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Division of Air Quality
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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.

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.

45CSR7 Fugitive Emissions - Section 5

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.

Subpart OOO Applicability - Section §60.670

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.

Subpart OOO Standard for Particulate Matter - Section §60.672

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)	

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.

Class II Modeling

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

Date

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}[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
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	0.77	3.38	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	0.22	0.97	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	0.49	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	8.25	36.14	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][7] ➜		***17.36***	***71.40***	***55.79***	***238.95***	***30.79***	***133.39***	***36.35***	***153.21***	***59.87***	***250.90***	***33.70***	***147.46***	***107.68***	***470.96***	***89.59***	***392.44***	***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.
(7) As the aggregate annual PTE of total HAPs is in excess of 25 TPY, the facility is defined as a major source of HAPs.

Attachment B: Air Dispersion Modeling Report

ROXUL USA, Inc.: RAN Facility

Permit Number R14-0037: Facility ID 037-00108