Facility ID No. 037-00108
Application No. R14-0037

Entire Document
NON-CONFIDENTIAL

Mr. Cammarato,

Your application for a construction permit for the RAN Facility was received by this Division on November 21, 2017, and was assigned to Joe Kessler. The following items were not included in the initial application submittal:

Original affidavit for Class I legal advertisement not submitted.

Application fee AND/OR additional application fees:

Entire Document
NON-CONFIDENTIAL

**$1,000 Construction, Modification, Relocation or Temporary Permit*
**$1,000 NSPS*
**$2,500 NESHAP*
**$10,000 Major Construction*
(You may contact the Accounts Receivable section at 304 926-0499 ext. 4888 or Kim Scott at ext. 1846 or Carolyn Norvell at ext. 1075 to pay via credit card. DEP accepts Visa and MasterCard only.)

These items are necessary for the assigned permit writer to continue the 30-day completeness review.

Within 30 days, you should receive a letter from Joe Kessler stating the status of the permit application and, if complete, given an estimated time frame for the agency's final action on the permit.

Any determination of completeness shall not relieve the permit applicant of the requirement to subsequently submit, in a timely manner, any additional or corrected information deemed necessary for a final permit decision.

Should you have any questions, please contact the assigned engineer, Joe Kessler, at 304-926-0499, extension 1219.

Kessler, Joseph R

From: McClung, Jon D
Sent: Friday, November 3, 2017 9:25 AM
To: ken.cammarato@roxul.com
Cc: Kessler, Joseph R; Milena Borissova; Jeff Twaddle; Lillian Nielsen; Christina Perlick; Grant Morgan; Kasey Harrington; Crowder, Laura M; Andrews, Edward S; Pursley, Steven R
Subject: RE: Roxul - Revised Modeling Protocol
Attachments: ROXUL_Protocol_Approval_Letter.pdf

Mr. Cammarato,

Please find attached the air quality modeling protocol approval letter regarding the anticipated mineral wool production facility in Ranson, WV.

Please contact me with any questions or concerns.

Regards,
Jon.

Entire Document
NON-CONFIDENTIAL

I.D. No. 037-00108 Reg. R14-0037
Company ROXUL
Facility RAN Region
Initials JM

Jonathan D. McClung, P.E.
West Virginia DEP
Division of Air Quality
601 57th Street SE
Charleston WV 25304
(304) 926-0499 ext. 1689
Jon.D.McClung@wv.gov

From: Kasey Harrington [mailto:Kasey.Harrington@erm.com]
Sent: Thursday, November 2, 2017 3:06 PM
To: McClung, Jon D <Jon.D.McClung@wv.gov>; Grant Morgan <Grant.Morgan@erm.com>
Cc: Kessler, Joseph R <Joseph.R.Kessler@wv.gov>; Milena Borissova <milena.borissova@erm.com>; Jeff Twaddle <Jeff.Twaddle@erm.com>; Lillian Nielsen <Mette.Drejstel@rockwool.com>; Christina Perlick <Christina.Perlick@erm.com>
Subject: RE: Roxul - Revised Modeling Protocol

Hi Jon, Please find the revised modeling protocol attached. If you require an updated/signed cover letter, please let me know. Ken is traveling this week, so we could email the letter early next week.

Thanks! Kasey

Kasey R. Harrington
ERM

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From: McClung, Jon D [mailto:Jon.D.McClung@wv.gov]
Sent: Tuesday, October 31, 2017 1:13 PM
To: Grant Morgan
Cc: Kessler, Joseph R; Lillian Nielsen; Milena Borissova; Jeff Twaddle; Kasey Harrington
Subject: RE: Roxul - Modeling Protocol Draft Supplement

Grant,

The Modeling Protocol Draft Supplement addresses the comments I had that we previously discussed. You may merge this supplement with the previously submitted protocol, resubmit the revised protocol, and that point I expect the revised protocol to be approvable. Please contact me with any questions or concerns.

Regards,
Jon.

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West Virginia DEP
Division of Air Quality
601 57th Street SE
Charleston WV 25304
(304) 926-0499 ext. 1689
Jon.D.McClung@wv.gov

From: Grant Morgan [mailto:Grant.Morgan@erm.com]
Sent: Thursday, October 26, 2017 10:02 AM
To: McClung, Jon D <Jon.D.McClung@wv.gov>
Cc: Kessler, Joseph R <Joseph.R.Kessler@wv.gov>; Lillian Nielsen <Mette.Drejstel@rockwool.com>; Milena Borissova <milena.borissova@erm.com>; Jeff Twaddle <Jeff.Twaddle@erm.com>; Kasey Harrington <Kasey.Harrington@erm.com>
Subject: Roxul - Modeling Protocol Draft Supplement

Jon,

Please find the attached protocol supplement for the Roxul modeling supplement, as discussed with Milena and during our meeting at MAR last week.

As you are able to review, please reach out to the team with any questions or comments. I apologize for not pushing this out more prior to our upcoming call.

Thank you,

Grant Morgan, P.E.
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voice: 304.757.4777 ext. 109 I mobile: 304.590.6160
mail: grant.morgan@erm.com I www.erm.com

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west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone: (304) 926-0499
Fax: (304) 926-0479

Jim Justice, Governor
Austin Caperton, Cabinet Secretary
dep.wv.gov

November 3, 2017

Ken Cammarato
Vice President, General Counsel & General Manager
Roxul USA, Inc.

Via electronic mail to: ken.cammarato@roxul.com

RE: New Source Review
Approval of Air Quality Modeling Protocol
Mineral Wool Production Facility
Ranson, West Virginia

Dear Mr. Cammarato,

Roxul USA, Inc. submitted an air quality modeling protocol, prepared by Environmental Resources Management, to the Division of Air Quality (DAQ) on September 8, 2017 and a revised protocol on November 2, 2017. This air quality modeling protocol supports an anticipated air quality permit application to be submitted to the DAQ to construct a new mineral wool production facility in Jefferson County, West Virginia. The DAQ has reviewed and hereby approves the revised air quality modeling protocol. If you have questions or concerns, please contact me via phone at (304) 926-0499 extension 1689 or via email at Jon.D.McClung@wv.gov.

Sincerely,

Jonathan D. McClung

Jonathan D. McClung
Engineer Senior

Kessler, Joseph R

From: McClung, Jon D
Sent: Thursday, November 2, 2017 1:08 PM
To: Christina Perlick; Milena Borissova
Cc: Grant Morgan; Kasey Harrington; Jeff Twaddle; Kessler, Joseph R
Subject: RE: Roxul Background Inventory

Christina,

WV DAQ agrees with the list of facilities below that ROXUL is planning to include in the source inventory for cumulative modeling. Please contact me with any questions or concerns.

Regards,
Jon.

Jonathan D. McClung, P.E.
West Virginia DEP
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601 57th Street SE
Charleston WV 25304
(304) 926-0499 ext. 1689
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Company ROXUL
Facility RAN Region
Initials JRK

From: Christina Perlick [mailto:Christina.Perlick@erm.com]
Sent: Tuesday, October 17, 2017 7:24 PM
To: McClung, Jon D <Jon.D.McClung@wv.gov>; Milena Borissova <milena.borissova@erm.com>
Cc: Grant Morgan <Grant.Morgan@erm.com>; Kasey Harrington <Kasey.Harrington@erm.com>; Jeff Twaddle <Jeff.Twaddle@erm.com>
Subject: Roxul Background Inventory

Mr. McClung,

Below are all the major air sources within 25km of the Roxul site that we are planning on including in the background inventory for the cumulative modeling. Attached is a more in-depth summary for each pollutant (yellow cells contain preliminary SIA's for the SIL).

If we have your agreement on this list, I can provide more details on the stacks and sources included from each facility. I think you will find it comprehensive. It is based on the WVDEP's emissions inventory and supplemented with Title V, and NSR/PSD permits and applications listed online. We also evaluated sources within 25 KM of the site in Maryland and Virginia. Please call me to discuss if you have any questions (734-552-6994).

Facilities within 25km of Roxul Site

IRS MARTINSBURG CENTER CAMPUS
QG PRINTING II CORP.
CONTINENTAL BRICK - MARTINSBURG FACILITY
OX PAPERBOARD, LLC
ARGOS USA LLC (Essroc Cement)
Knauf Insulation, LLC - INWOOD, WV
MAAX U.S. CORP
QUAD/GRAPHICS, INC
O-N Minerals (Chemstone) Co - Clear Brook (Carmeuse Winchester)
NORTH MOUNTAIN SANITARY LANDFILL

Sincerely,

Christina Perlick
Associate Engineer

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T +1 615.656.5874 | **M** 734.552.6994
E Christina.Perlick@erm.com | **W** www.erm.com

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Kessler, Joseph R

From:	Kasey Harrington <Kasey.Harrington@erm.com>
Sent:	Thursday, November 2, 2017 3:06 PM
To:	McClung, Jon D; Grant Morgan
Cc:	Kessler, Joseph R; Milena Borissova; Jeff Twaddle; Lillian Nielsen; Christina Perlick
Subject:	RE: Roxul - Revised Modeling Protocol
Attachments:	FINAL ROXUL Air Quality Modeling Protocol-v2.0.pdf

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Kasey R. Harrington
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Thank you,

Grant Morgan, P.E.
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voice: 304.757.4777 ext. 109 I mobile: 304.590.6160
mail: grant.morgan@erm.com I www.erm.com

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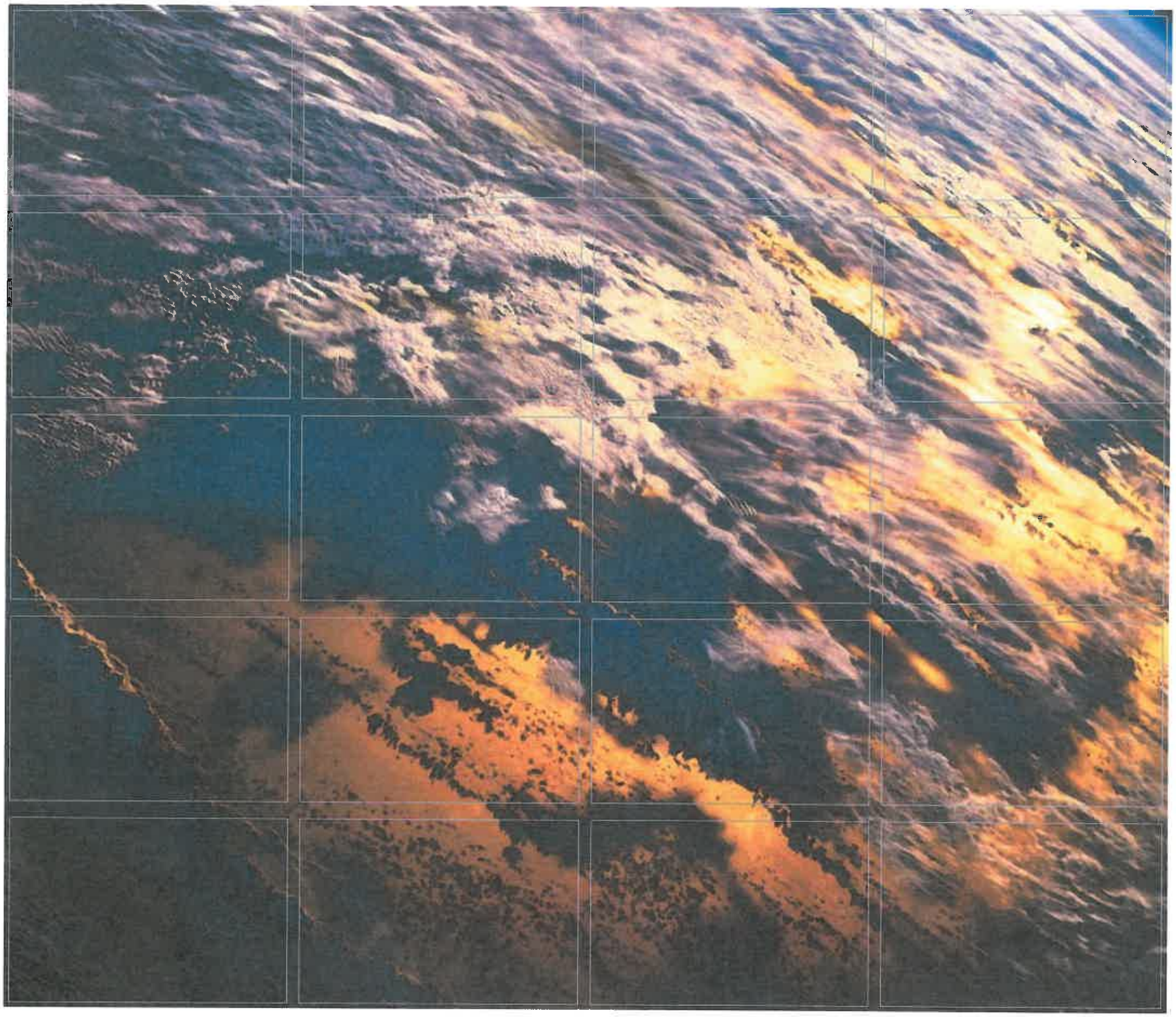

ROXUL USA, Inc.

New Source Review
Air Quality Modeling Protocol

Jefferson County, West Virginia

November 2017

Environmental Resources Management
204 Chase Drive
Hurricane, WV 25526
www.erm.com

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1.0 INTRODUCTION

ROXUL USA Inc., (Roxul) submits this air quality modeling protocol to support an air quality permit to construct application that is being submitted to the West Virginia Department of Environmental Protection (WVDEP), Division of Air Quality (WVDAQ, or The Department). The application is being submitted to authorize the development of a new mineral wool production facility in Jefferson County, West Virginia. A general area map showing the proposed location of the facility is provided in Figure 1-1 of this protocol.

1.1 PROJECT OVERVIEW

Roxul proposes to construct, install, and operate a new mineral wool insulation manufacturing facility (Project). The Project will consist 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 will produce stone wool insulation for building insulation, customized solutions for industrial applications, acoustic ceilings and other applications.

1.2 OVERVIEW OF 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 1-2 provides a summary of the regulatory program(s) that must be addressed for each regulated compound that will be emitted by the Project. It should be noted that these are preliminary emissions estimates only. Compounds with emission levels that trigger Non-attainment New Source Review (NNSR) requirements are subject to additional control (Lowest Achievable Emission Rate, LAER) and emissions offset requirements but do not require air quality dispersion modeling to assess compliance with the NAAQS. Requirements of the Prevention of Significant Deterioration (PSD) program must be addressed for major sources locating in attainment areas, for each compound having emissions greater than the significant emission rate (SER).

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

Compound	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

Applicability of the PSD program for the proposed Project is determined by evaluating whether potential emissions exceed new major source thresholds and SERs for each PSD regulated compound. The proposed project will be a new major source due to potential VOC emissions in excess of 250 tons per year.

Table 1-2 Applicability of Regulatory Air Programs to the Project

Compound	Preliminary Project Potential Emissions (tons/year)	PSD SER (tons/year)	NNSR Threshold	PSD Review Req'd?	NNSR Req'd?
NO_x	241	40	NA	Yes	No
CO	153	100	NA	Yes	No
SO_2	163	40	100	Yes	No
PM_{10}	156	15	NA	Yes	No
$PM_{2.5}$	111	Primary $PM_{2.5}$: 10 NO_X: 40 SO_2: 40	NA	Yes	No
O_3	NO_X: 241 VOC: 580	NO_X: 40 VOC: 40	NA	Yes	No
Lead	0.004	0.6	NA	No	No
H_2SO_4	17	7	NA	Yes	NA

NNSR does not apply, because Jefferson County, WV is in attainment for all regulated pollutants. Therefore, dispersion modeling will be performed for the compounds above that are subject to PSD review to assess the ambient air impacts resulting from the emissions of these compounds due to the Project, with the exception of VOC, which is a precursor to ozone formation and is not modeled. The modeling analysis will address compliance with the NAAQS and PSD Increments, as applicable. The modeling analyses described in this protocol will conform to Appendix W of 40 CFR Part 51 (Guideline on Air Quality Models). The key elements of the modeling analysis will include:

- Use of the latest version of the regulatory dispersion model and supporting programs: AERMOD (version 16216r), AERMET (version 16216), AERMINUTE (version 15272), AERMAP (version 11103), AERSURFACE (version 13016), 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 2016);
- 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;
- Utilize the Tier III NO_2 modeling method PVMRM in AERMOD, if necessary;
- 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 proposed 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*

Roxul proposes to construct, install, and operate a new mineral wool insulation facility (Project). The Project site is located in Jefferson County, WV. The general location of the facility is provided on the regional map shown in Figure 1-1. A preliminary plot plan of the proposed Project is presented in Figure 1-2.

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

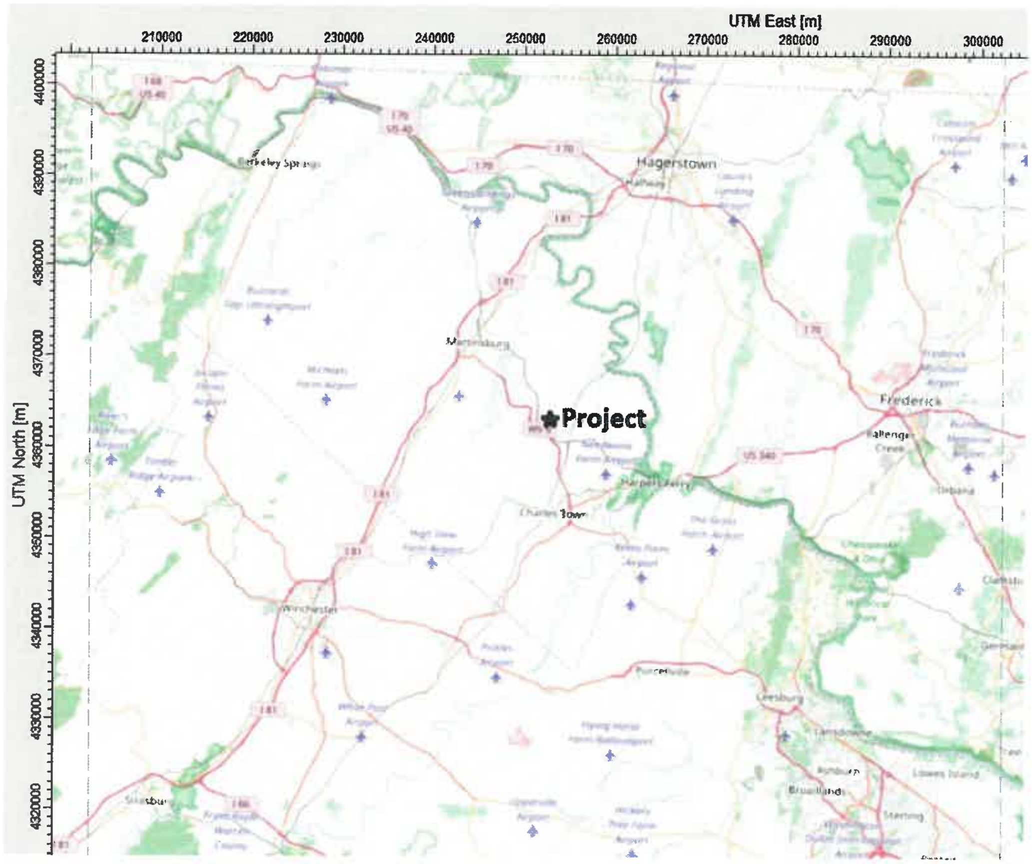
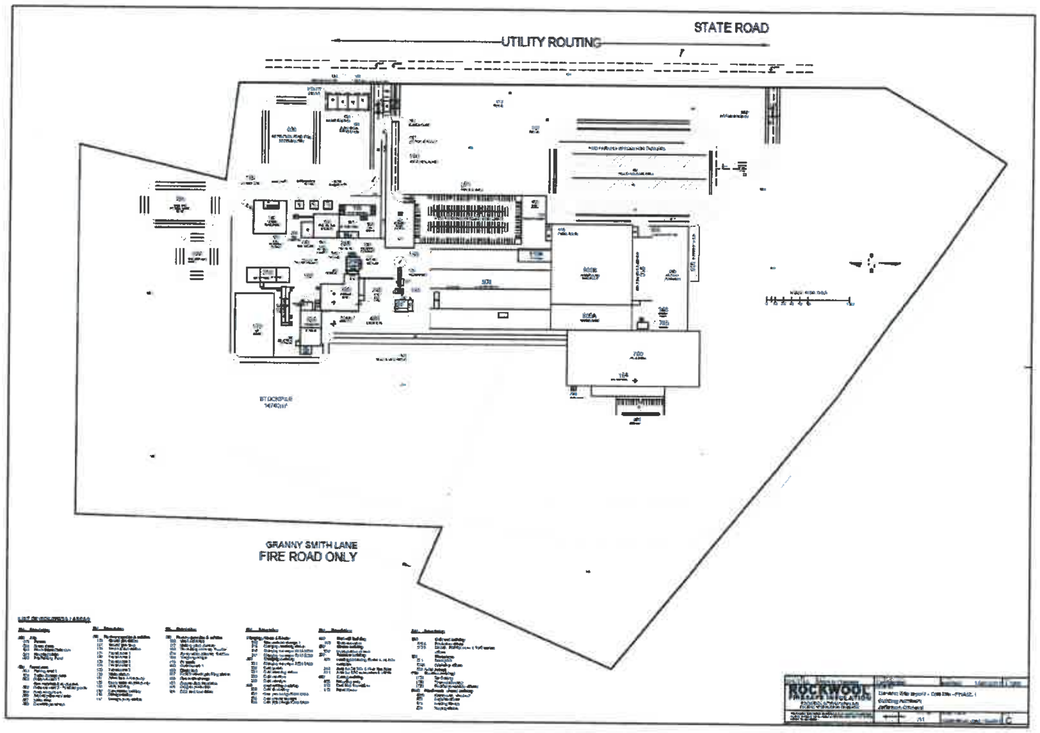


Figure 1-2 Preliminary Facility Layout



2.2 PROJECT SOURCES

A detailed list of emission rates and source parameters would be provided in the air quality modeling report supporting the new source application. An overview of the emission sources associated with the Project are as follows:

- One Mineral Wool Line including,
  - Raw Material Handling Sources (e.g., material unloading, storage silos, conveyor transfer points, portable crusher),
  - One (1) Melting Furnace, Spinning Chamber, Curing Oven, and Cooling Zone,
  - Dust control baghouses, and
  - Storage tanks,
- Coal Milling operations;
- One Rockfon Line including paint application, drying ovens, and dust control baghouse;

- Miscellaneous utilities or other facility-wide sources (boilers, heaters, cooling towers, portable crusher, fire pump, fuel storage, etc.); and
- Paved Haul Roads.

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. Roxul 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 gasses. The flow rate of gasses 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, Roxul is not proposing to model 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, Roxul is not proposing to separately model transient operations.

2.3 *BUILDING WAKE EFFECTS*

The EPA's Building Profile Input Program (BPIP), Version 04274 will be used to calculate downwash effects for the modeled emission sources. Building, structure, and tank configurations and locations relative to the modeled sources will be obtained from engineering drawings of the planned facility and input into BPIP. Construction of facility stacks will 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 16216r) will be used for predicting ambient impacts for each modeled compound. Regulatory default options will be used in the analysis, except as specified in this protocol. An overview of the various air quality modeling analyses that will utilize AERMOD are described in the following sections.

3.1.1 Project Only Modeling Analysis

This section summarizes the model inputs and procedures to be 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 will be required because these pollutants impacts will be presumed to not cause or contribute significantly to any modeled violations of a NAAQS or PSD Increment. Where impacts are predicted to exceed SILs, additional refined modeling is required to demonstrate that the cumulative impact of the Project and other potentially interacting sources plus background will 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 to be used, if necessary, to demonstrate that the combined impacts of pollutants from Project and nearby sources will not cause or contribute to air pollution in violation of any NAAQS or PSD Increment. The Class I Area impact analysis 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.

For purposes of presentation of all modeling results, it should be noted that all modeled concentrations will not be rounded or truncated, in accordance with EPA policy, when compared to applicable SILs, NAAQS, or PSD Increments.

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. Based on preliminary modeling, it is expected that cumulative impact modeling involving nearby sources will be required. However, it may be necessary to demonstrate that the Project is not contributing significantly to any modeled violations of NAAQS or PSD Increments. 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 of this protocol) 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 will 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	24	126	5
$PM_{2.5}$	24-Hour	35	14.3	20.7	1.2
	Annual	12	5.7	6.3	0.2
NO_2	1-Hour	188	33.2	154.8	7.5
	Annual	100	9.4	90.6	1
SO_2	1-Hour	196	39.5	156.5	7.8
	3-Hour	1,300	39.5	1,260	25
	24-Hour	365	17.5	347.5	5
	Annual	80	3.2	76.8	1
CO	1-Hour	40,000	458	39,542	2,000
	8-Hour	10,000	344	9,656	500

3.1.2.2 *Significant Impact Analysis Modeling Procedures*

The significance analysis involves refined modeling to determine maximum ambient impacts from the Project in comparison to pollutant-specific SILs. The results of the significance analysis determine the need for further modeling including nearby sources to evaluate compliance with NAAQS and PSD Increments. All Project sources listed in Section 2.2 will be included in the refined modeling

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

For the 8-hr CO and 24-hr $PM_{10}/PM_{2.5}$ analyses, the Emergency Fire Pump will be 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 will be 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 will be 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.

A pre-construction ambient air monitoring waiver must be requested in order for a facility subject to PSD review to be exempt from preconstruction ambient air monitoring requirements. A waiver may be considered based on the modeled impacts of the Project when compared to the SMCs in 40 CFR Part 52.21. The applicable SMCs are summarized in Table 3-2 in Section 3.2. If a project cannot be exempted from preconstruction monitoring based on modeling results, then the applicant may propose for the reviewing authority's consideration for the use of existing monitoring data if appropriate justification is provided.

Roxul proposes the use of representative regional background data to satisfy this requirement as necessary. Justification of the representativeness of existing regional background data for use in the modeling analysis is provided in Section 3.3.1 for $PM_{2.5}$ and Section 3.5 for all other applicable criteria pollutants.

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

In the event that the NO_2 and/or SO_2 1-hour and/or $PM_{2.5}$ 24-hour modeling predicts exceeds the applicable NAAQS, the MAXDCONT post processor to AERMOD will be used to assess whether the Project's contribution to the predicted violations, paired in time and space, is insignificant at all receptors in consideration.

In addition, in accordance with EPA guidance[1], the significant contribution analysis will examine every multi-year average of the daily maximum 1-hour values for NO_2, beginning with the 8th-highest and for SO2 beginning with the 4th-highest, continuing down the ranked distribution until all cumulative impacts are below the NAAQS. For the 24-hour $PM_{2.5}$ analysis, the significant contribution analysis will examine every multi-year average of the maximum 24-hour average values, beginning with the 8th-highest, continuing down the ranked distribution until all cumulative impacts are below the NAAQS.

3.2 *AMBIENT AIR QUALITY STANDARDS*

Table 3-2 presents a summary of the air quality standards that will be addressed for NO_2, SO_2, PM_{10}, $PM_{2.5}$, and CO. The SILs are presented, along with the SMCs, PSD Increments, and NAAQS. If Project impacts are shown to be less than the SILs and SMCs, then no further analysis is required. If the SILs are exceeded, additional analyses will be 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 violations of the 1-hr NO_2 NAAQS.

Table 3-2 Ambient Air Quality Standards

Pollutant	Averaging Period	NAAQS [a]	Class II Increment Standards	Class II SIL	SMC
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

[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."

Pollutant	Averaging Period	NAAQS [a]	Class II Increment Standards	Class II SIL	SMC
	Annual	12 [j,o]/15 [e,j]	4 [u]	0.3 [o], 0.2 [v]	-
NO_2	1-Hour	188 [l,p]	-	7.5 [c,n]	-
	Annual	100 [u]	25 [u]	1 [g,u]	14
CO	1-Hour	40,000 [d]	-	2,000 [g]	-
	8-Hour	10,000 [d]	-	500 [g]	575
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.

The Project is located approximately 11 km southeast of an existing ambient monitor that measures $PM_{2.5}$. This monitor in Martinsburg, WV (Site ID 54-003-0003) has been collecting $PM_{2.5}$ data since 1999. Due to the monitor's proximity, Roxul asserts that this monitor is suitable to represent the state of the air quality near the Project site during the pre-construction stage. Therefore, additional preconstruction monitoring should not be required for the Project, due to the existence of representative $PM_{2.5}$ ambient air quality data.

In addition to the SMC vacature in January 2013, EPA also remanded the SIL for $PM_{2.5}$. EPA intends to revise the approach to how the SIL is implemented. In the interim, widely accepted practice for PSD permitting is to continue to use the $PM_{2.5}$ SILs as benchmarks to determine a project's de-minimis standing with respect to the $PM_{2.5}$ NAAQS, but also to ensure that a project's modeled impacts do not exceed the NAAQS (despite being less than the SIL) when added to an existing representative background value of $PM_{2.5}$. Roxul intends to employ this practice as part of the air quality modeling analysis, specifically, that the Project's modeled concentrations of directly emitted $PM_{2.5}$ are both less than the levels of the SIL, but also less than the NAAQS when added to a representative background $PM_{2.5}$ concentration, obtained from the Piney Run, Garrett County, MD $PM_{2.5}$ monitor.

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. Monitors' distance to project, measurement scale, sampling rate, and data coverage are listed in Table 3-3.

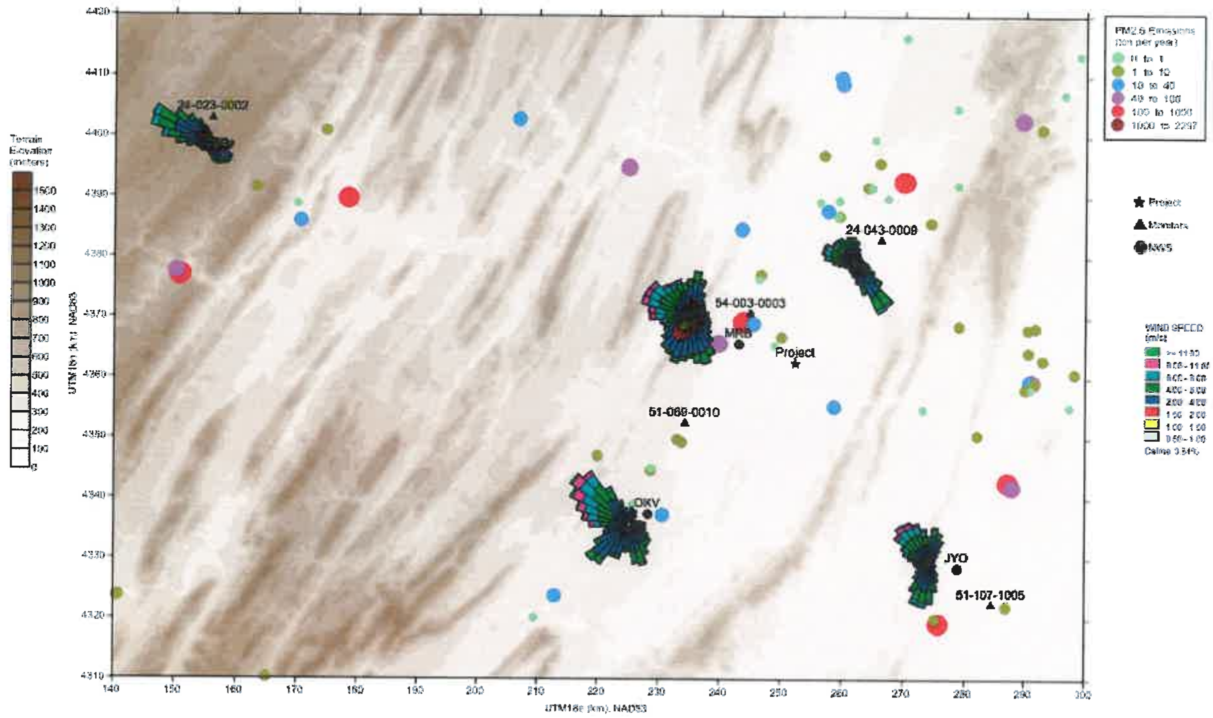
Table 3-3 List of $PM_{2.5}$ Ambient Monitor Station in the Vicinity of the Project Site

$PM_{2.5}$ Monitor Location	$PM_{2.5}$ Monitor ID	Distance to Project (km)	Measurement Scale	Sampling Rate	Data Coverage 2013-15	Design Conc. ($\mu g/m^3$) 24hr, Annual
Martinsburg, Berkeley Co., WV	54-003-0003	11	Urban (4-50km)	24-hour, every 3rd day	333 obs., 91%	26.6, 9.9*
Piney Run, Garrett Co., MD	24-023-0002	105	Regional Scale (50 - 100s km)	1-hour, every day	924 obs., 84%	15.9, 6.6
Hagerstown, Washington Co., MD	24-043-0009	25	Urban (4-50km)	1-hour, every day	1014 obs., 93%	25.7, 9.4
Ashburn, Loudoun Co. VA	51-107-1005	51	Neighborhood (400m – 4km)	24-hour, every 3rd days	338 obs., 93%	20.3, 8.7
Rte 669, Frederick Co. VA	51-069-0010	21	Neighborhood (400m – 4km)	24-hour, every 3rd days	361 obs., 99%	23.7, 8.9

* Berkeley Co. design values are based on 2014-2016 observations provided by WVDAQ

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) 2014. 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 - 2013-2015. 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 2014 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 84.4% for the 2013-2015 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 would be 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 will be included explicitly in the NAAQS and increment modeling.

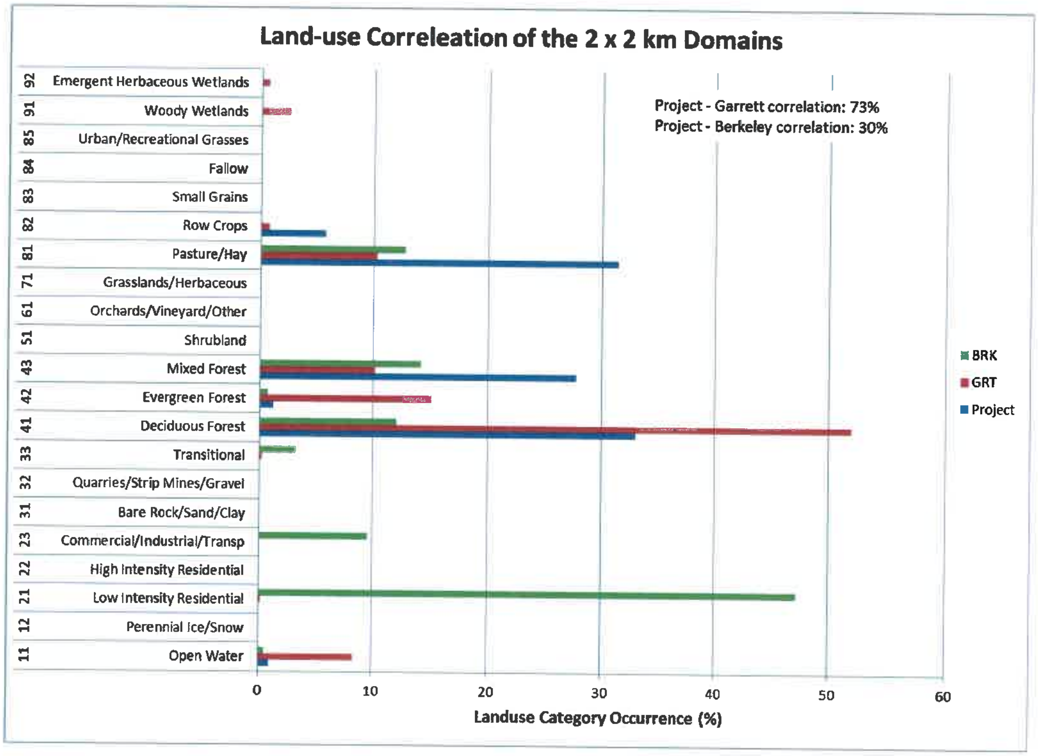
The initial review of the five available monitors indicates that the preferred sites for this project are the Berkeley Co. and the Garret Co. monitors. Further detailed evaluation of the land-use characteristics of these locations and comparison to the Project site are used to support the final monitor 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 = 73%
- Project to Berkeley Co. monitor (BRK) correlation = 30%

Figure 2-2 shows the comparison between the land-use features of the Project and two monitor sites based on the 1992 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 the above arguments, ERM proposes to use the Garrett County monitor as representative of the regional concentrations in the $PM_{2.5}$ NAAQS analysis for this PSD application. The cumulative modeling will include explicitly the regional sources in the vicinity of the Project, therefore the use of the Garrett County monitor observations can be considered realistic representation of the regional background values without introducing double counting of the 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". Roxul will utilize the MERPs guidance to assess the projects impacts on ozone secondary $PM_{2.5}$ formation as described in the paragraphs below.

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 241 tpy and the potential emissions of VOC are 580 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 fond to be located approximately 75 km northeast of the project. Due to the close regional proximity of EPA Source 8, Roxul 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 will be 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 2014 8hr Design Value (ppb)	Observed 2015 8hr Design Value (ppb)	Observed 2016 8hr Design Value (ppb)
540030003	Berkeley, WV	60.0	66.0	64.0

Also, for the purpose of this analysis, Roxul will consider 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 3-5 ***EPA Hypothetical Source Ozone Modeling Results – Source 8 (Pennsylvania)***

Precursor	Emissions (tpy)	Stack Height	Maximum Modeled Ozone Concentration (ppb)
NO_X	500	Low (1 m)	1.67
NO_X	500	High (90 m)	1.66
VOC	500	Low (1 m)	0.16
VOC	500	High (90 m)	0.16

The results of EPA's hypothetical source modeling presented in Table 3-5 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, Roxul will use 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 low stack height case for both NO_X and VOC is conservatively chosen along with the ozone SIL, the resulting MERPs values are the following:

NOX MERP = 1ppb * 500 tpy / 1.67 ppb = 299 tpy
VOC MERP = 1ppb * 500 tpy / 0.16 ppb = 3125 tpy

The potential emissions of NO_X (241 tpy) and VOC (580 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 (241 tpy)/NOX MERP (299 tpy) +
(Project VOC emissions (580 tpy)/VOC MERP (3125 tpy)) = 99.2%

The calculated cumulative consumption of the MERPs is 99.2%. Roxul concludes that this analysis utilizing recent EPA guidance demonstrates that the proposed project will result in insignificant ozone impacts.

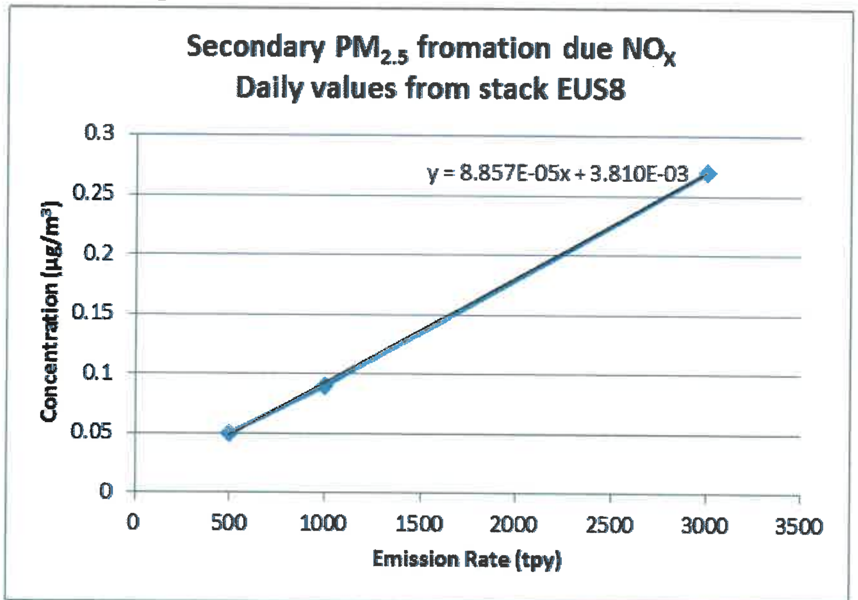
3.4.2 *Secondary $PM_{2.5}$ and EPA MERPs Guidance*

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, Roxul has used the model results for EPA Source 8 located in Southern Pennsylvania, Adams County. Figures 3-1 and 3-2 present plots of the modeled $PM_{2.5}$ concentrations for Source 8 plotted against modeled emissions of NO_X and SO_2 for the 500 tpy, 1,000 tpy, and 3,000 tpy "high" stack height cases. Each plot includes a trend line with a linear equation. The linear equation for each precursor and $PM_{2.5}$ averaging period can be used in conjunction with the Project potential emissions of NO_X and SO_2 to calculate an appropriate $PM_{2.5}$ concentration that can be added to the direct $PM_{2.5}$ concentration from AERMOD.

Figure 3-1 *EPA Hypothetical Source $PM_{2.5}$ Modeling Results – Source 8 (Pennsylvania) – 24-hr Average*



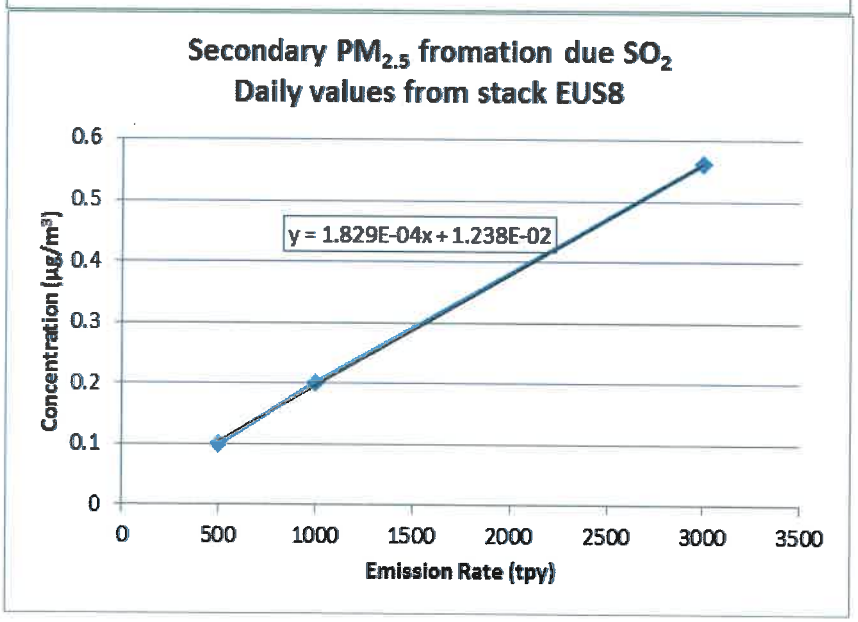
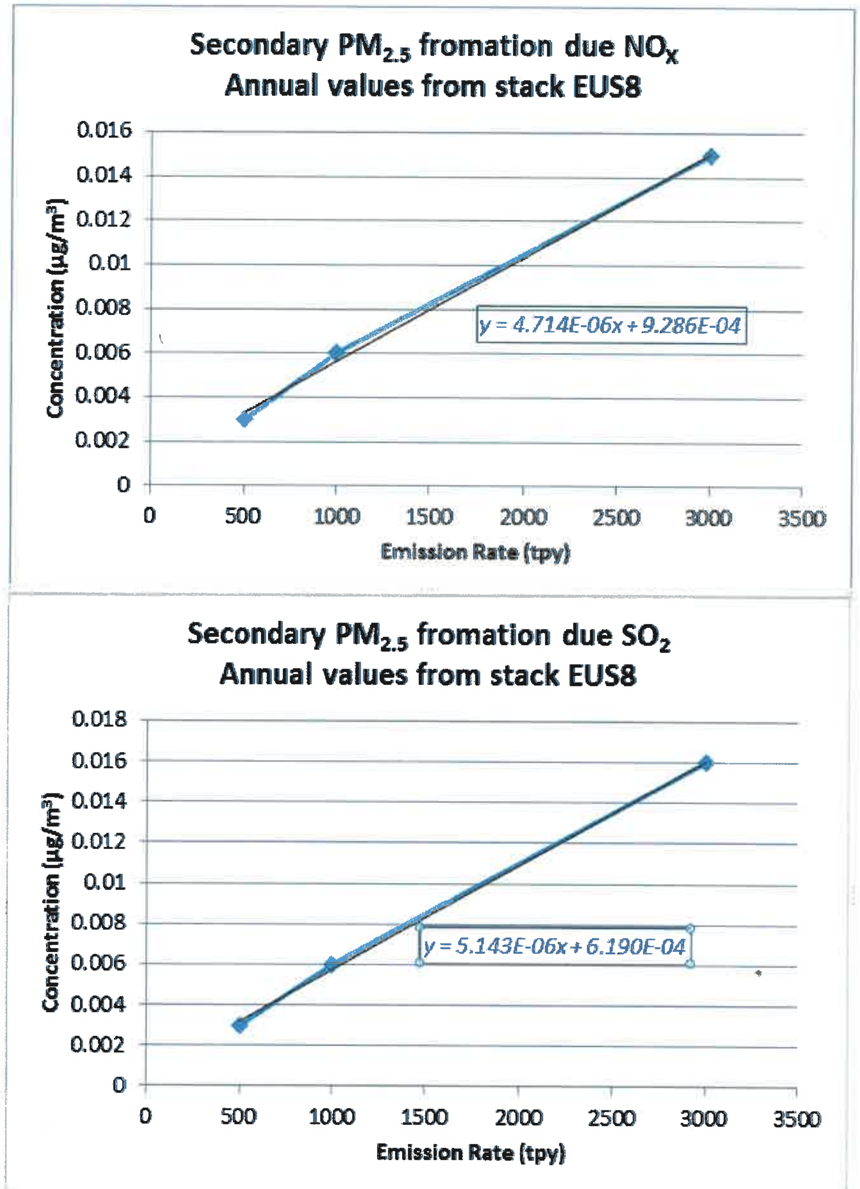


Figure 3-2 ***EPA Hypothetical Source $PM_{2.5}$ Modeling Results – Source 8 (Pennsylvania) – Annual Average***



The secondary $PM_{2.5}$ concentrations due to the Project derived from the equations shown in Figures 3-2 and 3-3 are as follows:

24-hr Secondary $PM_{2.5}$ due NO_X = $8.56e^{-5}$*(241 tpy) +$3.81e^{-3}$ = 0.025 µg/m³
+
24-hr Secondary $PM_{2.5}$ due SO_2 = $1.83e^{-4}$*(163 tpy) +$1.24e^{-2}$ = 0.042 µg/m³

Total Secondary $PM_{2.5}$ (24-hr) = 0.067 µg/m³

Annual Secondary $PM_{2.5}$ due NO_X = 4.71e-6*(241 tpy) +9.29e-4 = 0.0021μg/m³
+
Annual Secondary $PM_{2.5}$ due SO_2 = 5.14e-6*(163 tpy) +6.19e-4 = 0.0015 μg/m³

Total Secondary $PM_{2.5}$ (Annual) = 0.0035 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, can be added to direct $PM_{2.5}$ modeled concentrations to determine the total project air quality impact on $PM_{2.5}$. These concentrations represent only very small fraction of the SIL values – approximately 5.58% of the 24-hour SIL and 1.75% of the annual. Therefore the project impacts could be considered as insignificant and no further modeling actions would be required.

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}, SO_2, or CO. The following discussion presents the most current monitor design values for nearby monitors that Roxul has identified that are representative of Jefferson County.

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 Adams County, PA (EPA ID 42-001-0001). This is the closest NO_2 monitor to the proposed Project with a valid 2016 monitor design value. The Adams County monitor is located 77 km to the northeast of the project site. The NO_2 data coverage of 93.0% 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	Adams Co., PA	42-001-0001	77	1-Hour	33.2
				Annual	9.4

To characterize 1-hr background NO_2 values, Roxul proposes to utilize EPA guidance (EPA 2011) and calculate the design value based on the most recent three years of data. The proposed NAAQS analysis would be performed in two stages. In the first stage a conservative approach would be 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. 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 proposed $PM_{2.5}$ ambient data are collected at the Garrett County, MD monitoring station. Roxul proposes to use these 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)
$PM_{2.5}$	Pine Run Garrett Co., MD	24-023-0002	105	24-Hour	14.3
				Annual	5.7

To characterize 24-hr background $PM_{2.5}$ values, Roxul proposes to utilize EPA guidance (EPA 2014) and calculate the design value based on the most recent three years of data 2014-2016. The proposed NAAQS analysis would be performed in two stages. In the first stage a conservative approach would be 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 EPA guidance recommends the following approach:

- For each year, determine the annual 98th percentile 24-hr monitor value;
- For all 24-hr values in the year less than or equal to the 98th percentile value, divide the distribution into four seasonal categories;
- Determine the maximum concentration in each seasonal category;
- Average the seasonal maximum concentrations across the three years (e.g., average spring value for years 1-3).

The approach described above will result in four 24-hr values that will be used as input as background values in AERMOD if the overall 24-hr monitor design value is unnecessarily conservative.

3.5.3 *Representative Background Concentrations of PM_{10}*

The closest PM_{10} monitor to the proposed Project is located in Winchester City, VA, 33 km to the southwest. Based on proximity, Roxul proposes the use of 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 will be used to characterize background PM_{10} in the cumulative NAAQS analysis, if needed. 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	24

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 2016 monitor design value. The Garrett County monitor is located 105 km west-northwest of the Project site. The SO_2 data coverage of 85.6% 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	39.5
				3-Hour	39.5
				24-Hour	17.5
				Annual	3.2

To characterize 1-hr background SO_2 values, Roxul proposes to utilize EPA guidance (EPA 2011) and calculate the design value based on the most recent three years of data. The proposed NAAQS analysis would be performed in two stages. In the first stage a conservative approach would be 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 99th percentile monitor values by season and hour-of-day are to be calculated. EPA guidance suggests that the season and hour-of-day combination be based on the 2nd highest values to represent the 99th percentile. Roxul proposes to use the 1-hr SO_2 design value in the 3-hour NAAQS analysis.

3.5.5 *Representative Background Concentrations of CO*

The most representative CO monitor found in the vicinity of the Project is the Garrett County, MD regional transport monitor. If a cumulative analysis is triggered, Roxul will utilize the maximum highest-second highest monitor design value over the most recent three years of available monitor data for both the 1-hr and 8-hr averages to characterize background CO. Table 3-10 summarizes the most recent design values from the Garrett County, MD CO monitor.

Table 3-10 CO Monitor Design Values

POLLUTANT	MONITOR LOCATION	MONITOR ID	Distance to Project (km)	AVERAGING PERIOD	DESIGN CONCENTRATION (µg/m3)
CO	Garrett Co., MD	24-023-0002	105	1-Hour	458
				8-Hour	344

3.6 *NO_X TO NO_2 CONVERSION*

For the NO_2 modeling analyses, Roxul proposes to make use of 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. Roxul will utilize 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.

3.6.1 *Optional NO_2 Modeling Refinements*

The ARM approach described above is a Tier II NO_2 modeling methodology. Further refinements in AERMOD are available that account for NO_X to NO_2 transformation through the use of actual monitored concentrations of ozone. These refinements are referred to as Tier III NO_2 modeling methods. The Tier III approaches are the Plume Volume Molar Ratio Method (PVMRM) or the Ozone Limiting Method (OLM) options in AERMOD.

Roxul proposes to utilize a Tier III air quality modeling approach on an as-needed basis. Specifically, if the cumulative NO_2 modeling analysis results in unrealistically high concentrations of NO_2, then the Tier III options will be considered. EPA guidance (USEPA 2014a, USEPA 2015b) recommends the PVMRM approach over the OLM approach for "relatively isolated, elevated sources". Once the cumulative NO_X modeling inventory is finalized, Roxul will consider the appropriateness of both the PVMRM and OLM approaches. The characteristics of nearby NO_X sources and the interaction of those sources with Roxul's modeled NO_2 impacts will be considered in making the determination to apply PVMRM or OLM. The current PVMRM formulation in AERMOD 16216r is a revised version of PVMRM that was originally made available in AERMOD version 15181 as PVMRM2. PVMRM2 represents an improvement over the original PVMRM approach in that it addresses known issues with PVMRM in overestimating NO_2 conversion due to overestimates of plume volumes in stable conditions. EPA has published a technical support document that details the enhancements in PVMRM2 vs. PVMRM (USEPA 2015a).

Use of the Tier III refinements in AERMOD requires three additional inputs:

- Monitored ozone data;
- An equilibrium nitric oxide (NO)/NO_2 ratio; and
- Identification of source specific in-stack ratios of NO_2/NO_x.

Ozone data from the Berkeley County, WV ozone monitor will be used as input in the Tier III NO_2 modeling. Roxul will either characterize the ozone data on an hourly basis (a separate hour-by-hour file that will be read by AERMOD), or on a seasonal and hour-of-day basis. The default equilibrium nitric oxide (NO)/NO_2 ratio of 0.9 will be used.

In the absence of source-specific in-stack data, US EPA suggests a default in-stack NO_2/NO_x ratio of 0.5. Roxul will use an in-stack ratio of 0.5 for all project sources if manufacturer supported ratios cannot be obtained. For any cumulative inventory source greater than 1 km from the project site, Roxul will use an in-stack NO_2/NO_x ratio of 0.2. This approach is consistent with USEPA guidance for multi-source NO_2 modeling analyses (USEPA 2014a).

3.7 *GEOGRAPHIC SETTING*

3.7.1 *Land Use Characteristics*

The proposed facility will be located in the city of Ranson, Jefferson County, WV. AERMOD will be used in the default (rural) mode. Roxul 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 less than 1% urban classification. This determination was made by analyzing the

USGS NLCD 1992 data, where urban classifications were assumed to be category 22 (high intensity residential) and category 23 (commercial /industrial/transportation).

3.7.2 *Terrain*

The Project site is situated in elevated terrain at approximately 162 m. The latest version of EPA's AERMAP program (version 11103) will be 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 will be obtained at a horizontal resolution of 1 arc-second (30-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 will be 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 3-11 summarizes the applicable AQRVs or NAAQS secondary standards.

Table 3-11 Summary of Applicable AQRVs and AAQS

Pollutant	Averaging Period	AQRV Screening Levels (μg/m³)	Secondary NAAQS (μg/m³)
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

[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.

Pollutant	Averaging Period	AQRV Screening Levels (μg/m³)	Secondary NAAQS (μg/m³)
SO_2	1-hour	917	--
	3-hour	786	1,300
	24-hour	--	260
	Annual	18	60
CO	1-hour	--	--
	8-hour	--	--
	Weekly[1]	1,800,000	--
Pb	Quarterly	1.5	0.15

"--" = not applicable or not available.

[1] Weekly average impact approximated by modeled 24-hr average impact.

With respect to visibility impacts, it should be noted that the facility will comply with the applicable WVDAQ visible emissions regulations. In addition, Roxul will consult 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. VISCREEN will be executed following the procedures described in EPA's Workbook for Plume Visual Impact Screening and Analysis for Level-1 visibility assessments, if necessary.[3]

3.8 *RECEPTOR GRIDS*

For this modeling analysis, nested Cartesian receptor grids of variable spacing will be utilized to resolve the ground concentration patterns. The grids will be 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 will be used to define ground elevations and hill scales for each receptor. Roxul will analyze isopleths of modeled concentrations

[3] EPA, Workbook for Plume Visual Impact Screening and Analysis (Revised), EPA-454/R-92-023, 1992.

due to the proposed Project, and determine if the proposed receptor grid adequately accounts for the worst case impacts. The receptor grid extent will be 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 will be used to better resolve the concentration patterns. Roxul will make any adjustments to the proposed grid on a case by case basis, and provide justification for any refinements in the modeling report to WVDAQ.

The facility fence line will be used as the boundary to determine ambient air. No receptors will be placed within this fence line boundary. A physical fence will control public access to the facility.

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

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.

Roxul proposes to utilize meteorological data collected from 2012-2016 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) will also be used in the analysis. The following steps will be taken to prepare and process these data with the latest versions of EPA's processing programs:

- AERMET version 16216 will be used to process the surface and upper air meteorological data;
- The ADJ_U* option will be used in AERMET;
- One-minute and five-minute ASOS wind data will be processed for input into AERMET through the use of the AERMINUTE version 15272 preprocessor;
- AERSURFACE will be run with varying options for moisture conditions (average, wet, and dry) at seasonal temporal resolution;
- Climatological data from the National Climatic Data Center (NCDC) will be used to assign the moisture and snowfall characteristics for each season of the 5-year modeling period;
- The resulting files will be processed into 5 individual calendar years and one 5-year period for model input.

The ADJ_U* option addresses a known bias towards underprediction of friction velocity under stable, low wind speed conditions, leading to observed model overprediction for these conditions. ADJ_U* is a regulatory option in the default application of AERMET version 16216 for use in AERMOD. In addition, for this application no site-specific meteorological data is available. The surface data included were recorded at the Martinsburg airport NWS station and do not include turbulence observations.

AERMET processing is performed in 3 stages. Stage 1 processing reads the raw onsite, surface, and upper air files, performs data range and completeness checks, and formats data for input to Stage 2. Stage 2 reads the files prepared in Stage 1, adds the 1- and 5-minute wind observations and prepares a single merged file with all necessary inputs for Stage 3. Stage 3 carries out the boundary layer parameterizations needed to calculate turbulence parameters such as the friction velocity, convective velocity scale, Monin-Obukhov length scale, and convective and mechanical mixing depths as well as determines hourly surface characteristics (albedo, Bowen Ratio, and surface roughness length) based on the AERSURFACE outputs.

3.9.2 *Summary of AERMET Location Inputs*

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

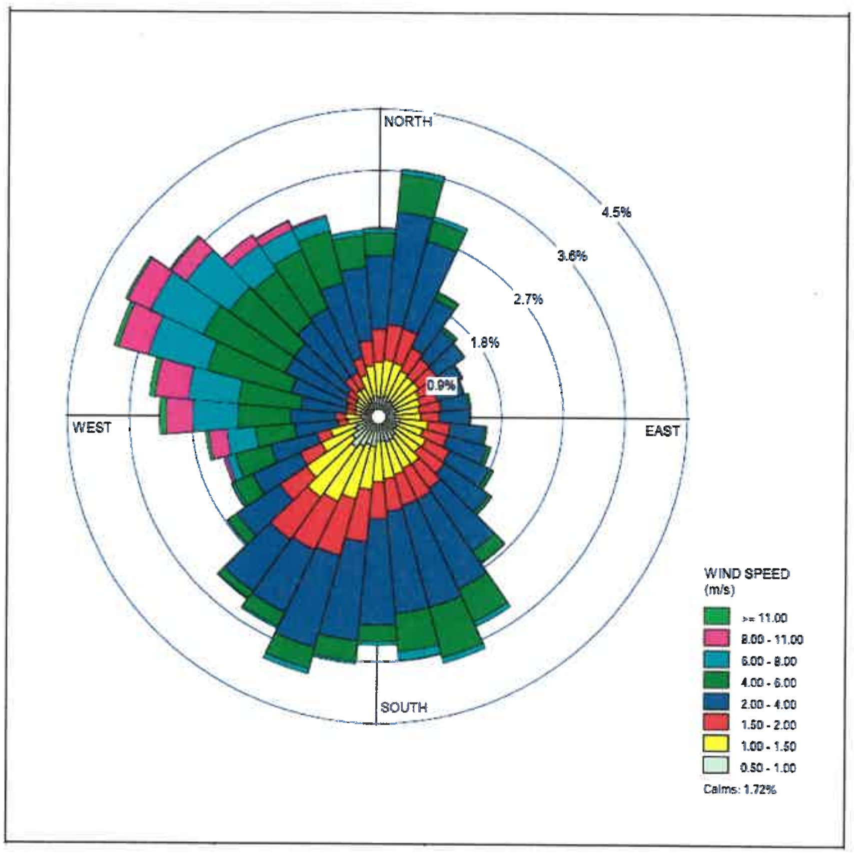
- KMRB ASOS Location: 39.402N 77.984W - specified by NCEI;
- KMRB Elevation: 162.8 m – specified in NCEI;
- IAD Upper Air Location: 38.98N 77.47W – noted in FSL file header; and
- Hourly AERMET data is processed in time zone 5.

3.9.3 *Meteorological Data Representativeness*

3.9.3.1 *Representativeness of Wind Measurements*

A wind rose for KMRB for 2012-2016 is shown in Figure 3-3.

Figure 3-3 KMRB Wind Rose – 2012-2016



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. Roxul 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 13016) land-use processor will be used for the development of the necessary micrometeorological parameters for use in AERMET. The following is a summary of the settings that will be used in AERSURFACE:

- USGS 1992 NLCD input land use data
- Center Latitude (decimal degrees): 39.402
- Center Longitude (decimal degrees): -77.984
- Datum: NAD83
- Study radius (km) for surface roughness: 1.0
- Airport? Y, Continuous snow cover? Y
- 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 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 will be based on climatological data compiled by NCDC. The moisture characterization and snow cover will be characterized on seasonal basis based on NCDC climatological records for the airport site. AERSURFACE will be executed with seasonal resolution with 12 wind direction sectors.

Additional details on the moisture and snow cover options that will be 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 3-12 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 3-12 *Comparison of Micrometeorological Variables*

Season	Albedo		Bowen Ratio		Surface Roughness	
	Project	Airport	Project	Airport	Project	Airport
1	0.55	0.53	0.50	0.50	0.125	0.025
2	0.14	0.15	0.38	0.48	0.264	0.055
3	0.18	0.18	0.44	0.42	0.563	0.110
4	0.18	0.18	0.75	0.83	0.563	0.102

The NLCD 1992 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 notably higher than the values derived for KMRB from the NLCD 1992 land use data. Roxul proposes conservatively to use the KMRB surface roughness in the modeling.

3.9.4 *AERMET Processing*

AERMET (version 16216) will be executed using EPA recommended settings to produce the meteorological data needed for AERMOD. The five year period from 2011-2015 is proposed for use in this analysis. The AERMET analysis will include the use of both the AERMINUTE and AERSURFACE preprocessors. The AERMINUTE (version 15272) meteorological data processor will be 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 will be applied to the 1-minute ASOS derived wind speeds in AERMET.

In addition to the surface meteorological data from KMRB, Roxul will utilize 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.

Precipitation, snow fall and temperature statistics, provided by the National Center for Environmental Information (NCEI), were used in the determination of snow cover and moisture characteristics for each season. Monthly averages for 1981-2010 period collected at the KMRB station were consider to establish the historical precipitation amounts and temperatures. The guidance 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. The proposed snow cover and moisture options for the 2012-2016 KMRB meteorological data processing are presented in Table 3-13.

Table 3-13 ***KMRB Snow Cover and Monthly Surface Moisture Assignments***

Modeling Year	WINTER		SPRING	SUMMER	FALL
	Moisture	Continuous Snow on the ground?	Moisture	Moisture	Moisture
2012	Avg	Yes	Avg	Dry	Avg
2013	Wet	Yes	Dry	Avg	Wet
2014	Wet	Yes	Avg	Avg	Avg
2015	Dry	Yes	Avg	Dry	Dry
2016	Wet	Yes	Avg	Wet	Dry

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 will include 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.

Roxul anticipates that 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) will be within 50 km for the 1-hour average and within 20 km for the larger averaging periods. Considering the above referenced language from the Guideline, Roxul proposes to limit the cumulative inventory for all pollutants and averaging periods that exceed their respective SIL to major sources within an area of radius 25km of the proposed Project site.

Separate inventories will be developed for CO, NO_X, PM_{10}, $PM_{2.5}$, and SO_2 in conjunction with WVDAQ, if required. Title V permits and permit applications that are publically available will be the primary basis for the development of modeled emission rates for these inventories. The stack parameters will be based on the WVDAQ, MDDEP, and VADEQ emission inventory and available permits.

If the modeling results imply that further refinement of the off-site inventories is necessary, Roxul will consult with WVDAQ.

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 southeast 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. Roxul anticipates that Q/D ratios for the closest Class I area will be approximately 9.6, which is below the FLM screening level of 10 and therefore no AQRV analysis is proposed.

Roxul proposes to evaluate 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 will be 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 will be determined based on the receptors used by the NPS to represent each Class I area for refined air quality modeling analyses[4]. If maximum modeled concentrations at the 50 km receptors are less than the Class I SILs for NO_2, PM_{10}, $PM_{2.5}$, and SO_2, then it can be assumed that the project would also have maximum potential impacts that would be less than the SILs at the more distant Class I areas.

To determine elevations for the 50 km ring of receptors, Roxul proposes to use AERMAP to determine the elevations for the receptor locations recommended by the NPS for each Class I area within 300 km. After the elevations for each Class I area receptor has been determined with AERMAP, Roxul will identify the maximum and minimum elevations (and associated hill scale heights) for all NPS Class I receptors, and use these elevations and associated hill scales as the elevation and hill scale for each receptor in the 50 km arc receptors for each Class I area.

If the Class I SILs are exceeded in the AERMOD screening evaluation, Roxul proposes refined analysis with the CALPUFF model to evaluative the project impact within the park proper. In the event of refined modeling, Roxul also proposes the use of chemical transformation with CALPUFF, namely the MESOPUFF II scheme coupled with the VISTAS meteorological data set provided by EPA. The use of the chemical transformation option would account also for the secondary $PM_{2.5}$ formation.

[4] http://www.nature.nps.gov/air/maps/receptors/

4.0 *MODEL RESULTS PRESENTATION*

Five (5) criteria pollutants will be modeled, namely CO, NO_2, $PM_{2.5}$, PM_{10}, and SO_2. Maximum ground level model design values will be identified for the appropriate averaging periods and compliance with SILs, and subsequently the NAAQS and PSD Increments, as necessary. Results will be presented in a tabular and graphical format (as needed). Electronic modeling files will be provided with the report.

5.0 *REFERENCES*

U.S. Environmental Protection Agency. (EPA 2016) AERMOD Implementation Guide, AERMOD Implementation Workgroup. December 2016.

National Park Service. (NPS 2010) Federal Land Managers' Air Quality Related Values Work Group (FLAG) Phase I Report - Revised (2010). Natural Resource Report NPS/NRPC/NRR – 2010/232

U.S. Environmental Protection Agency. (EPA 2011) EPA memo entitled "Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO2 National Ambient Air Quality Standard", EPA, Office of Air Quality Planning and Standards, Raleigh, NC. March 1, 2011.

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U.S. Environmental Protection Agency. (EPA 2015a) Technical Support Document (TSD) for NO2-related AERMOD Modifications, EPA, Office of Air Quality Planning and Standards, Raleigh, NC. July 2015, EPA-454/B-15-004.

U.S. Environmental Protection Agency. (EPA 2016a) EPA memo entitled "Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM2.5 under the PSD Permitting Program", EPA, Office of Air Quality Planning and Standards, Raleigh, NC. December 2, 2016.

U.S. Environmental Protection Agency. (EPA 2017) Appendix W to 40 CFR 51, Published January 17, 2017 Federal Register Volume 82 No. 10, Revisions to the Guideline on Air Quality Models: Enhancements to the AERMOD Dispersion Modeling System and Incorporation of Approaches to Address Ozone and Fine Particulate Matter; Final Rule.

Kessler, Joseph R

From:	Grant Morgan <Grant.Morgan@erm.com>
Sent:	Thursday, October 26, 2017 10:02 AM
To:	McClung, Jon D
Cc:	Kessler, Joseph R; Lillian Nielsen; Milena Borissova; Jeff Twaddle; Kasey Harrington
Subject:	Roxul - Modeling Protocol Draft Supplement
Attachments:	Roxul - Modeling Protocol suplement_10_26_17pdf.pdf

Jon,

Please find the attached protocol supplement for the Roxul modeling supplement, as discussed with Milena and during our meeting at MAR last week.

As you are able to review, please reach out to the team with any questions or comments. I apologize for not pushing this out more prior to our upcoming call.

Thank you,

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2.2 *PROJECT SOURCES*

A detailed list of emission rates and source parameters would be provided in the air quality modeling report supporting the new source application. An overview of the emission sources associated with the Project are as follows:

- One Mineral Wool Line including,
  - Raw Material Handling Sources (e.g., material unloading, storage silos, conveyor transfer points, portable crusher),
  - One (1) Melting Furnace, Spinning Chamber, Curing Oven, and Cooling Zone,
  - Dust control baghouses, and
  - Storage tanks,
- Coal Milling operations;
- One Rockfon Line including paint application, drying ovens, and dust control baghouse;
- Miscellaneous utilities or other facility-wide sources (boilers, heaters, cooling towers, portable crusher, fire pump, fuel storage, etc.); and
- Paved Haul Roads.

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. Roxul 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 gasses. The flow rate of gasses 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, Roxul is not proposing to model 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, Roxul is not proposing to separately model transient operations.

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". Roxul will utilize the MERPs guidance to assess the projects impacts on ozone secondary $PM_{2.5}$ formation as described in the paragraphs below.

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 241 tpy and the potential emissions of VOC are 580 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 fond to be located approximately 75 km northeast of the project. Due to the close regional proximity of EPA Source 8, Roxul 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 will be 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 2014 8hr Design Value (ppb)	Observed 2015 8hr Design Value (ppb)	Observed 2016 8hr Design Value (ppb)
540030003	Berkeley, WV	60.0	66.0	64.0

Also, for the purpose of this analysis, Roxul will consider 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 3-5 ***EPA Hypothetical Source Ozone Modeling Results – Source 8 (Pennsylvania)***

Precursor	**Emissions (tpy)**	**Stack Height**	**Maximum Modeled Ozone Concentration (ppb)**
NO_X	500	Low (1 m)	1.67
NO_X	500	High (90 m)	1.66
VOC	500	Low (1 m)	0.16
VOC	500	High (90 m)	0.16

The results of EPA's hypothetical source modeling presented in Table 3-5 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, Roxul will use 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 low stack height case for both NO_X and VOC is conservatively chosen along with the ozone SIL, the resulting MERPs values are the following:

NOX MERP = 1ppb * 500 tpy / 1.67 ppb = 299 tpy
VOC MERP = 1ppb * 500 tpy / 0.16 ppb = 3125 tpy

The potential emissions of NO_X (241 tpy) and VOC (580 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 (241 tpy)/NOX MERP (299 tpy) +
(Project VOC emissions (580 tpy)/VOC MERP (3125 tpy)) = 99.2%

The calculated cumulative consumption of the MERPs is 99.2%. Roxul concludes that this analysis utilizing recent EPA guidance demonstrates that the proposed project will result in insignificant ozone impacts.

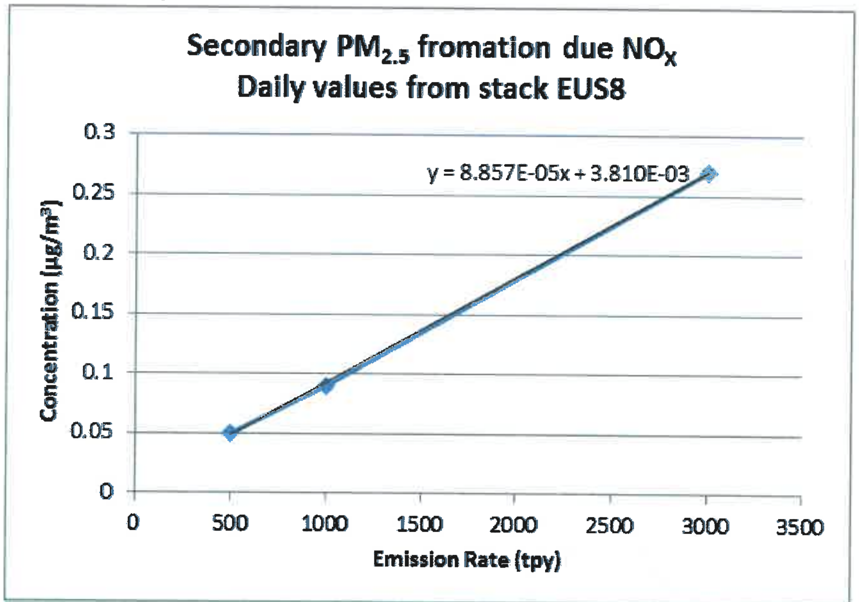
3.4.2 *Secondary $PM_{2.5}$ and EPA MERPs Guidance*

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, Roxul has used the model results for EPA Source 8 located in Southern Pennsylvania, Adams County. Figures 3-1 and 3-2 present plots of the modeled $PM_{2.5}$ concentrations for Source 8 plotted against modeled emissions of NO_X and SO_2 for the 500 tpy, 1,000 tpy, and 3,000 tpy "high" stack height cases. Each plot includes a trend line with a linear equation. The linear equation for each precursor and $PM_{2.5}$ averaging period can be used in conjunction with the Project potential emissions of NO_X and SO_2 to calculate an appropriate $PM_{2.5}$ concentration that can be added to the direct $PM_{2.5}$ concentration from AERMOD.

Figure 3-1 *EPA Hypothetical Source $PM_{2.5}$ Modeling Results – Source 8 (Pennsylvania) – 24-hr Average*



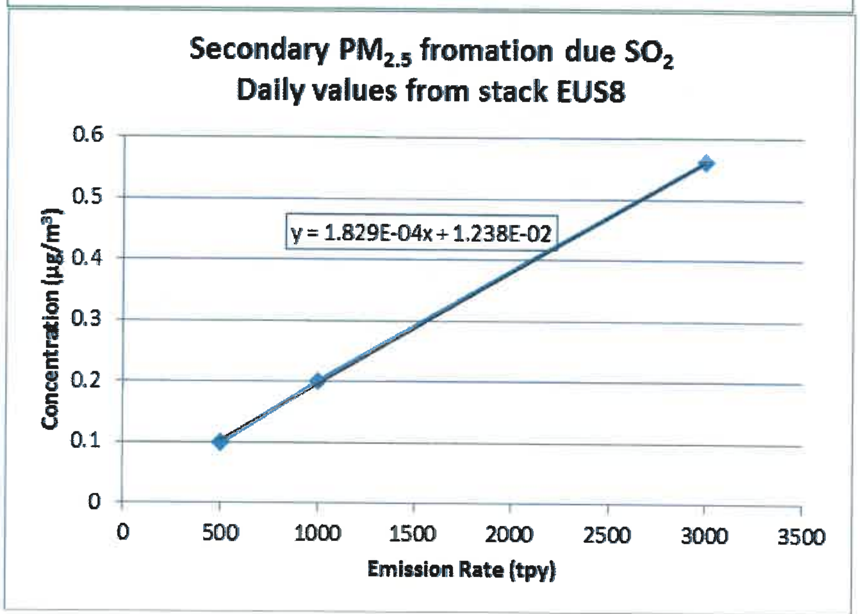
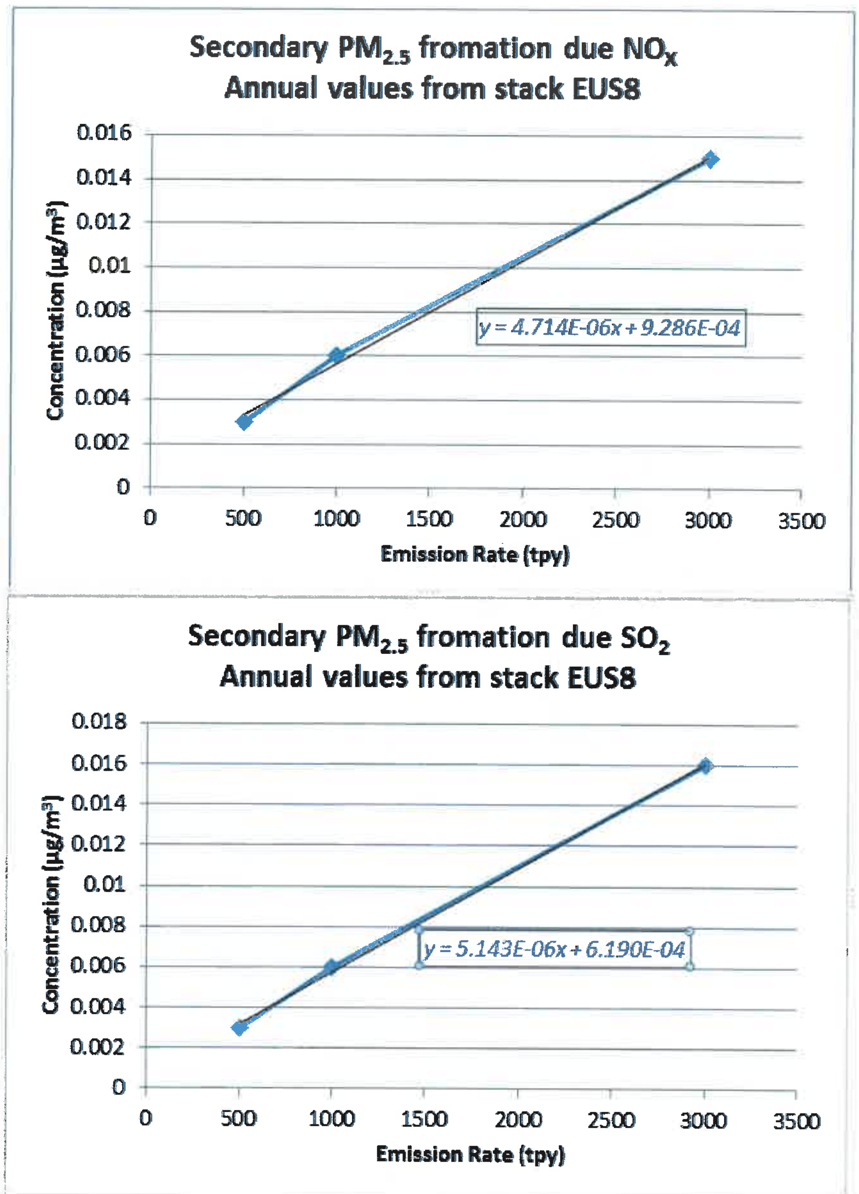


Figure 3-2 *EPA Hypothetical Source $PM_{2.5}$ Modeling Results – Source 8 (Pennsylvania) – Annual Average*



The secondary $PM_{2.5}$ concentrations due to the Project derived from the equations shown in Figures 3-2 and 3-3 are as follows:

24-hr Secondary $PM_{2.5}$ due NO_X = $8.56e^{-5}$*(241 tpy) +$3.81e^{-3}$ = 0.025 µg/m³
+
24-hr Secondary $PM_{2.5}$ due SO_2 = $1.83e^{-4}$*(163 tpy) +$1.24e^{-2}$ = 0.042 µg/m³

Total Secondary $PM_{2.5}$ (24-hr) = 0.067 µg/m³

Annual Secondary $PM_{2.5}$ due NO_X = 4.71e-6*(241 tpy) +9.29e-4 = 0.0021μg/m³
+
Annual Secondary $PM_{2.5}$ due SO_2 = 5.14e-6*(163 tpy) +6.19e-4 = 0.0015 μg/m³

Total Secondary $PM_{2.5}$ (Annual) = 0.0035 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, can be added to direct $PM_{2.5}$ modeled concentrations to determine the total project air quality impact on $PM_{2.5}$. These concentrations represent only very small fraction of the SIL values - approximately 5.58% of the 24-hour SIL and 1.75% of the annual. Therefore the project impacts could be considered as insignificant and no further modeling actions would be required.

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 will include 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.*

Roxul anticipates that 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) will be within 50 km for the 1-hour average and within 20 km for the larger averaging periods. Considering the above referenced language from the Guideline, Roxul proposes to limit the cumulative inventory for all pollutants and averaging periods that exceed their respective SIL to major sources within an area of radius 25km of the proposed Project site.

Separate inventories will be developed for CO, NO_X, PM_{10}, $PM_{2.5}$, and SO_2 in conjunction with WVDAQ, if required. Title V permits and permit applications that are publically available will be the primary basis for the development of modeled emission rates for these inventories. The stack parameters will be based on the WVDAQ, MDDEP, and VADEQ emission inventory and available permits.

If the modeling results imply that further refinement of the off-site inventories is necessary, Roxul will consult with WVDAQ.

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 southeast 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. Roxul anticipates that Q/D ratios for the closest Class I area will be approximately 9.6, which is below the FLM screening level of 10 and therefore no AQRV analysis is proposed.

Roxul proposes to evaluate 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 will be 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 will be determined based on the receptors used by the NPS to represent each Class I area for refined air quality modeling analyses[1]. If maximum modeled concentrations at the 50 km receptors are less than the Class I SILs for NO_2, PM_{10}, $PM_{2.5}$, and SO_2, then it can be assumed that the project would also have maximum potential impacts that would be less than the SILs at the more distant Class I areas.

To determine elevations for the 50 km ring of receptors, Roxul proposes to use AERMAP to determine the elevations for the receptor locations recommended by the NPS for each Class I area within 300 km. After the elevations for each Class I area receptor has been determined with AERMAP, Roxul will identify the maximum and minimum elevations (and associated hill scale heights) for all NPS Class I receptors, and use these elevations and associated hill scales as the elevation and hill scale for each receptor in the 50 km arc receptors for each Class I area.

If the Class I SILs are exceeded in the AERMOD screening evaluation, Roxul proposes refined analysis with the CALPUFF model to evaluative the project impact within the park proper. In the event of refined modeling, Roxul also proposes the use of chemical transformation with CALPUFF, namely the MESOPUFF II scheme coupled with the VISTAS meteorological data set provided by EPA. The use of the chemical transformation option would account also for the secondary $PM_{2.5}$ formation.

[1] http://www.nature.nps.gov/air/maps/receptors/

Kessler, Joseph R

From: Grant Morgan <Grant.Morgan@erm.com>
Sent: Friday, September 8, 2017 2:26 PM
To: McClung, Jon D; Kessler, Joseph R
Cc: Lillian Nielsen
Subject: Roxul - Jefferson County WV - Proposed Mineral Wool Manufacturing Facility Modeling Protocols
Attachments: Protocol Submittal Package Signed.pdf

John,

Please find this email for submission of the modeling protocols for the proposed mineral wool manufacturing facility in Ranson, Jefferson County, West Virginia. As you begin to conduct your review, please reach out with any questions or comments that you may have.

Thank you,

Grant Morgan, P.E.
ERM | 204 Chase Drive | Hurricane, WV | 25526
voice: 304.757.4777 ext. 109 | mobile: 304.590.6160
mail: grant.morgan@erm.com | www.erm.com

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Facility RAN Region
Initials JRK

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September 7, 2017

Mr. John McClung, Senior Engineer
West Virginia Department of Environmental Protection
Division of Air Quality
601 57th Street, SE
Charleston, West Virginia, 25304

RE: New Source Review
Air Quality Modeling Protocol
Mineral Wool Production Facility – Ranson, West Virginia

Dear Mr. McClung:

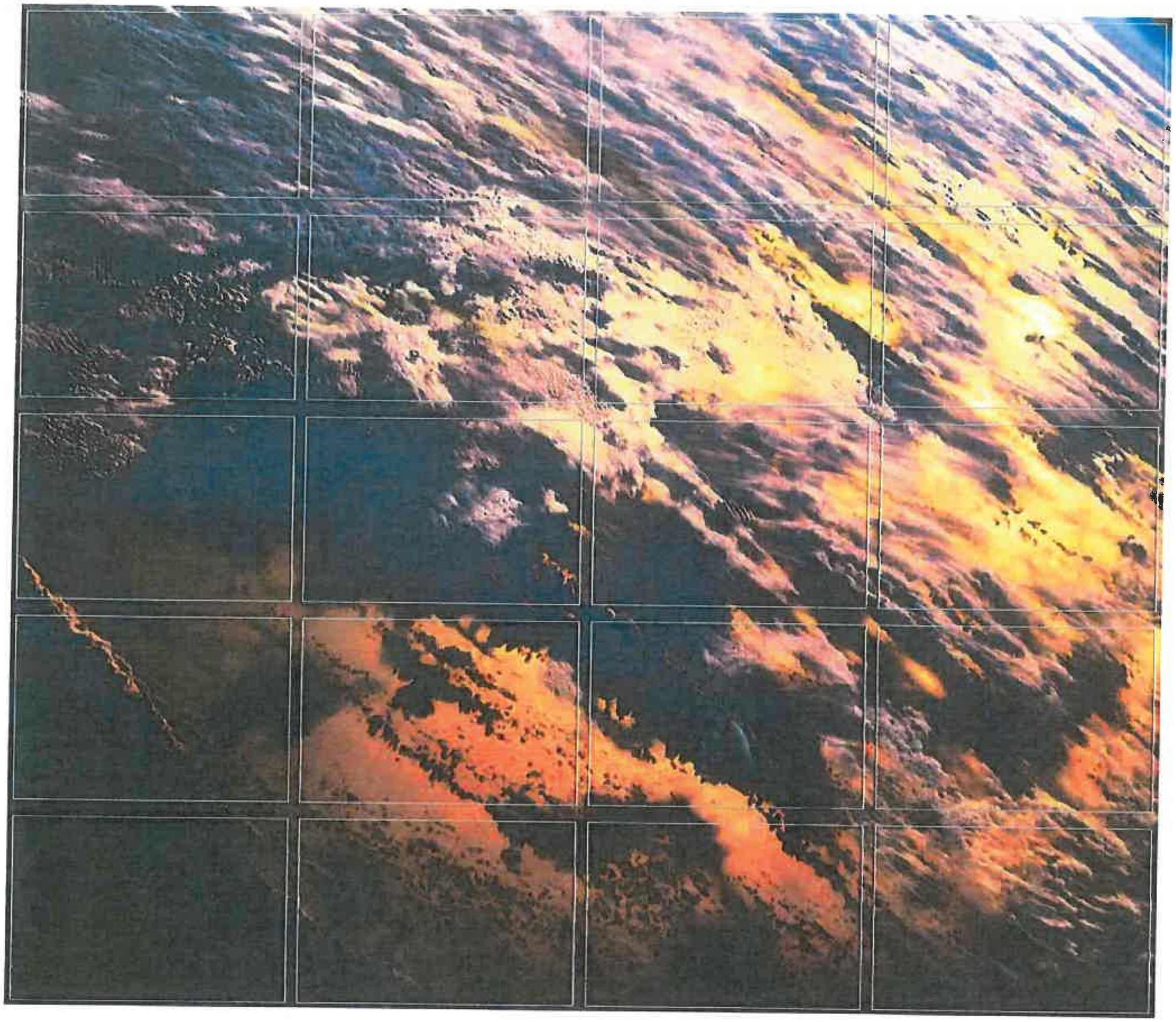
Roxul USA, Inc. submits this air modelling protocol to support an air quality permit to construct application that is being submitted to the West Virginia Department of Environmental Protection (WVDEP), Division of Air Quality (WVDAQ). The application is being submitted to authorize the development of a new mineral wool production facility in Jefferson County, West Virginia.

If you have any questions concerning this air modeling protocol, please contact Mr. Grant Morgan of Environmental Resources Management Inc, (ERM) me at (304) 757-4777 or by email at grant.morgan@erm.com.

Sincerely,

Ken Cammarato
Vice President, General Counsel & General Manager
ken.cammarato@roxul.com
Roxul USA, Inc.

Enclosures



ROXUL USA, Inc.

New Source Review
Air Quality Modeling Protocol

Jefferson County, West Virginia

September 2017

Environmental Resources Management
204 Chase Drive
Hurricane, WV 25526
www.erm.com

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1.0 INTRODUCTION

ROXUL USA Inc., (Roxul) submits this air quality modeling protocol to support an air quality permit to construct application that is being submitted to the West Virginia Department of Environmental Protection (WVDEP), Division of Air Quality (WVDAQ, or The Department). The application is being submitted to authorize the development of a new mineral wool production facility in Jefferson County, West Virginia. A general area map showing the proposed location of the facility is provided in Figure 1-1 of this protocol.

1.1 PROJECT OVERVIEW

Roxul proposes to construct, install, and operate a new mineral wool insulation manufacturing facility (Project). The Project will consist 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 will produce stone wool insulation for building insulation, customized solutions for industrial applications, acoustic ceilings and other applications.

1.2 OVERVIEW OF 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 1-2 provides a summary of the regulatory program(s) that must be addressed for each regulated compound that will be emitted by the Project. It should be noted that these are preliminary emissions estimates only. Compounds with emission levels that trigger Non-attainment New Source Review (NNSR) requirements are subject to additional control (Lowest Achievable Emission Rate, LAER) and emissions offset requirements but do not require air quality dispersion modeling to assess compliance with the NAAQS. Requirements of the Prevention of Significant Deterioration (PSD) program must be addressed for major sources locating in attainment areas, for each compound having emissions greater than the significant emission rate (SER).

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

Compound	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

Applicability of the PSD program for the proposed Project is determined by evaluating whether potential emissions exceed new major source thresholds and SERs for each PSD regulated compound. The proposed project will be a new major source due to potential VOC emissions in excess of 250 tons per year.

Table 1-2 *Applicability of Regulatory Air Programs to the Project*

Compound	Preliminary Project Potential Emissions (tons/year)	PSD SER (tons/year)	NNSR Threshold	PSD Review Req'd?	NNSR Req'd?
NO_x	241	40	NA	Yes	No
CO	153	100	NA	Yes	No
SO_2	163	40	100	Yes	No
PM_{10}	156	15	NA	Yes	No
$PM_{2.5}$	111	Primary $PM_{2.5}$: 10 NO_X: 40 SO_2: 40	NA	Yes	No
O_3	NO_X: 241 VOC: 580	NO_X: 40 VOC: 40	NA	Yes	No
Lead	0.004	0.6	NA	No	No
H_2SO_4	17	7	NA	Yes	NA

NNSR does not apply, because Jefferson County, WV is in attainment for all regulated pollutants. Therefore, dispersion modeling will be performed for the compounds above that are subject to PSD review to assess the ambient air impacts resulting from the emissions of these compounds due to the Project, with the exception of VOC, which is a precursor to ozone formation and is not modeled. The modeling analysis will address compliance with the NAAQS and PSD Increments, as applicable. The modeling analyses described in this protocol will conform to Appendix W of 40 CFR Part 51 (Guideline on Air Quality Models). The key elements of the modeling analysis will include:

- Use of the latest version of the regulatory dispersion model and supporting programs: AERMOD (version 16216r), AERMET (version 16216), AERMINUTE (version 15272), AERMAP (version 11103), AERSURFACE (version 13016), 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 2016);
- 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;
- Utilize the Tier III NO_2 modeling method PVMRM in AERMOD, if necessary;
- 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 proposed 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

Roxul proposes to construct, install, and operate a new mineral wool insulation facility (Project). The Project site is located in Jefferson County, WV. The general location of the facility is provided on the regional map shown in Figure 1-1. A preliminary plot plan of the proposed Project is presented in Figure 1-2.

Figure 1-1 *Roxul, Jefferson County, WV – Regional Map*

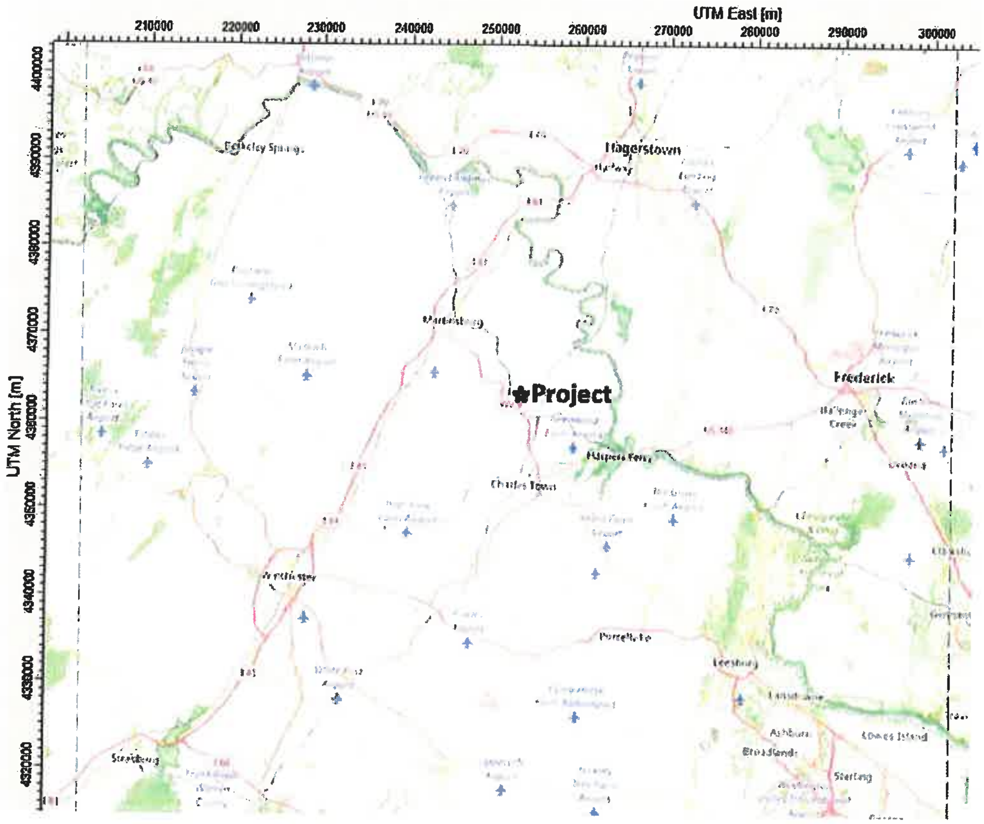
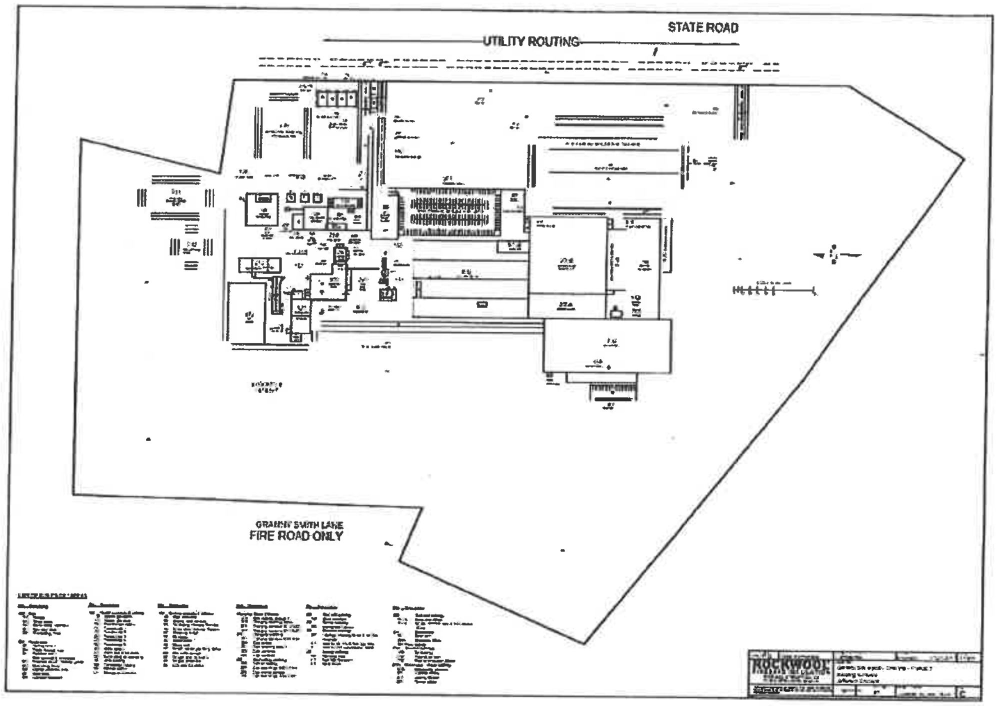


Figure 1-2 Preliminary Facility Layout



2.2 *PROJECT SOURCES*

A detailed list of emission rates and source parameters would be provided in the air quality modeling report supporting the new source application. An overview of the emission sources associated with the Project are as follows:

- One Mineral Wool Line including,
  - Raw Material Handling Sources (e.g., material unloading, storage silos, conveyor transfer points, portable crusher),
  - One (1) Melting Furnace, Spinning Chamber, Curing Oven, and Cooling Zone,
  - Dust control baghouses, and
  - Storage tanks,
- Coal Milling operations;
- One Rockfon Line including paint application, drying ovens, and dust control baghouse;

- Miscellaneous utilities or other facility-wide sources (boilers, heaters, cooling towers, portable crusher, fire pump, fuel storage, etc); and
- Paved Haul Roads.

2.3 *BUILDING WAKE EFFECTS*

The EPA's Building Profile Input Program (BPIP), Version 04274 will be used to calculate downwash effects for the modeled emission sources. Building, structure, and tank configurations and locations relative to the modeled sources will be obtained from engineering drawings of the planned facility and input into BPIP. Construction of facility stacks will 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 16216r) will be used for predicting ambient impacts for each modeled compound. Regulatory default options will be used in the analysis, except as specified in this protocol. An overview of the various air quality modeling analyses that will utilize AERMOD are described in the following sections.

3.1.1 *Project Only Modeling Analysis*

This section summarizes the model inputs and procedures to be 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 will be required because these pollutants impacts will be presumed to not cause or contribute significantly to any modeled violations of a NAAQS or PSD Increment. Where impacts are predicted to exceed SILs, additional refined modeling is required to demonstrate that the cumulative impact of the Project and other potentially interacting sources plus background will 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 to be used, if necessary, to demonstrate that the combined impacts of pollutants from Project and nearby sources will not cause or contribute to air pollution in violation of any NAAQS or PSD Increment. The Class I Area impact analysis 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.

For purposes of presentation of all modeling results, it should be noted that all modeled concentrations will not be rounded or truncated, in accordance with EPA policy, when compared to applicable SILs, NAAQS, or PSD Increments.

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. Based on preliminary modeling, it is expected that cumulative impact modeling involving nearby sources will be required. However, it may be necessary to demonstrate that the Project is not contributing significantly to any modeled violations of NAAQS or PSD Increments. 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 of this protocol) 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 will 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	24	126	5
$PM_{2.5}$	24-Hour	35	14.3	20.7	1.2
	Annual	12	5.7	6.3	0.2
NO_2	1-Hour	188	33.2	154.8	7.5
	Annual	100	9.4	90.6	1
SO_2	1-Hour	196	39.5	156.5	7.8
	3-Hour	1,300	39.5	1,260	25

Pollutant	Averaging Period	NAAQS	Representative Background/Design Concentration	Difference Between NAAQS and Design Concentration	SIL
	24-Hour	365	17.5	347.5	5
	Annual	80	3.2	76.8	1
CO	1-Hour	40,000	458	39,542	2,000
	8-Hour	10,000	344	9,656	500

3.1.2.2 *Significant Impact Analysis Modeling Procedures*

The significance analysis involves refined modeling to determine maximum ambient impacts from the Project in comparison to pollutant-specific SILs. The results of the significance analysis determine the need for further modeling including nearby sources to evaluate compliance with NAAQS and PSD Increments. All Project sources listed in Section 2.2 will be included in the refined modeling

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

For the 8-hr CO and 24-hr $PM_{10}/PM_{2.5}$ analyses, the Emergency Fire Pump will be 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 will be 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 will be 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.

A pre-construction ambient air monitoring waiver must be requested in order for a facility subject to PSD review to be exempt from preconstruction ambient air monitoring requirements. A waiver may be considered based on the modeled impacts of the Project when compared to the SMCs in 40 CFR Part 52.21. The applicable SMCs are summarized in Table 3-2 in Section 3.2. If a project cannot be exempted from preconstruction monitoring based on modeling results, then the applicant may propose for the reviewing authority's consideration for the use of existing monitoring data if appropriate justification is provided.

Roxul proposes the use of representative regional background data to satisfy this requirement as necessary. Justification of the representativeness of existing regional background data for use in the modeling analysis is provided in Section 3.3.1 for $PM_{2.5}$ and Section 3.5 for all other applicable criteria pollutants.

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

In the event that the NO_2 and/or SO_2 1-hour and/or $PM_{2.5}$ 24-hour modeling predicts exceeds the applicable NAAQS, the MAXDCONT post processor to AERMOD will be used to assess whether the Project's contribution to the predicted violations, paired in time and space, is insignificant at all receptors in consideration.

In addition, in accordance with EPA guidance[1], the significant contribution analysis will examine every multi-year average of the daily maximum 1-hour values for NO_2, beginning with the 8th-highest and for SO2 beginning with the 4th-highest, continuing down the ranked distribution until all cumulative impacts are below the NAAQS. For the 24-hour $PM_{2.5}$ analysis, the significant contribution analysis will examine every multi-year average of the maximum 24-hour average values, beginning with the 8th-highest, continuing down the ranked distribution until all cumulative impacts are below the NAAQS.

3.2 *AMBIENT AIR QUALITY STANDARDS*

Table 3-2 presents a summary of the air quality standards that will be addressed for NO_2, SO_2, PM_{10}, $PM_{2.5}$, and CO. The SILs are presented, along with the SMCs, PSD Increments, and NAAQS. If Project impacts are shown to be less than the SILs and SMCs, then no further analysis is required. If the SILs are exceeded, additional analyses will be necessary including the development of a

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[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."

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 violations of the 1-hr NO_2 NAAQS.

Table 3-2 Ambient Air Quality Standards

Pollutant	Averaging Period	NAAQS [a]	Class II Increment Standards	Class II SIL	SMC
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]	0.3 [o], 0.2 [v]	-
NO_2	1-Hour	188 [l,p]	-	7.5 [c,n]	-
	Annual	100 [u]	25 [u]	1 [g,u]	14
CO	1-Hour	40,000 [d]	-	2,000 [g]	-
	8-Hour	10,000 [d]	-	500 [g]	575
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.

The Project is located approximately 11 km southeast of an existing ambient monitor that measures $PM_{2.5}$. This monitor in Martinsburg, WV (Site ID 54-003-0003) has been collecting $PM_{2.5}$ data since 1999. Due to the monitor's proximity, Roxul asserts that this monitor is suitable to represent the state of the air quality near the Project site during the pre-construction stage. Therefore, additional preconstruction monitoring should not be required for the Project, due to the existence of representative $PM_{2.5}$ ambient air quality data.

In addition to the SMC vacature in January 2013, EPA also remanded the SIL for $PM_{2.5}$. EPA intends to revise the approach to how the SIL is implemented. In the interim, widely accepted practice for PSD permitting is to continue to use the $PM_{2.5}$ SILs as benchmarks to determine a project's de-minimis standing with respect to the $PM_{2.5}$ NAAQS, but also to ensure that a project's modeled impacts do not exceed the NAAQS (despite being less than the SIL) when added to an existing representative background value of $PM_{2.5}$. Roxul intends to employ this practice as part of the air quality modeling analysis, specifically, that the Project's modeled concentrations of directly emitted $PM_{2.5}$ are both less than the levels of the SIL, but also less than the NAAQS when added to a representative background $PM_{2.5}$ concentration, obtained from the Piney Run, Garrett County, MD $PM_{2.5}$ monitor.

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. Monitors' distance to project, measurement scale, sampling rate, and data coverage are listed in Table 3-3.

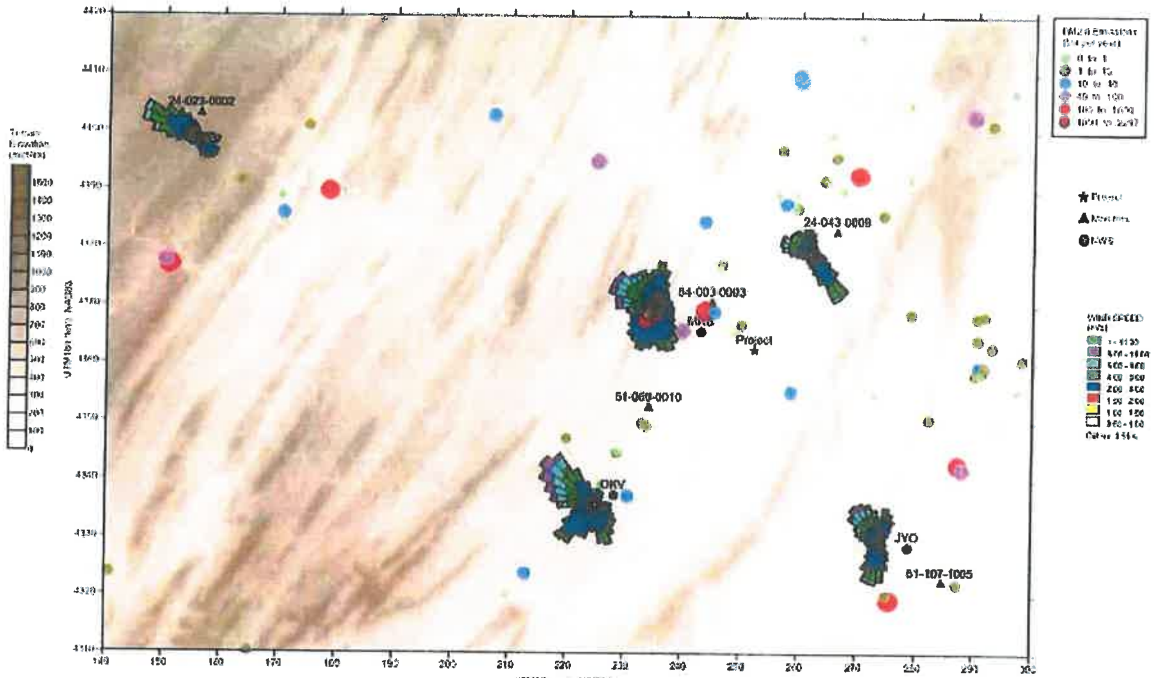
Table 3-3 List of $PM_{2.5}$ Ambient Monitor Station in the Vicinity of the Project Site

$PM_{2.5}$ Monitor Location	$PM_{2.5}$ Monitor ID	Distance to Project (km)	Measurement Scale	Sampling Rate	Data Coverage 2013-15	Design Conc. (µg/m³) 24hr, Annual
Martinsburg, Berkeley Co., WV	54-003-0003	11	Urban (4-50km)	24-hour, every 3rd day	333 obs., 91%	26.6, 9.9*
Piney Run, Garrett Co., MD	24-023-0002	105	Regional Scale (50 - 100s km)	1-hour, every day	924 obs., 84%	15.9, 6.6
Hagerstown, Washington Co., MD	24-043-0009	25	Urban (4-50km)	1-hour, every day	1014 obs., 93%	25.7, 9.4
Ashburn, Loudoun Co. VA	51-107-1005	51	Neighborhood (400m – 4km)	24-hour, every 3rd days	338 obs., 93%	20.3, 8.7
Rte 669, Frederick Co. VA	51-069-0010	21	Neighborhood (400m – 4km)	24-hour, every 3rd days	361 obs., 99%	23.7, 8.9

* Berkeley Co. design values are based on 2014-2016 observations provided by WVDAQ

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) 2014. 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 - 2013-2015. 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 2014 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 84.4% for the 2013-2015 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 would be 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 will be included explicitly in the NAAQS and increment modeling.

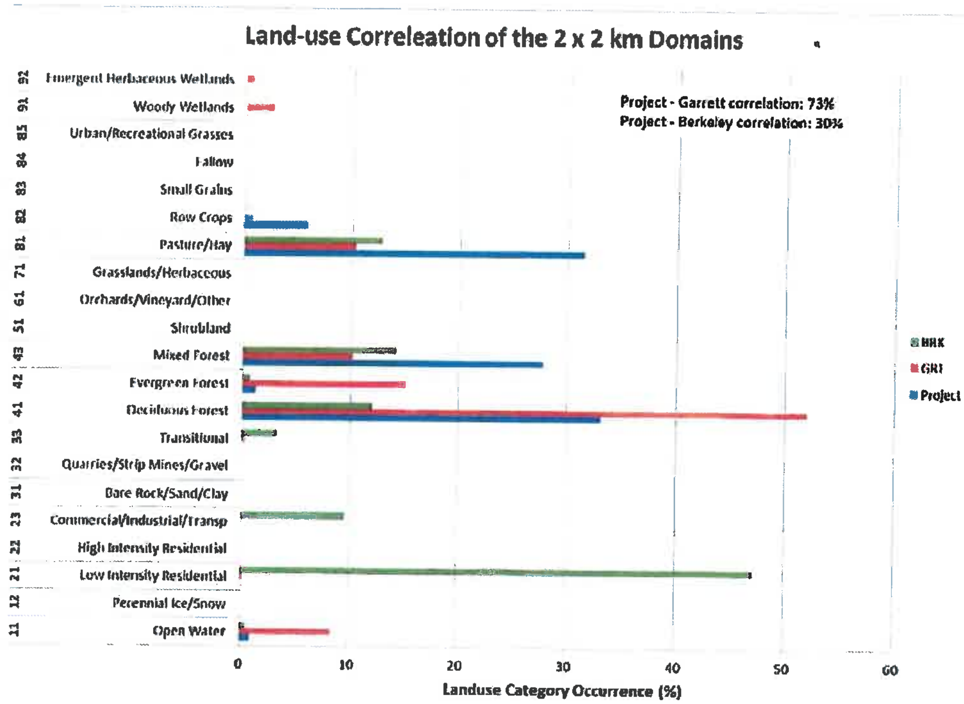
The initial review of the five available monitors indicates that the preferred sites for this project are the Berkeley Co. and the Garret Co. monitors. Further detailed evaluation of the land-use characteristics of these locations and comparison to the Project site are used to support the final monitor 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 = 73%
- Project to Berkeley Co. monitor (BRK) correlation = 30%

Figure 2-2 shows the comparison between the land-use features of the Project and two monitor sites based on the 1992 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 the above arguments, ERM proposes to use the Garrett County monitor as representative of the regional concentrations in the $PM_{2.5}$ NAAQS analysis for this PSD application. The cumulative modeling will include explicitly the regional sources in the vicinity of the Project, therefore the use of the Garrett County monitor observations can be considered realistic representation of the regional background values without introducing double counting of the concentrations.

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

3.4.1 *Ozone Analysis*

The 2012-2016 8-hour ozone design value for the Martinsburg, West Virginia ozone monitor (monitor 54-0003-0003) is 63 ppb. The 8-hr ozone NAAQS is 70 ppb. The proposed project will result in a 241 tons/yr increase in NO_x and 580 tons/yr increase in VOC. NO_x and VOC are precursors for tropospheric ozone formation. To assess whether a proposed project will have impacts with respect to ozone formation, it is useful to consider regional emissions of ozone precursors. Table 3-4 presents the emissions of NO_x and VOC for the Project air shed including sources from the following counties: Jefferson, WV, Berkeley, WV, Morgan, WV, as well as the surrounding counties in Maryland, Virginia, and Pennsylvania, from the 2014 NEI.

Table 3-4 Regional Ozone Precursor Emissions (TPY) – 2014 NEI

Pollutant	Point Sources	Non-point Sources	On-road Sources	Total	Project Emissions	Project % of Air Shed Emissions
NOX	3,355	6,286	21,062	30,703	241	0.78%
VOC	1,398	78,893	8,594	88,886	580	0.65%

The proposed project's emissions of NO_X and VOC represent approximately 0.78% and 0.65% of regional emissions of these compounds when compared to the historic data in the 2014 NEI. It is reasonable to assume that the relatively low emissions of these ozone precursors from the proposed project are unlikely to cause sufficient formation of additional ozone to endanger the ozone NAAQS.

To further illustrate that the proposed project's impacts of NO_X in particular will be unlikely to cause significant formation of ozone, technical data relating to regional modeling for the Cross State Air Pollution Rule (CSAPR) have been reviewed. The technical data are available online at https://www.epa.gov/airmarkets/air-quality-modeling-technical-support-document-final-cross-state-air-pollution-rule.

Considering the prevailing winds in the region, it can be stated that the majority of emissions that are expected to be culpable for ozone concentrations measured at the Berkeley monitor would originate mostly from sources in the states of West Virginia, Pennsylvania, Ohio, Virginia, and Maryland. Table 3-5 presents the NO_X emissions of from the CSAPR scenarios for these sources while Table 3-6 presents ozone model results and historic ambient values for each case at the Berkeley County ozone monitor.

Table 3-5 CSAPR Emissions Cases

State	2005 Base Case NO_X (tons)	2012 Base Case NO_X (tons)	2014 Base Case NO_X (tons)	NO_X Emission Reduction (2012 minus 2005 tons / % reduction)		NO_X Emission Reduction (2014 minus 2012 tons / % reduction)	
Maryland	312,230	197,441	181,909	-114,789	-36.8%	-15,533	-7.9%
Pennsylvania	781,647	565,051	529,673	-216,596	-27.7%	-35,378	-6.3%
Virginia	488,263	359,907	334,720	-128,355	-26.3%	-25,187	-7.0%
West Virginia	308,655	172,143	166,094	-136,512	-44.2%	-6,049	-3.5%
Ohio	906,327	560,718	522,450	-345,609	-38.1%	-38,268	-6.8%

Table 3-6 Monitor Values at the Berkeley, WV

Monitor ID	County, State	Observed 2005 8hr Design Value (ppb)	Observed 2012 8hr Design Value (ppb)	Observed 2014 8hr Design Value (ppb)
540030003	Berkeley, WV	75.8	66.7	63.0

Using the data summarized in Tables 3-5 and 3-6, it is possible to develop tons/ppb factors that illustrate how many tons reduction in NO_X were needed to affect a change in modeled values of ozone at the monitor. Table 3-7 summarizes these factors.

Table 3-7 Comparison of Modeled Emissions Reductions and Monitor Value Reductions

State	NO_X Emission Reduction (tons)	O_3 Concentration Reduction (ppb)	Reduction Rate Factor (tons/ppb)
2012			
Maryland	-114,789	-9.1	12,568
Pennsylvania	-216,596		23,715
Virginia	-128,355		14,054
West Virginia	-136,512		14,947
Ohio	-345,609		37,840
2014			
Maryland	-15,533	-3.7	4,236
Pennsylvania	-35,378		9,649
Virginia	-25,187		6,869
West Virginia	-6,049		1,650
Ohio	-38,268		10,437

The lowest reduction rate factor of 1,650 tons/ppb was found for the West Virginia sources between the 2012 base case and the 2014 base case. If this factor is conservatively used in the estimation of potential contribution to ozone generation, than the Project NO_X emissions would results in approximately 0.15 ppb of ozone. Although this is a simplification of reality, where the actual emissions culpable will originate from all considered states and other upwind states, this demonstration does serve to illustrate the magnitude of emissions necessary to affect appreciable change in ozone values at the Berkeley, WV ozone monitor. Roxul believes that this demonstration supports the conclusion that emissions from the proposed project will not endanger the ozone NAAQS.

3.4.2 *Secondary $PM_{2.5}$ Formation*

Pursuant to the revisions to the USEPA Guidelines on Air Quality Models[2], projects that trigger NSR review for $PM_{2.5}$ must consider the formation of secondary $PM_{2.5}$ along with primary $PM_{2.5}$ emissions. Since the direct $PM_{2.5}$ emissions from the proposed Project are greater than the SER, these emissions will be explicitly modeled. The emissions from the proposed project are also greater than the SER for NO_X (241 tpy) and SO_2 (163) tpy. A qualitative method for analyzing the secondary $PM_{2.5}$ formation, based on comparison of the Project emissions to the total emissions of the air shed is proposed for this application.

The air shed considered in this analysis includes the all sources within the neighboring counties of the project as follows: Jefferson, WV; Berkeley, WV; Morgan, VW; Frederick, VA; Clarke, VA, Hampshire, VA; Washington, MD; Frederick, MD; Loudoun, MD; Franklin, MD, and Fulton, PA. A review of the $PM_{2.5}$ emissions from the sources within the air shed was completed based on the reports listed in the 2014 National Emissions Inventory (NEI)[3]. The emissions included in the analysis represent the sum of all emissions from point, non-point and on-road emissions. The regional speciated $PM_{2.5}$ emission profile is summarized in Table 3-8.

TABLE 3-8 Speciated $PM_{2.5}$ Emissions from Sources within the Air Shed of the Project

Pollutant Code	Pollutant Description	Air shed Emissions (tpy)	% of PM25-PRI	% of NO_X	% of SO_2	Project Emissions (tpy)	% of Air Shed
EC	Elemental Carbon portion of $PM_{2.5}$-PRI	693	7.36%				
NO3	Nitrate portion of $PM_{2.5}$-PRI	23	0.24%	0.07%		0.18*	0.82%
OC	Organic Carbon portion of $PM_{2.5}$-PRI	2205	23.42%				
PMFINE	Remaining PMFINE portion of $PM_{2.5}$-PRI	5891	62.58%				
SO4	Sulfate Carbon portion of $PM_{2.5}$-PRI	178	1.89%		4.95%	7.88*	4.42%
PM25-PRI	PM2.5 Primary (Filterable + Condensable)	9413				111	1.18%
NOX	Nitrogen Oxides	30,703				241	0.78%
SO2	Sulfur Dioxide	3,594				163	4.54%

* Emissions estimated based on the fractions derived from NEI2014

As shown in the table, the proposed Project's NO_X and SO_2 emission rates represent relatively small (less than 6%) portion of the total emissions in the region and therefore would not be expected to cause a significant change on ambient air quality. The speciated $PM_{2.5}$ regional profile also implies that the nitrates and sulfates represent only 2.13% of $PM_{2.5}$; the predominant portion of

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[2] Section 5 of USEPA's Guideline on Air Quality Models, Appendix W to 40 CFR Part 51.
[3] https://www.epa.gov/air-emissions-inventories/2014-national-emissions-inventory-nei-data

particulate matter in the region (62.58%) is associated with non-sulfates, non-nitrates particles, followed by organic carbons 23.42% and elemental carbon 7.36%.

Next observed concertation at the Garrett County monitoring site were considered. The station is a part of the Interagency Monitoring of Protected Visual Environments (IMPROVE) network and provides speciated $PM_{2.5}$ observation in particular reports for the amount of observed nitrate and sulfates are provided daily. Observations from 2014 were selected in order to match the NEI inventory period. The annual average $PM_{2.5}$ concentrations at the monitor were 6.46 $\mu g/m^3$; the annual average nitrates were 0.66 $\mu g/m^3$ or 10.22% and the annual average sulfates were 2.01 $\mu g/m^3$ or 31.11% of the total primary $PM_{2.5}$ observed. Therefore the estimated increase in the total primary PM2.5 can be calculated as (Project Emissions/Air shed Emissions)*(Observed concentrations):

Nitrates portion: (0.18 tpy/ 23 tpy) * (0.66 $\mu g/m^3$)	= 5.18 e-3 $\mu g/m^3$
+	
Sulfates portion: (8.07 tpy / 178 tpy) * (2.01 $\mu g/m^3$)	= 9.12 e-2 $\mu g/m^3$
Total PM2.5 increase due project	= 9.64 e-2 $\mu g/m^3$

The estimated potential concentration increase from the Project emissions amounts to a very small fraction of the observed total primary $PM_{2.5}$ – approximately 1.49%.

Furthermore, as part of the proposed application the impacts of direct $PM_{2.5}$ emission would be evaluated through explicit modeling. It is reasonable to assume that the maximum modeled direct $PM_{2.5}$ concentrations are unlikely to occur where secondary $PM_{2.5}$ impacts due to the proposed project would theoretically occur: According to EPA's regional modeling study performed in support of the Draft Multiple Emission Rates for Precursors (MERP) Tier-1 ozone and secondary $PM_{2.5}$ analysis methodology[4], the formation of secondary $PM_{2.5}$ tends to peak approximately 10 km downwind of the emitting source, because Project's emissions of NO_X and SO_2 would require some time in the atmosphere to form particulate nitrate and sulfates, and this is unlikely to occur close into the proposed Project where the maximum direct $PM_{2.5}$ impacts are expected to occur.

Because of these considerations, it is assumed that secondary formation of $PM_{2.5}$ due to the emission of NO_x and SO_2 precursors by the proposed Project will be insignificant.

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}, SO_2, or CO. The following discussion presents

[4] https://www3.epa.gov/ttn/scram/guidance/guide/EPA454_R_16_006.pdf

the most current monitor design values for nearby monitors that Roxul has identified that are representative of Jefferson County.

3.5.1 *Representative Background Concentrations of NO_2*

Table 3-9 presents the most recent NO_2 monitor design values for the regional transport monitor in Adams County, PA (EPA ID 42-001-0001). This is the closest NO_2 monitor to the proposed Project with a valid 2016 monitor design value. The Adams County monitor is located 77 km to the northeast of the project site. The NO_2 data coverage of 93.0% was found sufficient for modeling purposes. The monitor is placed in rural setting similar to the project site.

Table 3-9 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	Adams Co., PA	42-001-0001	77	1-Hour	33.2
				Annual	9.4

To characterize 1-hr background NO_2 values, Roxul proposes to utilize EPA guidance (EPA 2011) and calculate the design value based on the most recent three years of data. The proposed NAAQS analysis would be performed in two stages. In the first stage a conservative approach would be 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. 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 proposed $PM_{2.5}$ ambient data are collected at the Garrett County, MD monitoring station. Roxul proposes to use these data to characterize background $PM_{2.5}$ for use in any necessary cumulative $PM_{2.5}$ analysis. Table 3-10 presents the current annual and 24-hr monitor design values.

Table 3-10 $PM_{2.5}$ Monitor Design Values

POLLUTANT	MONITOR LOCATION	MONITOR ID	Distance to Project (km)	AVERAGING PERIOD	DESIGN CONCENTRATION (µg/m3)
$PM_{2.5}$	Pine Run	24-023-0002	105	24-Hour	14.3

	Garrett Co., MD			Annual	5.7

To characterize 24-hr background $PM_{2.5}$ values, Roxul proposes to utilize EPA guidance (EPA 2014) and calculate the design value based on the most recent three years of data 2014-2016. The proposed NAAQS analysis would be performed in two stages. In the first stage a conservative approach would be 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 EPA guidance recommends the following approach:

- For each year, determine the annual 98^{th} percentile 24-hr monitor value;
- For all 24-hr values in the year less than or equal to the 98^{th} percentile value, divide the distribution into four seasonal categories;
- Determine the maximum concentration in each seasonal category;
- Average the seasonal maximum concentrations across the three years (e.g., average spring value for years 1-3).

The approach described above will result in four 24-hr values that will be used as input as background values in AERMOD if the overall 24-hr monitor design value is unnecessarily conservative.

3.5.3 *Representative Background Concentrations of PM_{10}*

The closest PM_{10} monitor to the proposed Project is located in Winchester City, VA, 33 km to the southwest. Based on proximity, Roxul proposes the use of 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 will be used to characterize background PM_{10} in the cumulative NAAQS analysis, if needed. Table 3-11 summarizes the most recent design value from the Winchester City, VA PM_{10} monitor.

Table 3-11 ***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	24

3.5.4 *Representative Background Concentrations of SO_2*

Table 3-12 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 2016 monitor design value. The Garrett County monitor is located 105 km west-northwest of the Project site. The SO_2 data coverage of 85.6% was found sufficient for modeling purposes. The monitor is placed in rural setting similar to the Project site.

Table 3-12 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	39.5
				3-Hour	39.5
				24-Hour	17.5
				Annual	3.2

To characterize 1-hr background SO_2 values, Roxul proposes to utilize EPA guidance (EPA 2011) and calculate the design value based on the most recent three years of data. The proposed NAAQS analysis would be performed in two stages. In the first stage a conservative approach would be 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 99th percentile monitor values by season and hour-of-day are to be calculated. EPA guidance suggests that the season and hour-of-day combination be based on the 2nd highest values to represent the 99th percentile. Roxul proposes to use the 1-hr SO_2 design value in the 3-hour NAAQS analysis.

3.5.5 *Representative Background Concentrations of CO*

The most representative CO monitor found in the vicinity of the Project is the Garrett County, MD regional transport monitor. If a cumulative analysis is triggered, Roxul will utilize the maximum highest-second highest monitor design value over the most recent three years of available monitor data for both the 1-hr and 8-hr averages to characterize background CO. Table 3-13 summarizes the most recent design values from the Garrett County, MD CO monitor.

Table 3-13 CO Monitor Design Values

POLLUTANT	MONITOR LOCATION	MONITOR ID	Distance to Project (km)	AVERAGING PERIOD	DESIGN CONCENTRATION (μg/m3)

CO	Garrett Co., MD	24-023-0002	105	1-Hour	458
				8-Hour	344

3.6 NO_X TO NO_2 CONVERSION

For the NO_2 modeling analyses, Roxul proposes to make use of 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. Roxul will utilize 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.

3.6.1 *Optional NO_2 Modeling Refinements*

The ARM approach described above is a Tier II NO_2 modeling methodology. Further refinements in AERMOD are available that account for NO_X to NO_2 transformation through the use of actual monitored concentrations of ozone. These refinements are referred to as Tier III NO_2 modeling methods. The Tier III approaches are the Plume Volume Molar Ratio Method (PVMRM) or the Ozone Limiting Method (OLM) options in AERMOD.

Roxul proposes to utilize a Tier III air quality modeling approach on an as-needed basis. Specifically, if the cumulative NO_2 modeling analysis results in unrealistically high concentrations of NO_2, then the Tier III options will be considered. EPA guidance (USEPA 2014a, USEPA 2015b) recommends the PVMRM approach over the OLM approach for "relatively isolated, elevated sources". Once the cumulative NO_X modeling inventory is finalized, Roxul will consider the appropriateness of both the PVMRM and OLM approaches. The characteristics of nearby NO_X sources and the interaction of those sources with Roxul's modeled NO_2 impacts will be considered in making the determination to apply PVMRM or OLM. The current PVMRM formulation in AERMOD 16216r is a revised version of PVMRM that was originally made available in AERMOD version 15181 as PVMRM2. PVMRM2 represents an improvement over the original PVMRM approach in that it addresses known issues with PVMRM in overestimating NO_2 conversion due to overestimates of plume volumes in stable conditions. EPA has published a technical support document that details the enhancements in PVMRM2 vs. PVMRM (USEPA 2015a).

Use of the Tier III refinements in AERMOD requires three additional inputs:

- Monitored ozone data;
- An equilibrium nitric oxide (NO)/NO_2 ratio; and
- Identification of source specific in-stack ratios of NO_2/NO_X.

Ozone data from the Berkeley County, WV ozone monitor will be used as input in the Tier III NO_2 modeling. Roxul will either characterize the ozone data on an hourly basis (a separate hour-by-hour file that will be read by AERMOD), or on a seasonal and hour-of-day basis. The default equilibrium nitric oxide (NO)/NO_2 ratio of 0.9 will be used.

In the absence of source-specific in-stack data, US EPA suggests a default in-stack NO_2/NO_x ratio of 0.5. Roxul will use an in-stack ratio of 0.5 for all project sources if manufacturer supported ratios cannot be obtained. For any cumulative inventory source greater than 1 km from the project site, Roxul will use an in-stack NO_2/NO_x ratio of 0.2. This approach is consistent with USEPA guidance for multi-source NO_2 modeling analyses (USEPA 2014a).

3.7 *GEOGRAPHIC SETTING*

3.7.1 *Land Use Characteristics*

The proposed facility will be located in the city of Ranson, Jefferson County, WV. AERMOD will be used in the default (rural) mode. Roxul 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 less than 1% urban classification. This determination was made by analyzing the USGS NLCD 1992 data, where urban classifications were assumed to be category 22 (high intensity residential) and category 23 (commercial /industrial/transportation).

3.7.2 *Terrain*

The Project site is situated in elevated terrain at approximately 162 m. The latest version of EPA's AERMAP program (version 11103) will be 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 will be obtained at a horizontal resolution of 1 arc-second (30-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 will be 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"[5] 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 3-14 summarizes the applicable AQRVs or NAAQS secondary standards.

Table 3-14 Summary of Applicable AQRVs and AAQS

Pollutant	Averaging Period	AQRV Screening Levels (μg/m³)	Secondary NAAQS (μg/m³)
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
CO	1-hour	--	--
	8-hour	--	--
	Weekly[1]	1,800,000	--
Pb	Quarterly	1.5	0.15

"--" = not applicable or not available.

[1] Weekly average impact approximated by modeled 24-hr average impact.

With respect to visibility impacts, it should be noted that the facility will comply with the applicable WVDAQ visible emissions regulations. In addition, Roxul will consult 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. VISCREEN will be executed following the procedures described in EPA's

[5] USEPA, A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals, EPA 450/2-81-078, December 12, 1980.

Workbook for Plume Visual Impact Screening and Analysis for Level-1 visibility assessments, if necessary.[6]

3.8 RECEPTOR GRIDS

For this modeling analysis, nested Cartesian receptor grids of variable spacing will be utilized to resolve the ground concentration patterns. The grids will be 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 will be used to define ground elevations and hill scales for each receptor. Roxul will analyze isopleths of modeled concentrations due to the proposed Project, and determine if the proposed receptor grid adequately accounts for the worst case impacts. The receptor grid extent will be 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 will be used to better resolve the concentration patterns. Roxul will make any adjustments to the proposed grid on a case by case basis, and provide justification for any refinements in the modeling report to WVDAQ.

The facility fence line will be used as the boundary to determine ambient air. No receptors will be placed within this fence line boundary. A physical fence will control public access to the facility.

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

[6] EPA, Workbook for Plume Visual Impact Screening and Analysis (Revised), EPA-454/R-92-023, 1992.

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.

Roxul proposes to utilize meteorological data collected from 2012-2016 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) will also be used in the analysis. The following steps will be taken to prepare and process these data with the latest versions of EPA's processing programs:

- AERMET version 16216 will be used to process the surface and upper air meteorological data;
- The ADJ_U* option will be used in AERMET;
- One-minute and five-minute ASOS wind data will be processed for input into AERMET through the use of the AERMINUTE version 15272 preprocessor;
- AERSURFACE will be run with varying options for moisture conditions (average, wet, and dry) at seasonal temporal resolution;
- Climatological data from the National Climatic Data Center (NCDC) will be used to assign the moisture and snowfall characteristics for each season of the 5-year modeling period;
- The resulting files will be processed into 5 individual calendar years and one 5-year period for model input.

The ADJ_U* option addresses a known bias towards underprediction of friction velocity under stable, low wind speed conditions, leading to observed model overprediction for these conditions. ADJ_U* is a regulatory option in the default application of AERMET version 16216 for use in AERMOD. In addition, for this application no site-specific meteorological data is available. The surface data included were recorded at the Martinsburg airport NWS station and do not include turbulence observations.

AERMET processing is performed in 3 stages. Stage 1 processing reads the raw onsite, surface, and upper air files, performs data range and completeness checks, and formats data for input to Stage 2. Stage 2 reads the files prepared in Stage 1, adds the 1- and 5-minute wind observations and prepares a single merged file with all necessary inputs for Stage 3. Stage 3 carries out the boundary layer parameterizations needed to calculate turbulence parameters such as the friction velocity, convective velocity scale, Monin-Obukhov length scale, and convective and mechanical mixing depths as well as determines hourly surface characteristics (albedo, Bowen Ratio, and surface roughness length) based on the AERSURFACE outputs.

3.9.2 *Summary of AERMET Location Inputs*

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

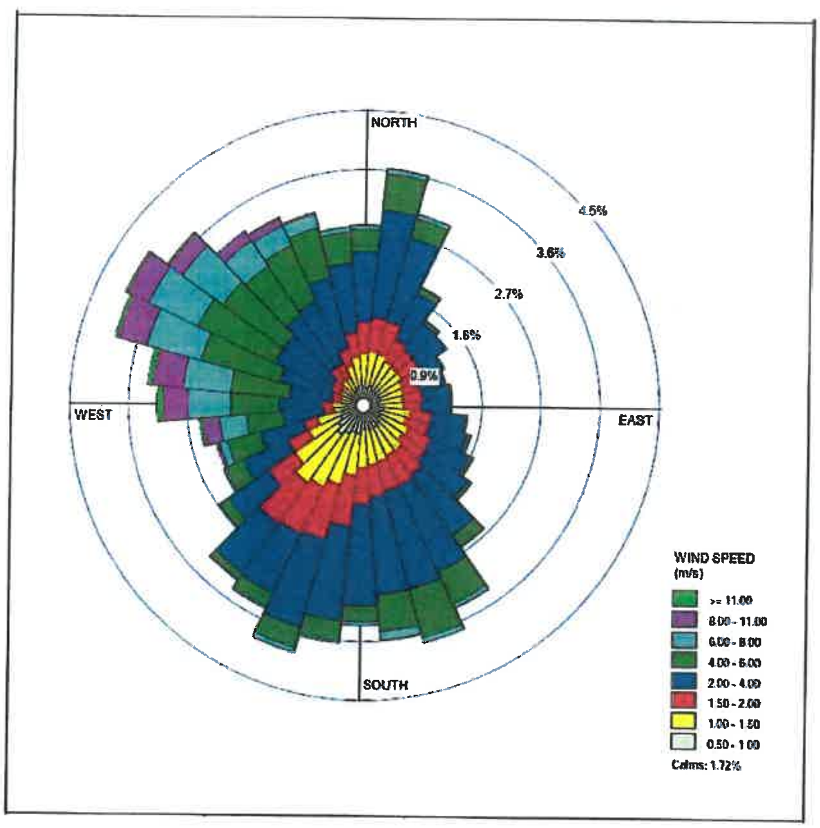
- KMRB ASOS Location: 39.402N 77.984W - specified by NCEI;
- KMRB Elevation: 162.8 m – specified in NCEI;
- IAD Upper Air Location: 38.98N 77.47W – noted in FSL file header; and
- Hourly AERMET data is processed in time zone 5.

3.9.3 *Meteorological Data Representativeness*

3.9.3.1 *Representativeness of Wind Measurements*

A wind rose for KMRB for 2012-2016 is shown in Figure 3-1.

Figure 3-1 KMRB Wind Rose – 2012-2016



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. Roxul 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 13016) land-use processor will be used for the development of the necessary micrometeorological parameters for use in AERMET. The following is a summary of the settings that will be used in AERSURFACE:

- USGS 1992 NLCD input land use data
- Center Latitude (decimal degrees): 39.402
- Center Longitude (decimal degrees): -77.984
- Datum: NAD83
- Study radius (km) for surface roughness: 1.0
- Airport? Y, Continuous snow cover? Y
- 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 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 will be based on climatological data compiled by NCDC. The moisture characterization and snow cover will be characterized on seasonal basis based on NCDC climatological records for the airport site. AERSURFACE will be executed with seasonal resolution with 12 wind direction sectors.

Additional details on the moisture and snow cover options that will be 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 3-15 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 3-15 Comparison of Micrometeorological Variables

Season	Albedo		Bowen Ratio		Surface Roughness	
	Project	Airport	Project	Airport	Project	Airport
1	0.55	0.53	0.50	0.50	0.125	0.025
2	0.14	0.15	0.38	0.48	0.264	0.055
3	0.18	0.18	0.44	0.42	0.563	0.110
4	0.18	0.18	0.75	0.83	0.563	0.102

The NLCD 1992 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 notably higher than the values derived for KMRB from the NLCD 1992 land use data. Roxul proposes conservatively to use the KMRB surface roughness in the modeling.

3.9.4 AERMET Processing

AERMET (version 16216) will be executed using EPA recommended settings to produce the meteorological data needed for AERMOD. The five year period from 2011-2015 is proposed for use in this analysis. The AERMET analysis will include the use of both the AERMINUTE and AERSURFACE preprocessors. The AERMINUTE (version 15272) meteorological data processor will be 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 will be applied to the 1-minute ASOS derived wind speeds in AERMET.

In addition to the surface meteorological data from KMRB, Roxul will utilize 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.

Precipitation, snow fall and temperature statistics, provided by the National Center for Environmental Information (NCEI), were used in the determination of snow cover and moisture characteristics for each season. Monthly averages for 1981-2010 period collected at the KMRB station were consider to establish the historical precipitation amounts and temperatures. The guidance 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. The proposed snow cover and moisture options for the 2012-2016 KMRB meteorological data processing are presented in Table 3-16.

Table 3-16 KMRB Snow Cover and Monthly Surface Moisture Assignments

Modeling Year	WINTER		SPRING	SUMMER	FALL
	Moisture	Continuous Snow on the ground?	Moisture	Moisture	Moisture
2012	Avg	Yes	Avg	Dry	Avg
2013	Wet	Yes	Dry	Avg	Wet
2014	Wet	Yes	Avg	Avg	Avg
2015	Dry	Yes	Avg	Dry	Dry
2016	Wet	Yes	Avg	Wet	Dry

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 will include 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.

Roxul anticipates that 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) will be within 50 km for the 1-hour average and within 20 km for the larger averaging periods. Considering the above referenced language from the Guideline, Roxul proposes to limit the cumulative inventory for all pollutants and averaging periods that exceed their respective SIL to major sources within an area of radius SIA+10km of the proposed Project site as determined by any specific pollutant and averaging time. If a nearby major source is determined to not cause a significant concentration gradient in the vicinity of the Project site, Roxul will exercise discretion in not including that nearby source in the cumulative modeling analysis. Any such source excluded from the cumulative air quality modeling analysis will be documented in the final air quality modeling report to WVDAQ with a rationale for exclusion. Detailed list with the inventory sources parameters and emission rates will be included in the final air quality application. This inventory will be developed for CO, NO_X, PM_{10}, $PM_{2.5}$, and SO_2, if required, and will include all major stationary sources within 25 km of the Project site. Title V permits and permit applications that are publically available will be the primary basis for the development of modeled emission rates for this inventory. The stack parameters will be based on the WVDAQ, MDDEP, and VADEQ emission inventory and available permits.

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 southeast 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. Roxul anticipates that Q/D ratios for the closest Class I area will be approximately 9.6, which is below the FLM screening level of 10 and therefore no AQRV analysis is proposed.

Roxul proposes to evaluate 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 will be 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 will be determined based on the receptors used by the NPS to represent each Class I area for refined air quality modeling analyses[7]. If maximum modeled concentrations at the 50 km receptors are less than the Class I SILs for NO_2, PM_{10}, $PM_{2.5}$, and SO_2, then it can be assumed that the project would also have maximum potential impacts that would be less than the SILs at the more distant Class I areas.

To determine elevations for the 50 km ring of receptors, Roxul proposes to use AERMAP to determine the elevations for the receptor locations recommended by the NPS for each Class I area within 300 km. After the elevations for each Class I area receptor has been determined with AERMAP, Roxul will identify the maximum and minimum elevations (and associated hill scale heights) for all NPS Class I receptors, and use these elevations and associated hill scales as the elevation and hill scale for each receptor in the 50 km arc receptors for each Class I area.

4.0 *MODEL RESULTS PRESENTATION*

Five (5) criteria pollutants will be modeled, namely CO, NO_2, $PM_{2.5}$, PM_{10}, and SO_2. Maximum ground level model design values will be identified for the appropriate averaging periods and compliance with SILs, and subsequently the

[7] http://www.nature.nps.gov/air/maps/receptors/

NAAQS and PSD Increments, as necessary. Results will be presented in a tabular and graphical format (as needed). Electronic modeling files will be provided with the report.

5.0 *REFERENCES*

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National Park Service. (NPS 2010) Federal Land Managers' Air Quality Related Values Work Group (FLAG) Phase I Report - Revised (2010). Natural Resource Report NPS/NRPC/NRR – 2010/232

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U.S. Environmental Protection Agency. (EPA 2015a) Technical Support Document (TSD) for NO2-related AERMOD Modifications, EPA, Office of Air Quality Planning and Standards, Raleigh, NC. July 2015, EPA-454/B-15-004.

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U.S. Environmental Protection Agency. (EPA 2017) Appendix W to 40 CFR 51, Published January 17, 2017 Federal Register Volume 82 No. 10, Revisions to the Guideline on Air Quality Models: Enhancements to the AERMOD Dispersion Modeling System and Incorporation of Approaches to Address Ozone and Fine Particulate Matter; Final Rule.

Kessler, Joseph R

From:	McClung, Jon D
Sent:	Thursday, April 20, 2017 1:45 PM
To:	Grant Morgan; Kessler, Joseph R
Cc:	Jeff Twaddle; Tom Wickstrom; Milena Borissova; Andrews, Edward S; Pursley, Steven R; Qutaish, Fadi; Crowder, Laura M
Subject:	RE: Background Monitor Evaluation - Potential PSD Eastern Panhandle

Grant,

We have reviewed the Project Shuttle Background Monitor Selection document and find that it adequately provides the rationale for selecting background monitoring data to use as part of a dispersion modeling analysis to support a potential PSD air quality permit application and would be approvable as written.

Please contact me with any questions.

Regards,
Jon.

Entire Document
NON-CONFIDENTIAL

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Company ROXUL
Facility RAN Region
Initials JM

From: Grant Morgan [mailto:Grant.Morgan@erm.com]
Sent: Tuesday, April 18, 2017 3:26 PM
To: McClung, Jon D <Jon.D.McClung@wv.gov>; Kessler, Joseph R <Joseph.R.Kessler@wv.gov>
Cc: Jeff Twaddle <Jeff.Twaddle@erm.com>; Tom Wickstrom <Tom.Wickstrom@erm.com>; Milena Borissova <milena.borissova@erm.com>
Subject: Background Monitor Evaluation - Potential PSD Eastern Panhandle

Jon and Joe,

Please find the attached document outlining ERMs criteria and rationale for background monitor selection for the proposed PSD that we met with WVDAQ to discuss on back on March 13th. As we briefly discussed on our conference call on April 5th, ERM would welcome any comments or discussion on our proposed monitor selection prior to protocol submittals.

If you have any questions or would like to setup a time to discuss now that you have information in your hands, please let me know. We appreciate your willingness to engage and discuss.

Thank you,

Grant Morgan, P.E.
ERM I 204 Chase Drive I Hurricane, WV I 25526
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ERM
The business of sustainability

Kessler, Joseph R

From:	Grant Morgan <Grant.Morgan@erm.com>
Sent:	Tuesday, April 18, 2017 3:26 PM
To:	McClung, Jon D; Kessler, Joseph R
Cc:	Jeff Twaddle; Tom Wickstrom; Milena Borissova
Subject:	Background Monitor Evaluation - Potential PSD Eastern Panhandle
Attachments:	Project Shuttle Background Monitor Selection.pdf

Jon and Joe,

Please find the attached document outlining ERMs criteria and rationale for background monitor selection for the proposed PSD that we met with WVDAQ to discuss on back on March 13th. As we briefly discussed on our conference call on April 5th, ERM would welcome any comments or discussion on our proposed monitor selection prior to protocol submittals.

If you have any questions or would like to setup a time to discuss now that you have information in your hands, please let me know. We appreciate your willingness to engage and discuss.

Thank you,

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Project Shuttle Background Monitor Selection

Modeling for NAAQS compliance requires consideration of the ambient pollutant concentrations. A measure of the ambient background concentrations is obtained from the records collected in the EPA's ambient air network consisting of monitoring stations spread over the country on an irregular grid. Monitors of different types are installed in a broad spectrum of environs and designed to capture pollutant concentration on several scales, such as regional transport or neighborhood scale.

For the purposes of this PSD application ERM proposes to include the ambient background concentrations from the most representative monitors. Representativeness was evaluated based on any of these criteria:

- proximity
- prevailing wind direction
- land-use characteristics
- emission source characteristics
- monitor objective
- data capture at monitor

Design values for each pollutant /averaging time pair were calculated based on the 2013-2015 records – the most recent complete year data provided by EPA. In the first stage of the modeling, a single design value will be calculated in the form of the NAAQS to be added to the corresponding modeling concentrations for each pollutant/ averaging time pair. The design values would be added to concentrations of each of the 5 modeling years – 2011 – 2015, or the 5-year average modeling concentrations as required by the form of the standard.

As a refined method ERM proposes to calculate seasonal values for the short-term averages. ERM will follow the EPA guidance to determine the appropriate seasonal values for 24-hr PM2.5, and seasonal/hour of day values for 1-hr NO2 and 1-hr SO2.

The resulting monitor selections are summarized in Table 1

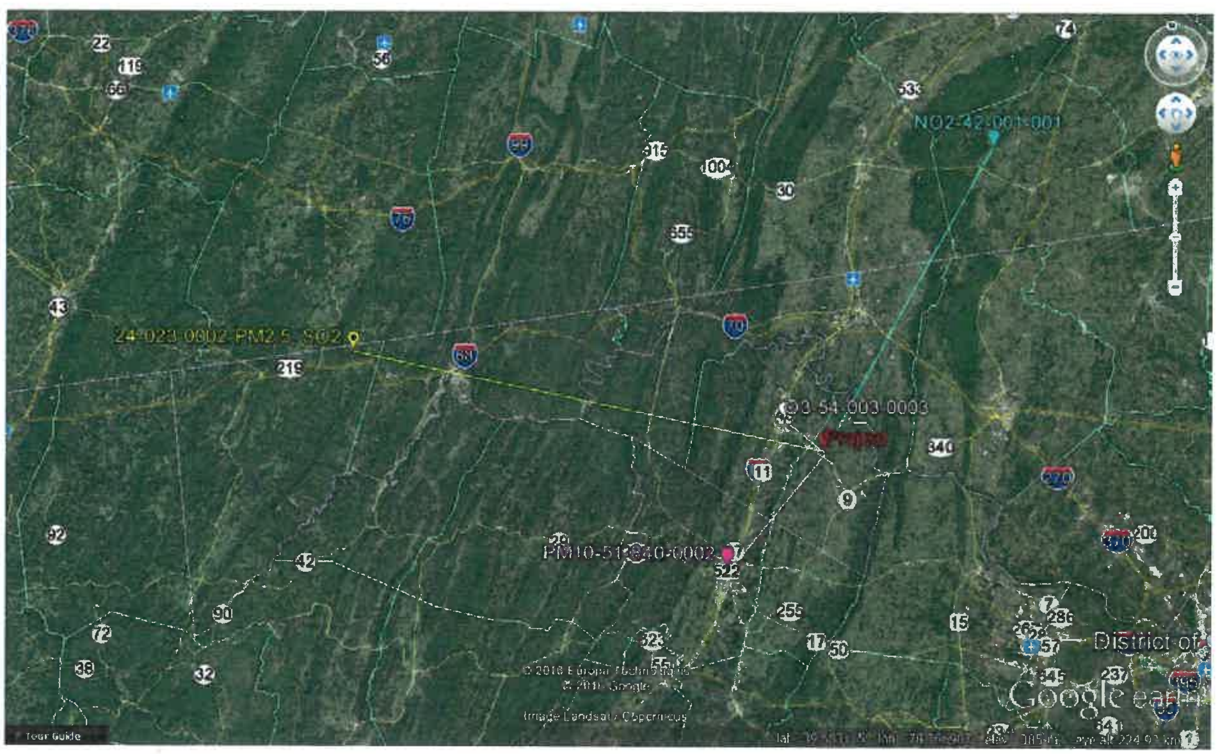
Table 1: List of proposed ambient monitor station

POLLUTANT	MONITOR LOCATION	MONITOR ID	Distance to Project (km)	AVERAGING PERIOD	DESIGN CONCENTRATION (μg/m³)
$PM_{2.5}$	Garrett Co., MD	24-023-0002	105	24-Hour	15.9
				Annual	6.6
PM_{10}	Winchester City, VA	51-840-0002	33	24-Hour	23.0
SO_2	Garrett Co., MD	24-023-0002	105	1-Hour	53.0
				3-Hour	53.0*
				24-Hour	14.5
				Annual	2.6
NO_2	Adams Co., PA	42-001-0001	77	1-Hour	37.0
				Annual	9.4
Ozone	Berkeley Co., WV	54-003-0003	11	8-Hour	123.7

* For modeling purposes the 3-hour SO2 ambient background concentrations will be represented with the 3-yar average 99th percentile of the 1-cour averages.

Figure 1 shows the relative position of the monitors to the project site

Figure 1: Monitor locations relative to project site



PM2.5

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. Monitors' distance to project, measurement scale, sampling rate, and data coverage are listed in Table 2.

Table 2: List of PM2.5 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 2013-15	Design Conc. (µg/m³) 24hr, Annual
Martinsburg, Berkeley Co., WV	54-003-0003	11	Urban (4-50km)	24-hour, every 3rd day	333 obs., 91%	26.6, 9.9*
Piney Run, Garrett Co., MD	24-023-0002	105	Regional Scale (50 - 100s km)	1-hour, every day	924 obs., 84%	15.9, 6.6
Hagerstown, Washington Co., MD	24-043-0009	25	Urban (4-50km)	1-hour, every day	1014 obs., 93%	25.7, 9.4
Ashburn, Loudoun Co. VA	51-107-1005	51	Neighborhood (400m – 4km)	24-hour, every 3rd days	338 obs., 93%	20.3, 8.7
Rte 669, Frederick Co. VA	51-069-0010	21	Neighborhood (400m – 4km)	24-hour, every 3rd days	361 obs., 99%	23.7, 8.9

* Berkeley Co. design values are based on 2014-2016 observations provided by WVDAQ

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) 2014. 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 - 2013-2015. Monitor and weather station locations together with the regional $PM_{2.5}$ sources are presented in Figure 2 over terrain elevation background.

Figure 2: Location of PM2.5 ambient monitor stations in relation to project and NEI 2014 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 84.4% for the 2013-2015 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 PM2.5 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 the Berkeley Co., WV monitor is of the same type and only 11 km from 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 will be included explicitly in the NAAQS and increment modeling.

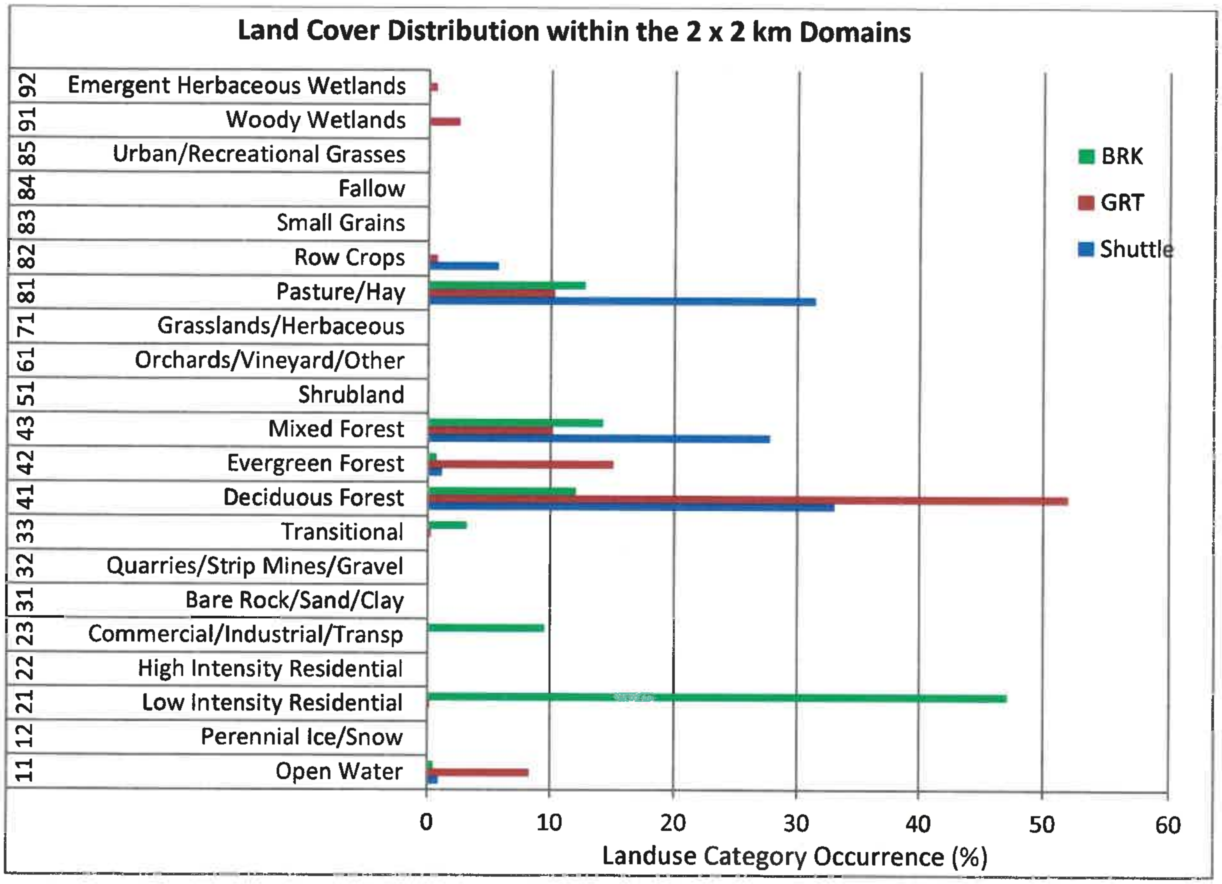
The initial review of the five available monitors indicates that the preferred sites for this project are the Berkeley Co. and the Garret Co. monitors. Further detailed evaluation of the land-use characteristics of these locations and comparison to the Project site are used to support the final monitor 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 Shuttle to Garrett Co. monitor (GRT) correlation = 73%
- Project Shuttle to Berkeley Co. monitor (BRK) correlation = 30%

Figure 3 shows the comparison between the land-use features of the project and two monitor sites based on the 1992 National Land Cover Data archive, provided by the USGS.

Figure 3: Comparison of the land-use features between the Martinsburg (BRK) and Garrett Co, (GRT) monitors and Project



Based on the above arguments, ERM proposes to use the Garrett County monitor as representative of the regional concentrations in the $PM_{2.5}$ NAAQS analysis for this PSD application. The cumulative modeling will include explicitly the regional sources in the vicinity of the project, therefore the use of the Garrett County monitor observations can be considered realistic representation of the regional background values without introducing double counting of the concentrations.

SO_2

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 85.6% for the 2013-2015 period.

The Adams County PA, SO_2 monitor was also considered based on the relative position between the monitor and the project site. It is a regional transport monitor 77km to the northeast of project placed in a rural area. The monitor was rejected due to lack of sufficient data coverage; the period for collecting SO_2 observation began on October 1, 2014.

Similarly to the $PM_{2.5}$ analysis this monitor is considered as the most representative regional transport monitor for this application. Therefore ERM proposes the use of the Garrett County monitor observations in the SO_2 NAAQS analysis.

PM_{10}

The PM_{10} monitoring network is much sparser than the $PM_{2.5}$ network. The PM_{10} monitors are placed predominantly in urban areas. The closest monitor to the project site is located in Winchester City, VA, 33 km southwest. The next closest monitors are located in the vicinity of Washington DC.

Based on proximity, ERM proposes the use of Winchester City monitor observations in the PM_{10} NAAQS analysis for this NSR PSD application.

NO_2

The Adams County, PA monitor is regional transport monitor located 77 km to the northeast of the project site. Unlike SO_2, the NO_2 data coverage of 93.0% was found sufficient for modeling purposes. The monitor is placed in rural setting similar to the project.

Ozone

ERM proposes to use the Berkeley County, WV monitor for the ozone analysis in this application. The monitor is located in the city of Martinsburg, 11 km northwest of the project site.

It should be noted that NAAQS analysis for all pollutants/ averaging periods will include explicit modeling of nearby facilities, as determined by the multisource modeling procedures. The selection of the background monitors is aiming to minimize double counting of emissions