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April 21, 2021

Mr. Ray Stewart, P.E.
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Winston-Salem Regional Office
450 West Hanes Mill Road, Suite 300
Winston-Salem, North Carolina 27105

NC Department of
Environmental Quality
Received

APR 22 2021

Winston-Salem
Regional Office

**Re: Air Quality Construction Permit Applications
Carolina Sunrock
Burlington North Plant
Prospect Hill Quarry and Distribution Center
Caswell County**

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check # 68792
\$400.00
Received 4/22/21
- DMN

Dear Mr. Stewart:

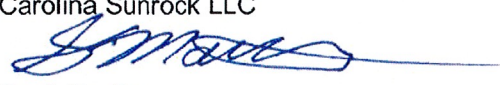
Please find attached the construction permit applications for the proposed Carolina Sunrock plant sites that will be located in Caswell County, NC. The attached applications are being resubmitted for the same sites that the NC Division of Air Quality (DAQ) denied last year.

The attached applications contain the required information, including application forms, calculations, dispersion modeling, and other supporting information as required for air permit construction applications. These applications also address the air quality concerns that were expressed by NC DAQ to Carolina Sunrock last year.

Carolina Sunrock understands that DAQ intends to notice the permit application for a public hearing. As such, it is requested that the agency include with the public notice the time and place of the public hearing in accordance with 15A NCAC 2Q .0307, and also include an alternate hearing date in the event of a postponement due to extraordinary circumstances. Please let us know if DAQ will follow this requested procedure.

If you have any questions regarding this application, please feel free to contact me at (919) 747-6336

Sincerely
Carolina Sunrock LLC


Scott Martino,
Manager Environmental Compliance

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NC Department of
Environmental Quality
Received

APR 22 2021

Winston-Salem
Regional Office

AIR QUALITY CONSTRUCTION PERMIT APPLICATION

CAROLINA SUNROCK LLC
PROSPECT HILL, NORTH CAROLINA



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Project 203401.0131



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1. INTRODUCTION

1.1 Executive Summary

Carolina Sunrock LLC (Carolina Sunrock) currently owns and operates several hot mix asphalt, concrete batching plants, and quarries across North Carolina. Carolina Sunrock, as previously submitted in November 2019, plans to build a hot mix asphalt, truck mix concrete batch plant, and quarry at 1238 Wrenn Road in Prospect Hill, Caswell County, North Carolina.

For this proposed facility, Carolina Sunrock is requesting a construction and operating permit be issued in accordance with Title 15A of North Carolina Administrative Code (15A NCAC) Chapter 2Q .0304 and 2Q .0305. In accordance with 15A NCAC 2Q .0305(a)(1), the required number of copies (2) have been included as required by Rule 2Q .0305(b), and the copies have been signed as required by Rule 2Q .0305(a)(1)(E).

There have been no changes made since the original submittal other than the acceptance of utilizing ultra-low sulfur diesel (ULSD) as a fuel source for the asphalt cement heaters.

The new facility will be a synthetic minor facility for particulate matter (PM), nitrogen oxides (NO_x) and carbon monoxide (CO) emissions and an area source of hazardous air pollutants (HAPs). The permit application fee (\$400) as required under 2Q .0301(c), 0304(j) and 2Q .0305(a)(1)(A) is enclosed. Furthermore, as required by 2Q .0304(b)(1) and 2Q .0305(a)(1)(B), a zoning consistency determination is being submitted as part of this application.

1.2 Application Contents

Three copies of this air permit application and application processing fee of \$400 are enclosed. This application contains the following information:

- Section 2 provides a project description and discusses air emissions,
- Section 3 discusses regulatory applicability,
- Section 4 contains the air dispersion modeling analysis,
- Section 5 provides general facility permit application forms,
- Section 6 provides source specific permit application forms,
- Appendix A contains facility-wide emission summaries, including:
 - Combustion source emission summaries,
 - DEQ spreadsheet calculations for the HMA plant,
 - DEQ spreadsheet calculations for the concrete batch plant,
 - DEQ spreadsheet calculations for the quarry operations,
- Appendix B contains the NAAQS modeling analysis, and
- Appendix C presents a copy of the local zoning consistency request submitted to the local zoning department.

2. BACKGROUND AND PROCESS DESCRIPTION

2.1 Background

Carolina Sunrock is submitting this application to build a new hot mix asphalt (HMA), truck mix concrete batch plant, and quarry in Prospect Hill, North Carolina. The facility requests that the following permitted manufacturing operations be included as emission sources in the permit:

- > Hot mix asphalt plant
- > RAP crushing system
- > Truck mix batch concrete plant
- > Quarry operations
- > Electricity generation (power generators)

The new plant's processes are discussed in detail in Section 2.2. Facility-wide potential emission estimates associated with the facility's operations are included in Appendix A.

A detailed description of the production process and associated emissions sources are provided in the following subsections. NCDEQ's source-specific application forms are included in Section 6 of this application.

2.2 Process Description

2.2.1 Hot Mix Asphalt Plant

Carolina Sunrock is proposing the following emission sources associated with a hot mix asphalt plant (250 tons per hour capacity) consisting of:

- > Propane/Natural Gas/No. 2 Fuel oil/Recycled No. 2 Fuel Oil/Recycled No. 4 Fuel Oil-fired drum type hot mix asphalt plant (80 MMBtu/hr maximum heat input capacity) – controlled by a 45,000 cfm bagfilter
- > Two (2) hot mix asphalt storage silos (150 tons maximum capacity, each)
- > Three (3) hot mix asphalt storage silos (200 tons maximum capacity, each)
- > Asphalt loadout operation
- > Truck loadout operation
- > Two asphalt cement heaters

In association with the asphalt plant, Carolina Sunrock is also proposing a reclaimed asphalt pavement (RAP) crushing system consisting of:

- > One crusher (65 tph)
- > One RAP bin and feeder
- > One double deck screen
- > Six conveyors

The RAP crushing system will also periodically use a mobile crusher (also rated at 65 tph) which may temporarily reside at the new Prospect Hill facility but moves from site to site. This crusher has an associated diesel-fired generator. This mobile crusher is exempt from permitting in accordance with 15A NCAC 2Q .0902, which exempts temporary crushers. This exemption is discussed further in Section 3.5.12.

2.2.2 Truck Mix Concrete Batch Plant

Carolina Sunrock is proposing a truck mix concrete batch plant (120 cubic yards per hour) consisting of:

- > Cement silo (200 tons maximum capacity)
- > Fly ash silo (150 tons maximum capacity)
- > Truck loadout point
- > Cement/flyash weight batcher (25 tons maximum capacity)
- > Aggregate weigh batcher (50 tons maximum capacity)

Note that all the sources in the truck mix concrete batch plant except for the aggregate weight batcher will be controlled by a 6500 cfm bagfilter.

2.2.3 Quarry Operations

Carolina Sunrock is proposing to operate a quarry operation with a 1200 ton per hour primary crushing, secondary crushing, aggregate screening/washing, and aggregate conveyance. There will be several diesel-fired generators associated with certain quarry equipment such as primary crushers, screens, and cone crushers, and are listed below:

Emission Source ID	Rating	Units
GEN-1 (J50V2)	350	hp
GEN-1a (J45)	350	hp
GEN-2 (S190dt)	125	hp
GEN-3 (PS1300 Maxtrack)	440	hp
GEN-4 (TF80)	125	hp
GEN-5 (PS1300 Maxtrack)	450	hp
GEN-7 (PS100 Maxtrack)	350	hp

Quarry operations (that are not wet material processing operations) will be subject to NSPS Subpart OOO, discussed in Section 3.4.2 below. The diesel generators used to power certain quarry equipment (listed above) will be subject to the RICE MACT (40 CFR 63 Subpart ZZZZ) and the NSPS Subpart IIII for compression ignition RICE, discussed in Section 3.4.4.

2.2.4 Large Natural Gas/Propane Power Generators

The facility will use electricity generated by large natural gas/propane fired generators. Two generators are rated at 2065 hp and one is rated at 1721 hp. Propane will likely only be used until the natural gas pipeline is completed. Therefore, to be able to combust either fuel the plant requests the engines be permitted as natural gas and/or propane-fired units.

The potential emissions from these large generators are based on 8,760 hrs/year of operation since they are providing electricity to the site and two of the generators may be run continuously. The generator engines will be model year 2021 or later depending on when construction commences at the site; therefore, the generators will be subject to NSPS Subpart JJJJ for spark ignition RICE (discussed in Section 3.4). Each generator will be equipped with catalytic oxidation to mitigate CO emissions.

Potential emissions are included in Appendix A. AP-42 emission factors were used for all pollutants except for NO_x, CO, and VOC. The vendor-provided NO_x and CO emission factors were used to estimate NO_x and CO emissions for each generator. The NSPS emission standard for VOC was used to estimate VOC emissions from each generator.

In order to avoid major source status under Title V, the facility is requesting an operational limitation on the generators such that only two out of three generators may run simultaneously. For conservatism, this application assumes the two largest engines may run at the same time.

2.2.5 Insignificant Activities

Carolina Sunrock is proposing the following insignificant activities which are exempt from permitting (See Form D4 in Section 5):

- IES-1 – Used Oil Storage Tank associated with asphalt plant (20,000 gallon capacity);
- IES-2 – Used Oil Storage Tank associated with asphalt plant (20,000 gallon capacity);
- IES-3 – Liquid Asphalt Tank (30,000 gallon capacity);
- IES-4 – Liquid Asphalt Tank (30,000 gallon capacity);
- IES-5 – Diesel Fuel Storage Tank associated with asphalt plant (20,000 gallon capacity);
- IES-6 – Diesel Fuel Storage Tank associated with asphalt plant (20,000 gallon capacity);
- IES-13 – Diesel Fuel Storage tank associated with quarry (20,000 gallon capacity);
- IES-14 – Diesel Fuel Storage tank associated with quarry (20,000 gallon capacity); and
- IES-15 – Propane Storage Tank (100,000 gallon capacity)

2.3 Synthetic Minor Permit Limitation Request

Unrestricted facility wide PTE emissions are over 100 tpy for PM, NO_x, and CO. Therefore, Carolina Sunrock is requesting synthetic minor limitations be included in the permit to limit PM, NO_x, and CO emissions and avoid major source status under the Title V regulations.

The DEQ spreadsheets used for the HMA, concrete batch, and quarry emissions included in Appendix A include emission estimates at a maximum 8760 hours per year of operation. The Emission Summary table in Appendix A includes a summary of the uncontrolled potential emissions at full maximum operation of 8760 hours per year. Table 1 also includes a summary of the potential emissions in tons per year after applying the synthetic minor limitations.

Carolina Sunrock is proposing the following synthetic minor limitations to ensure that PM, NO_x, and CO PTE remain below 100 tpy:

- Production of the HMA plant (maximum design production of 250 tph) will be capped at 600,000 tpy.
- Production of the quarry operations (maximum design production of 1,200 tph) will be capped based on a maximum of 4745 hours per year of operation. Therefore, 1,200 tph * 4745 hrs/yr = 5,694,000 tpy

Therefore, Carolina Sunrock requests an annual production limitation of 5,694,00 tpy for the quarry operations. No limit on operating hours is proposed.

- Operation of the large natural gas/propane-fired power generators (each equipped with catalytic oxidation) will be limited to only operating two out of three of the generators simultaneously. Therefore, the generators cannot run more than 17,520 hours per year.
- The facility requests no limitation on the concrete batch operations.

3. REGULATORY APPLICABILITY ANALYSIS

3.1 Title V Applicability

40 CFR Part 70 establishes the federal Title V operating permit program. North Carolina has incorporated the provisions of this federal program in its Title V operating permit program under 15A NCAC 2Q .0500. The major source thresholds with respect to the North Carolina Title V operating permit program regulations are 10 tons per year of a single HAP, 25 tpy of any combination of HAP, 100 tpy of certain other regulated pollutants, and 100,000 tpy for CO_{2e}.

The facility is a synthetic minor source because potential uncontrolled emissions for particulate matter (PM), nitrogen oxides (NO_x) and carbon monoxide (CO) exceeds the applicable threshold of 100 tpy. The facility is a minor source of HAPs because potential uncontrolled HAP emissions are less than 10/25 tpy.

3.2 PSD Applicability

North Carolina has implemented the federal PSD requirements of 40 CFR 51.166 under North Carolina Regulation 15A NCAC 2D .0530. Under the PSD regulations, a major stationary source for PSD is defined as any source in one of the 28 named source categories with the potential to emit 100 tpy or more of any regulated pollutant, or any source not in one of the 28 named source categories with the potential to emit 250 tpy or more of any regulated pollutant other than carbon dioxide equivalent (CO_{2e}), for which the threshold is 100,000 tpy.¹ The facility does not qualify for classification in one of the 28 listed source categories; therefore, the facility's major source threshold for PSD is 250 tpy.

As shown in Appendix A, emissions of PSD-regulated compounds are below PSD thresholds, therefore the facility is not a major stationary source in regards to PSD regulations.

3.3 NESHAP Applicability

Potential emissions of HAPs are not greater than the major source thresholds of 10/25 tpy for HAPs. Therefore, Carolina Sunrock is a minor source of HAPs.

3.3.1 Stationary Reciprocating Internal Combustion Engines MACT [40 CFR 63 Subpart ZZZZ]

40 CFR 63 Subpart ZZZZ applies to reciprocating internal combustion engines (RICE) located at a major or area source of HAP emissions. This facility will be an area source of HAPs. A stationary RICE is any internal combustion engine which uses reciprocating motion to convert heat energy into mechanical work and which is not mobile.

This facility is proposing three large spark ignition engines to provide electricity generation to the site (ES-PGEN1 through ES-PGEN3). The facility will also be installing diesel fired compression ignition engines for certain quarry equipment (see list in 2.2.3).

¹ 40 CFR §52.21(b)(1)(i)

Stationary RICE at area sources are considered new if construction commences on or after June 12, 2006 (§63.6590(a)(2)(iii)); therefore, all the engines permitted in this application will be new sources.

Per §63.6590(c), a new or reconstructed stationary RICE located at an area source must meet the requirements of this part by meeting the requirements of 40 CFR 60 Subpart IIII, for compression ignition engines, and 40 CFR 60 Subpart JJJJ, for spark ignition engines. See Section 3.4.3 for more information regarding NSPS Subpart IIII and Section 3.4.4 for Subpart JJJJ.

3.4 NSPS Applicability

3.4.1 Standards of Performance for Hot Mix Asphalt Facilities NSPS [40 CFR 60 Subpart I]

The provisions of this subpart are applicable to hot mix asphalt facilities that commence construction or modification after June 11, 1973; therefore this rule applies to Carolina Sunrock's hot mix asphalt plant (ID No. HMA-1).

3.4.1.1 Emission Standards

In accordance with §60.92, Carolina Sunrock must not discharge into the atmosphere any gases which:

- Contain PM in excess of 90 mg/dscm (0.04 gr/dscf)
- Exhibit 20 percent opacity, or greater.

3.4.1.2 Testing Requirements

Per §60.93, the facility shall conduct a performance test as required in §60.8, using the following test methods:

- Method 5 for determining compliance with PM standard
- Method 9 and §60.11 procedures for determining opacity

3.4.2 Standards of Performance for Nonmetallic Mineral Processing Plants NSPS [40 CFR 60 Subpart OOO]

Per §60.670(a)(1), the provisions of this subpart are applicable to crushers and grinding mills at hot mix asphalt facilities that reduce the size of nonmetallic minerals embedded in RAP up to the first storage silo or bin. Therefore, the RAP Crushing System at the facility is subject to this regulation including the RAP crusher, conveyor, and screen. The quarry operations are also subject to this standard.

3.4.2.1 Emission Standards

In accordance with table 3 and §60.672(b), for affected facilities that commence construction after April 22, 2008, the fugitive emission limit for the RAP Crushing System and quarry crushers (crusher only) is 12 percent opacity. For the RAP and quarry conveyors and screens, the fugitive emissions limit is 7 percent opacity.

The facility must demonstrate compliance with these limits by conducting an initial performance test per §60.11 and §60.675 and perform periodic inspections of water sprays per §60.674(b) and §60.676(b). The facility must also perform a repeat performance test within 5 years from the previous performance test from affected facilities without water sprays (facilities controlled by water carryover from upstream water sprays that are inspected are exempt from the repeat testing requirement).

3.4.2.2 Exemption for Portable Crushers

The facility may also periodically utilize a portable RAP crushing system that moves from site to site. It is exempt from Subpart OOO in accordance with §60.670(c)(2) since its capacity is 65 tons per hour, which is less than the 150 tons per hour threshold specified in this exemption. This portable crusher is also exempt from permitting per 15A NCAC 2Q .0902 which is further discussed in Section 3.5.12.

3.4.3 NSPS Subpart Subpart IIII – Stationary Compression Ignition Internal Combustion Engines

The NSPS Subpart IIII applicability definition provides:

(a) The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary compression ignition(CI) internal combustion engines (ICE) as specified in paragraphs (a)(1) through (3) of this section....

(1) Manufacturers of stationary CI ICE with a displacement of less than 10 liters per cylinder where the model year is:

i. 2007 or later, for engines that are not fire pump engines.

(2) Owners 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.

The diesel fired generators associated with quarry equipment, described in Section 2.2.3 above, are non-emergency generators (model year 2021 or later depending on the date construction begins) that combust ultra-low sulfur diesel (ULSD). The date of manufacture for the engine and date of construction will occur after the applicability dates specified above. Therefore, the generators are subject to the provisions of Subpart IIII.

Because the engines will be used to operate certain quarry equipment for non-emergency purposes and cylinder displacement is less than 10 liters/cylinder, the engine is subject to the emission limits in 40 CFR §60.4201 and the fuel specifications of 40 CFR 60.4207.

The proposed generator must meet the following Tier 4 emissions and opacity standards:

- 0.67 grams per kilowatt hour (g/kw-hr) of NOX,
- 0.19 grams per kilowatt hour (g/kw-hr) of HC²
- 3.5 g/kw-hr of CO, and
- 0.03 g/kw-hr of PM.

As provided in 40 CFR §60.4211(c), to demonstrate compliance with these emission standards, Carolina Sunrock will purchase certified engines to meet the emission limits listed 40 CFR 60.4201, and will install and configure the engines according to the manufacturer's specifications. No performance testing is required.

Effective October 1, 2010, only diesel fuel that meets the requirements set forth in 40 CFR §80.510(b) may be used in accordance with 40 CFR §60.4207(b). This regulation states that the sulfur content must remain less than or equal to 15 ppm, and either the cetane index must be at least 40, or the aromatic content must be less than or equal to 35 volume percent.

3.4.4 NSPS Subpart JJJJ – Stationary Spark Ignition Internal Combustion Engines

The NSPS Subpart JJJJ applicability definition provides:

(a) The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary spark ignition (SI) internal combustion engines (ICE) as specified in paragraphs (a)(1) through (6) of this section...

(4) Owners and operators of stationary SI ICE that commence construction after June 12, 2006, where the stationary SI ICE are manufactured:

(i) On or after July 1, 2007, for engines with a maximum engine power greater than or equal to 500 HP (except lean burn engines with a maximum engine power greater than or equal to 500 HP and less than 1,350 HP);

(6) The provisions of §60.4236 of this subpart are applicable to all owners and operators of stationary SI ICE that commence construction after June 12, 2006.

The three natural gas/propane-fired generators (each equipped with catalytic oxidation) are subject to Subpart JJJJ since they are larger than 500 hp and will commence construction after the applicability dates specified above.

According to §60.4233(e), the facility's large power generators are subject to the emission standards in Table 1 for Non-Emergency SI Natural Gas and Non-Emergency SI Lean Burn LPG greater than 500 hp (manufactured after July 1, 2010) must comply with the following emission standards:

- 1.0 grams per horsepower hour (g/hp-hr) of NO_x,
- 2.0 g/hp-hr of CO, and
- 0.7g/hp-hr of VOC.

To meet the compliance requirements of §60.4243(b)(1), Carolina Sunrock plans to purchase certified engines where the engine and control device (i.e., catalytic oxidation) are operated and maintained according to the manufacturer's emission-related instructions. The facility will keep records of conducted maintenance to demonstrate compliance. The engine settings will only be adjusted according to and consistent with the manufacturer's instructions. If the site purchases a certified natural gas engine and combusts only natural gas, there are no requirements to keep a maintenance plan, conducting performance tests, or submitting an initial notification.

If the site purchases a certified natural gas unit but combusts propane as the fuel, the site shall treat the unit as a non-certified engine. As such, when combusting propane, the site will demonstrate compliance as follows: Uncertified engines > 500 HP must keep maintenance plan and records demonstrating compliance, conduct initial performance testing within 60 days of startup and subsequent testing every 8760 hours or three years, whichever comes first. An Initial Notification must be submitted in accordance with 40 CFR 60.7(a)(1) for all SI ICE > 500 HP that have not been certified to meet emissions standards in NSPS JJJJ.

3.4.5 Non-Applicable NSPS

The basis for non-applicability of a potential NSPS is provided below.

Subpart Kb: Subpart Kb applies to volatile organic liquid storage vessels with a volume greater than 75 m³ (19,813 gallons) storing VOCs with a vapor pressure equal to or greater than 15.0 kPa (2.18 psia). In addition, tanks with capacities of greater than 151 m³ (39,890 gallons), containing VOCs with a vapor pressure less than 3.5 kPa (0.5 psia) are exempt from this NSPS. This project will add several storage tanks for storing ULSD, used oil, liquid asphalt, and pressurized propane, which all have vapor pressures below the applicability cutoff per AP-42 Table 7.1-2, and are therefore exempt from this regulation.

3.5 North Carolina Regulations

The applicability of key North Carolina State Implementation Plan (SIP) regulations is discussed below.

3.5.1 Particulates from Hot Mix Asphalt Plants (15A NCAC 2D .0506)

Particulate matter emissions resulting from the operation of a hot mix asphalt plant shall not exceed allowable emission rates. The allowable emission rates are, as defined in 15A NCAC 2D .0506, a function of the process weight rate and shall be determined by the following equation (calculated to three significant figures), where P is the process throughput rate in tons per hour (tons/hr) and E is the allowable emission rate in pounds per hour (lbs/hr).

$$E = 4.9445 * (P)^{0.4376} \quad \text{for } P < 300 \text{ tons/hr, or}$$
$$E = 60 \text{ lbs/hr} \quad \text{for } P \geq 300 \text{ tons/hr}$$

Since the process weight rate is 250 tons/hour, the allowable emission rate is 55.4 lb/hr. Controlled PM emissions are 1.28 lb/hr, well under the allowable emission rate.

3.5.2 Particulates from Sand, Gravel, or Crushed Stone Operations (15A NCAC 2D .0510)

This regulation applies to the RAP crushing system and quarry operations at Carolina Sunrock. As required by 15A NCAC 2D .0510 "Particulates from Sand, Gravel, or Crushed Stone Operations," the following requirements apply:

- a. The Permittee of a sand, gravel, recycled asphalt pavement (RAP), or crushed stone operation shall not cause, allow, or permit any material to be produced, handled, transported, or stockpiled without taking measures to reduce to a minimum any particulate matter from becoming airborne to prevent exceeding the ambient air quality standards beyond the property line for particulate matter, both PM₁₀ and total suspended particulates.
- b. Fugitive dust emissions from sand, gravel, RAP, or crushed stone operations shall be controlled by 15A NCAC 2D .0540 "Particulates from Fugitive Dust Emission Sources."
- c. The Permittee of any sand, gravel, RAP, or crushed stone operation shall control process-generated emissions:
 - i. From crushers with wet suppression (excluding RAP crushers); and
 - ii. From conveyors, screens, and transfer points

such that the applicable opacity standards in 15A NCAC 2D .0521 Control of Visible Emissions," or 15A NCAC 2D .0524 "New Source Performance standards" are not exceeded.

3.5.3 Particulates from Miscellaneous Industrial Processes (15A NCAC 2D .0515)

This regulation applies to the following truck mix concrete batch plant emission sources: cement/flyash weigh batcher, cement/flyash silos, aggregate weigh batcher, and truck loadout point.

As required by 15A NCAC 2D .0515 "Particulates from Miscellaneous Industrial Processes," particulate matter emissions from the emission sources shall not exceed allowable emission rates. The allowable emission rates are, as defined in 15A NCAC 2D .0515, a function of the process weight rate and shall be determined by the following equation(s), where P is the process throughput rate in tons per hour (tons/hr) and E is the allowable emission rate in pounds per hour (lbs/hr).

$$E = 4.10 * (P)^{0.67} \quad \text{for } P \leq 30 \text{ tons/hr, or}$$
$$E = 55 * (P)^{0.11} - 40 \quad \text{for } P > 30 \text{ tons/hr}$$

See Appendix A, Concrete Batch Plant Emissions Calculator – Input Screen, for the allowable emission rate calculation for each source. The emission rate from each source is less than the maximum allowable emission rate, and thus shows compliance with this regulation.

3.5.4 Control of Visible Emissions (15A NCAC 2D .0521)

Visible emissions from the HMA plant, concrete batch plant, and quarry's emission sources, manufactured after July 1, 1971, shall not be more than 20 percent opacity when averaged over a six-minute period, except that six-minute periods averaging not more than 87 percent opacity may occur not more than once in any hour nor more than four times in any 24-hour period. However, sources which must comply with 15A NCAC 2D .0524 "New Source Performance Standards" or .1110 "National Emission Standards for Hazardous Air Pollutants" must comply with applicable visible emissions requirements contained therein.

3.5.5 Particulates from Fugitive Dust Emission Sources (15A NCAC 2D .0540)

The facility shall not cause or allow fugitive dust emissions to cause or contribute to substantive complaints or excess visible emissions beyond the property boundary. If substantive complaints or excessive fugitive dust emissions from the facility are observed beyond the property boundaries for six minutes in any one hour (using Reference Method 22 in 40 CFR, Appendix A), the owner or operator may be required to submit a fugitive dust plan as described in 2D .0540(f).

"Fugitive dust emissions" means particulate matter that does not pass through a process stack or vent and that is generated within plant property boundaries from activities such as: unloading and loading areas, process areas stockpiles, stock pile working, plant parking lots, and plant roads (including access roads and haul roads).

3.5.6 Sulfur Dioxide Emissions from Combustion Sources (15A NCAC 2D .0516)

As required by 15A NCAC 2D .0516 "Sulfur Dioxide Emissions from Combustion Sources," sulfur dioxide emissions from the combustion sources shall not exceed 2.3 pounds per million Btu heat input. The combustion sources proposed in this application will comply with this regulation through combusting natural gas, propane, or ultra-low sulfur diesel fuel.

3.5.7 New Source Performance Standards (15A NCAC 2D .0524)

For Propane/Natural Gas/No. 2 fuel oil/recycled No. 2 fuel oil/No. 4 fuel oil/recycled No.4 fuel oil fired batch type hot mix asphalt plant (250 tons/hour maximum capacity, 80 MMBtu/hr maximum heat input) (ID No. ES-1), the facility shall comply with all applicable provisions, including the notification, testing, reporting, recordkeeping, and monitoring requirements contained in 15A NCAC 2D .0524 "New Source Performance Standards" (NSPS) as promulgated in 40 CFR 60, Subpart I, including Subpart A "General Provisions."

For the nonmetallic mineral processing equipment (RAP Crushing System and quarry operations), the facility shall comply with all applicable provisions, including the notification, testing, reporting, recordkeeping, and monitoring requirements contained in 15A NCAC 2D .0524 "New Source Performance Standards" (NSPS) as promulgated in 40 CFR 60, Subpart OOO including Subpart A General Provisions.

The power generators and diesel fired quarry equipment generators will be subject to NSPS Subpart JJJJ and IIII, respectively.

See Section 3.4 for further details.

3.5.8 Excess Emissions Reporting and Malfunctions (15A NCAC 2D .0535)

As required by 15A NCAC 2D .0535, if a source of excess emissions lasts for more than four hours and results from a malfunction, a breakdown of process or control equipment or any other abnormal conditions, the facility shall:

- a. Notify the Director or his designee of any such occurrence by 9:00 a.m. Eastern time of the Division's next business day of becoming aware of the occurrence and describe:
 - i. the name and location of the facility,
 - ii. the nature and cause of the malfunction or breakdown,
 - iii. the time when the malfunction or breakdown is first observed,
 - iv. the expected duration, and
 - v. an estimated rate of emissions.
- b. Notify the Director or his designee immediately when the corrective measures have been accomplished.

3.5.9 Control and Prohibition of Odorous Emissions (15A NCAC 2D .1806)

The facility shall not operate without implementing management practices or installing and operating odor control equipment sufficient to prevent odorous emissions from the facility from causing or contributing to objectionable odors beyond the facility's boundary.

3.5.10 Limitation to Avoid Title V Permit (15A NCAC 2Q .0501)

Pursuant to 15A NCAC 2Q .0315 "Synthetic Minor Facilities," to avoid the applicability of 15A NCAC 2Q .0501 "Purpose of Section and Requirement for a Permit," Carolina Sunrock requests that facility-wide emissions be limited to less than 100 tons per consecutive 12-month period for the following pollutants:

- > PM
- > NO_x
- > CO

The facility requests the limitations discussed in Section 2.3 above.

3.5.11 Toxic Air Pollutant Procedures (15A NCAC 2Q .0700)

Under the NC air toxics program regulations, facility-wide modeling and permitting is required if total facility-wide emissions of regulated air toxics emitted from non-exempt, new or modified emission units exceed the toxics de minimis emissions rates (a.k.a., "TPERS") established under the 15A NCAC 2Q .0700 regulations.

Carolina Sunrock has triggered modeling for the following pollutants since total facility wide emissions exceed the respective TPERs: arsenic, benzene, cadmium, formaldehyde, mercury, and nickel. Therefore, Carolina Sunrock is submitting an air dispersion modeling analysis (See Section 4) and requests TAP limits be added to the permit according to Table 4-6 in the following section.

3.5.12 Permit Exemptions - Temporary Crushers (15A NCAC 2Q .0902)

The facility may periodically use a mobile RAP crushing system that moves around other Carolina Sunrock sites. This temporary crusher has a maximum capacity of 65 tons per hour. It is exempt from permitting since it meets the criteria specified in 2Q .0902 and will not be operated at this facility for more than 12 months. In addition, the crusher:

- Will crush no more than 300,000 tons at the facility
- Will burn no more than 17,000 gallons of diesel fuel at the facility
- Does not operate at a quarry that has an air permit
- Will continuously use water spray to control emissions from the crusher, and
- Does not operate at a facility that is required to have a mining permit issued by Division of Energy, Mineral, and Land Resources.

The diesel fired emergency generator associated with this temporary crusher was not included in the TAP modeling demonstration since it is exempt from permitting and will only be operated on a short term basis. The generator is also subject to RICE MACT (40 CFR 63, Subpart ZZZZ).

4. AIR DISPERSION MODELING ANALYSIS

This section presents the input data and modeling methodology utilized in the TAP modeling compliance demonstration. The modeling methodology conforms to the Guidelines for Evaluating the Air Quality Impacts of Toxic Pollutants in North Carolina (May 2018) and more recent changes posted on NCDAQ's Air Quality Analysis Branch (AQAB) website. In lieu of a modeling protocol, a protocol checklist is provided in Appendix B.

As previously discussed, potential emissions of six (6) compounds regulated under 15A NCAC 2Q .0700 (NC Air Toxics) exceed their TPER and this air dispersion modeling evaluation has been conducted to demonstrate compliance with all applicable AAL.

This report also presents the input data, modeling methodology and results for the NAAQS modeling compliance demonstration that was completed for Carolina Sunrock's Prospect Hill, NC facility (Prospect Hill). The modeling methodology generally conforms to U.S. EPA's *Guideline on Air Quality Models* 40 CFR 51, Appendix W (Revised, January 17, 2017), herein referred to as the *Guideline*, and more specifically to North Carolina Division of Air Quality (NCDAQ) Guidance documents.²³⁴

Since the time of the original application submitted in November 2019, DAQ requested that the site perform a NAAQS modeling demonstration for SO₂, NO_x, TSP, PM₁₀ and PM_{2.5}. Appendix C includes the report documenting NAAQS compliance, that was prepared and submitted to DAQ's Air Quality Analysis Branch (AQAB) on March 18, 2021.

There have been no changes made since the original submittal other than the acceptance of utilizing ultra-low sulfur diesel (ULSD) as a fuel source for the insignificant asphalt heaters.

4.1 Facility Location

Figure 4-1 provides a topographical map of the area surrounding the Carolina Sunrock Prospect Hill property. The approximate central Universal Transverse Mercator (UTM) coordinates of the facility are 664.4 kilometers (km) east and 4,018.7 km north in Zone 17 (NAD 83).

For modeling purposes, the appropriate urban/rural land use classification for the area was determined using the Auer technique, which is recommended in the *Guideline on Air Quality Models*. In accordance with this technique, the area within a 3-km radius of the facility was identified on US Geological Survey (USGS) topographic maps (and was delineated by land use type). More than 50 percent of the surrounding land use can be classified as undeveloped rural (i.e., Auer's A4 classification), therefore the area is classified as rural.

² https://files.nc.gov/ncdeq/Air%20Quality/permits/mets/NC_PSD_Modeling_Guidance_20200701.pdf

³ https://files.nc.gov/ncdeq/Air%20Quality/permits/mets/NC_Toxics_Guidance_rev_24May2018.pdf

⁴ https://files.nc.gov/ncdeq/Air%20Quality/permits/mets/NC_DAQ_Quarry_Modeling_Guidance_31May2018.pdf

Figure 4-1. Map of Area Surrounding Carolina Sunrock



4.2 Model selection

The AERMOD dispersion model (version 19091) was used to calculate off-property concentrations in the modeling analysis. AERMOD was promulgated as the preferred model in 40 CFR 51, Appendix W on November 9, 2005 and is recommended by the NCDAQ for evaluating criteria and toxic air pollutant concentrations from industrial facilities such as Carolina Sunrock's Prospect Hill #2 facility.⁵ AERMOD was run using the regulatory default option, which automatically implements NCDAQ and U.S. EPA recommended model options.

4.3 Source Description

Tables 4-1 and 4-2 presents a table of the modeled point and volume sources, respectively, including their locations at the facility. All locations are expressed in UTM Zone 18 (NAD83) coordinates.

Table 4-1. Modeled Point Source Locations

Model ID	Description	UTM-E (m)	UTM-N (m)	Elevation (m)
PGEN1	Power Engine 1	664,047.9	4,018,679.7	205.0
PGEN2	Power Engine 2	664,050.7	4,018,673.3	205.2
PGEN3	Power Engine 3	664,053.4	4,018,667.0	205.4
CD1	Asphalt Plant Baghouse	664,069.6	4,018,718.7	204.6
IES4	Asphalt Heater	664,066.8	4,018,732.0	204.7
IES5	Liquid Asphalt Heater	664,071.1	4,018,735.0	204.8
HMASILO1	Asphalt Silo 1 Vent	664,109.1	4,018,719.0	205.1
HMASILO2	Asphalt Silo 2 Vent	664,112.0	4,018,721.4	205.1
HMASILO3	Asphalt Silo 3 Vent	664,115.0	4,018,723.7	205.0
HMASILO4	Asphalt Silo 4 Vent	664,117.9	4,018,726.2	204.9
HMASILO5	Asphalt Silo 5 Vent	664,106.1	4,018,716.5	205.2
CD2	Concrete Plant Baghouse	664,155.2	4,018,786.6	202.2
GEN1	Quarry Generator	664,799.0	4,018,997.2	191.0
GEN1A	Quarry Generator	665,048.1	4,018,924.3	186.6
GEN2	Quarry Generator	664,815.4	4,019,139.4	190.8
GEN3	Quarry Generator	664,617.9	4,018,936.2	199.0
GEN5	Quarry Generator	664,627.5	4,018,930.4	198.4
GEN7	Quarry Generator	664,636.8	4,018,891.0	197.4
GEN4	Quarry Generator	665,031.3	4,019,118.9	188.2

⁵ 40 CFR 51, Appendix W—*Guideline on Air Quality Models*, Appendix A.1—AMS/EPA Regulatory Model (AERMOD).

Table 4-2. Modeled Volume Source Locations

Model ID	Description	UTM-E (m)	UTM-N (m)	Elevation (m)
HMALO1	Asphalt Loadout 1	664,109.1	4,018,719.0	205.1
HMALO2	Asphalt Loadout 2	664,112.0	4,018,721.4	205.1
HMALO3	Asphalt Loadout 3	664,115.0	4,018,723.7	205.0
HMALO4	Asphalt Loadout 4	664,117.9	4,018,726.2	204.9
HMALO5	Asphalt Loadout 5	664,106.1	4,018,716.5	205.2

Tables 4-3 and 4-4 present the stack parameters input to the model for each of the point and volume sources, respectively. The stacks for sources IES4 and IES5 are vertical stacks but will have raincaps and thus, per NCDAQ guidance, were modeled with an exit velocity of 0.01 m/s. The HMASILO vents are characterized as point sources with ambient release characteristics, so per NCDAQ guidance, were modeled with an exit velocity of 0.01 m/s and exit temperature of 25 deg. C. The volume source parameters were calculated based on NCDAQ *Guidance* for surface-based volume sources.

Table 4-3. Modeled Point Source Parameters

Model ID	Stack Height (m)	Exit Temp. (K)	Exit Velocity (m/s)	Stack Diameter (m)
PGEN1	5.18	788.71	22.02	0.15
PGEN2	5.18	788.71	22.02	0.15
PGEN3	5.18	788.71	22.02	0.15
CD1	9.22	388.71	29.41	0.96
IES4	2.74	435.93	0.01	0.30
IES5	4.57	435.93	0.01	0.05
HMASILO1	19.81	298.15	0.01	0.30
HMASILO2	19.81	298.15	0.01	0.30
HMASILO3	18.29	298.15	0.01	0.30
HMASILO4	18.29	298.15	0.01	0.30
HMASILO5	18.29	298.15	0.01	0.30
CD2	10.67	298.15	24.38	0.46
GEN1	3.66	797.04	29.11	0.15
GEN1A	3.66	797.04	29.11	0.15
GEN2	3.66	797.04	29.11	0.15
GEN3	3.66	797.04	29.11	0.15
GEN5	3.66	797.04	29.11	0.15
GEN7	3.66	797.04	29.11	0.15
GEN4	1.83	778.71	15.07	0.15

Table 4-4. Modeled Volume Source Parameters

Model ID	Release Height (m)	Init. Lat. Dimension (K)	Init. Vert. Dimension (m/s)
HMALO1	3.66	0.15	1.70
HMALO2	3.66	0.15	1.70
HMALO3	3.66	0.15	1.70
HMALO4	3.66	0.15	1.70
HMALO5	3.66	0.15	1.70

Table 4-5 presents the emission rates modeled for each of the triggered TAPs. These rates represent values that are in excess of the calculated potential rates in order to provide the facility with operational flexibility.

Table 4-5. Modeled Emission Rates

Model ID	FORM	Modeled Emission Rates (g/s)				
		MERCURY	NICKEL	ARSENIC	BENZENE	CADMIUM
PGEN1	1.005E-01	0.000E+00	0.000E+00	0.000E+00	3.169E-03	0.000E+00
PGEN2	1.005E-01	0.000E+00	0.000E+00	0.000E+00	3.169E-03	0.000E+00
PGEN3	8.379E-02	0.000E+00	0.000E+00	0.000E+00	2.641E-03	0.000E+00
CD1	9.765E-02	8.190E-05	1.991E-03	1.764E-05	1.229E-02	1.298E-05
IES4	3.564E-05	4.536E-07	4.536E-07	6.048E-07	3.095E-07	4.536E-07
IES5	3.267E-05	4.158E-07	4.158E-07	5.544E-07	2.837E-07	4.158E-07
HMASILO1	5.292E-04	0.000E+00	0.000E+00	0.000E+00	2.457E-05	0.000E+00
HMASILO2	5.292E-04	0.000E+00	0.000E+00	0.000E+00	2.457E-05	0.000E+00
HMASILO3	5.292E-04	0.000E+00	0.000E+00	0.000E+00	2.457E-05	0.000E+00
HMASILO4	5.292E-04	0.000E+00	0.000E+00	0.000E+00	2.457E-05	0.000E+00
HMASILO5	5.292E-04	0.000E+00	0.000E+00	0.000E+00	2.457E-05	0.000E+00
CD2	0.000E+00	2.423E-05	2.423E-05	8.297E-06	0.000E+00	6.298E-08
GEN1	3.643E-04	9.261E-07	9.261E-07	1.235E-06	2.880E-04	9.261E-07
GEN1A	3.643E-04	9.261E-07	9.261E-07	1.235E-06	2.880E-04	9.261E-07
GEN2	1.301E-04	3.308E-07	3.308E-07	4.410E-07	1.029E-04	3.308E-07
GEN3	4.579E-04	1.164E-06	1.164E-06	1.552E-06	3.621E-04	1.164E-06
GEN5	4.683E-04	1.191E-06	1.191E-06	1.588E-06	3.703E-04	1.191E-06
GEN7	3.643E-04	9.261E-07	9.261E-07	1.235E-06	2.880E-04	9.261E-07
GEN4	1.301E-04	3.308E-07	3.308E-07	4.410E-07	1.029E-04	3.308E-07
HMALO1	2.306E-05	0.000E+00	0.000E+00	0.000E+00	1.363E-05	0.000E+00
HMALO2	2.306E-05	0.000E+00	0.000E+00	0.000E+00	1.363E-05	0.000E+00
HMALO3	2.306E-05	0.000E+00	0.000E+00	0.000E+00	1.363E-05	0.000E+00
HMALO4	2.306E-05	0.000E+00	0.000E+00	0.000E+00	1.363E-05	0.000E+00
HMALO5	2.306E-05	0.000E+00	0.000E+00	0.000E+00	1.363E-05	0.000E+00

As previously described, the following sources are subject to a NESHAP standard:

- PGEN1
- PGEN2
- PGEN3
- GEN1 (J50V2)
- GEN1A (J45)
- GEN2 (S190dt)
- GEN3 (PS1300 Maxtrack)
- GEN5 (PS1300 Maxtrack)
- GEN7 (PS100 Maxtrack)
- GEN4 (TF80)

Since the above sources were included in the TAP modeling analysis, which demonstrates no unacceptable risk to the public, TAP permit limitations are not required for those sources. As such, Carolina Sunrock is requesting the TAP limits in Table 4-6 be included in the permit, based on the modeled emission rates in Table 4-5 (in g/s) and scaled to the appropriate averaging period.

Table 4-6. Requested Permit Limits

Model ID	Requested Permit Limits					
	FORM (lb/hr)	MERCURY (lb/day)	NICKEL (lb/day)	ARSENIC (lb/yr)	BENZENE (lb/yr)	CADMIUM (lb/yr)
CD1	7.75E-01	1.56E-02	3.79E-01	1.23E+00	8.54E+02	9.02E-01
IES4	2.83E-04	8.64E-05	8.64E-05	4.20E-02	2.15E-02	3.15E-02
IES5	2.59E-04	7.92E-05	7.92E-05	3.85E-02	1.97E-02	2.89E-02
HMASILO1	4.20E-03	-	-	-	1.71E+00	-
HMASILO2	4.20E-03	-	-	-	1.71E+00	-
HMASILO3	4.20E-03	-	-	-	1.71E+00	-
HMASILO4	4.20E-03	-	-	-	1.71E+00	-
HMASILO5	4.20E-03	-	-	-	1.71E+00	-
CD2	0.00E+00	-	4.62E-03	5.77E-01	0.00E+00	4.38E-03
HMALO1	1.83E-04	-	-	-	9.48E-01	-
HMALO2	1.83E-04	-	-	-	9.48E-01	-
HMALO3	1.83E-04	-	-	-	9.48E-01	-
HMALO4	1.83E-04	-	-	-	9.48E-01	-
HMALO5	1.83E-04	-	-	-	9.48E-01	-

4.4 Meteorological Data

The AERMOD modeling results were based on sequential hourly surface observations from Danville, NC (DAN) and upper air data also from Greensboro, NC (GSO). These stations are

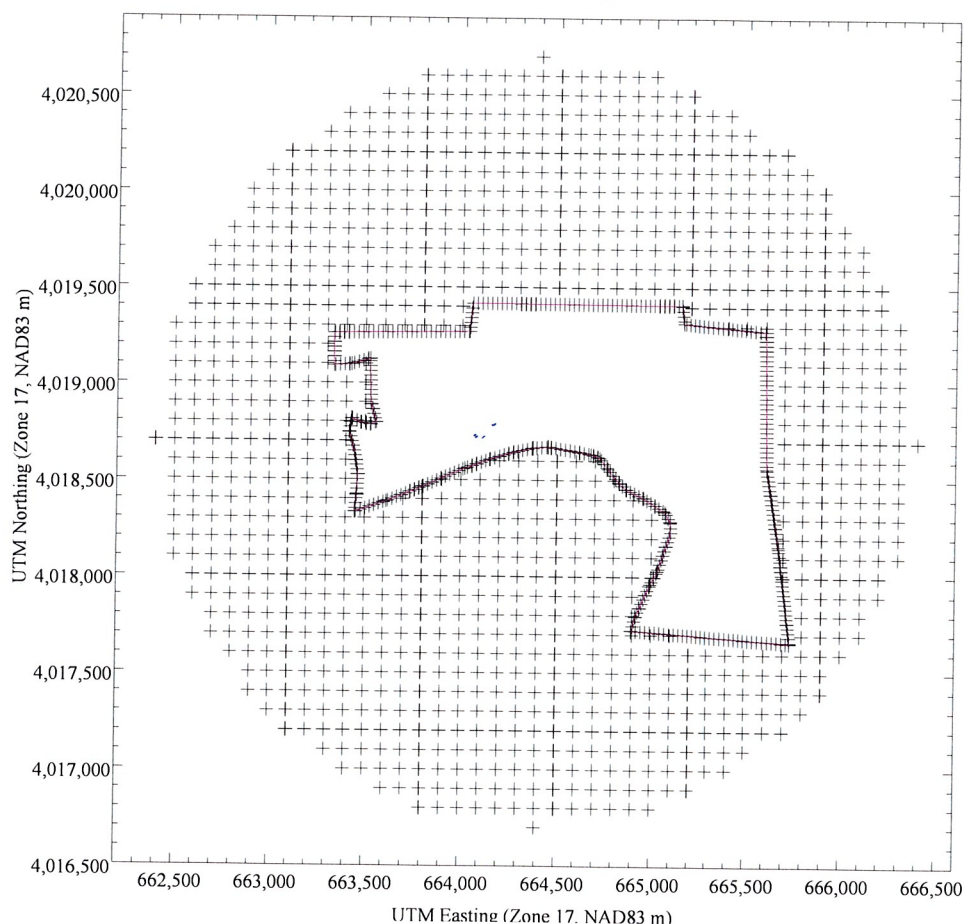
recommended by NCDAQ for modeling facilities located in Caswell County.⁶ The base elevation for the surface station is 174 m.⁷

Since the modeled impacts for at least one modeled TAP exceeded 50% of the AAL, five (5) years of data were modeled. The 5, most recent years of meteorological data (2014-2018) were downloaded from NCDAQ's website and input to AERMOD.

4.5 Modeled Receptors

The receptors included in the modeling analysis consisted of property line receptors, spaced 25 meters (m) apart, and Cartesian receptor points spaced every 100 m, extending out 3 km from the center of the facility. There are no public right-of-ways (e.g. roads) traversing the property line, so only a single property line was included in the modeling. The impacts were reviewed to ensure that the maximum impacts were captured within the 100 m spaced grid. Figure 4-2 shows the receptors included in the modeling analysis.

Figure 4-2. Modeled Receptor Grid



⁶ <https://deq.nc.gov/about/divisions/air-quality/air-quality-permits/modeling-meteorology/meteorological-data>

⁷ https://files.nc.gov/ncdeq/Air%20Quality/permits/mets/ProfileBaseElevations_2018.pdf

The AERMOD model is capable of handling both simple and complex terrain. Through the use of the AERMOD terrain preprocessor (AERMAP), AERMOD incorporates not only the receptor heights, but also an effective height (hill height scale) that represents the significant terrain features surrounding a given receptor that could lead to plume recirculation and other terrain interaction.⁸

Receptor terrain elevations input to the model were interpolated from National Elevation Database (NED) data obtained from the USGS. NED data consist of arrays of regularly spaced elevations. The array elevations are at a resolution of 1 arcsecond (approximately 30 m intervals) and were interpolated using the latest version of AERMAP (version 18081) to determine elevations at the defined receptor intervals. The data obtained from the NED files were checked for completeness and spot-checked for accuracy against elevations on corresponding USGS 1:24,000 scale topographical quadrangle maps. AERMAP was also used to establish the base elevation of all Carolina Sunrock structures and emission sources.

4.6 Building Downwash

AERMOD incorporates the Plume Rise Model Enhancements (PRIME) downwash algorithms. Direction specific building parameters required by AERMOD are calculated using the BPIP-PRIME preprocessor (version 04274).

EPA has promulgated stack height regulations that restrict the use of stack heights in excess of "Good Engineering Practice" (GEP) in air dispersion modeling analyses. Under these regulations, that portion of a stack in excess of the GEP height is generally not creditable when modeling to determine source impacts. This essentially prevents the use of excessively tall stacks to reduce ground-level pollutant concentrations. The minimum stack height not subject to the effects of downwash, called the GEP stack height, is defined by the following formula:

$H_{GEP} = H + 1.5L$, where:

H_{GEP} = minimum GEP stack height,

H = structure height, and

L = lesser dimension of the structure (height or projected width).

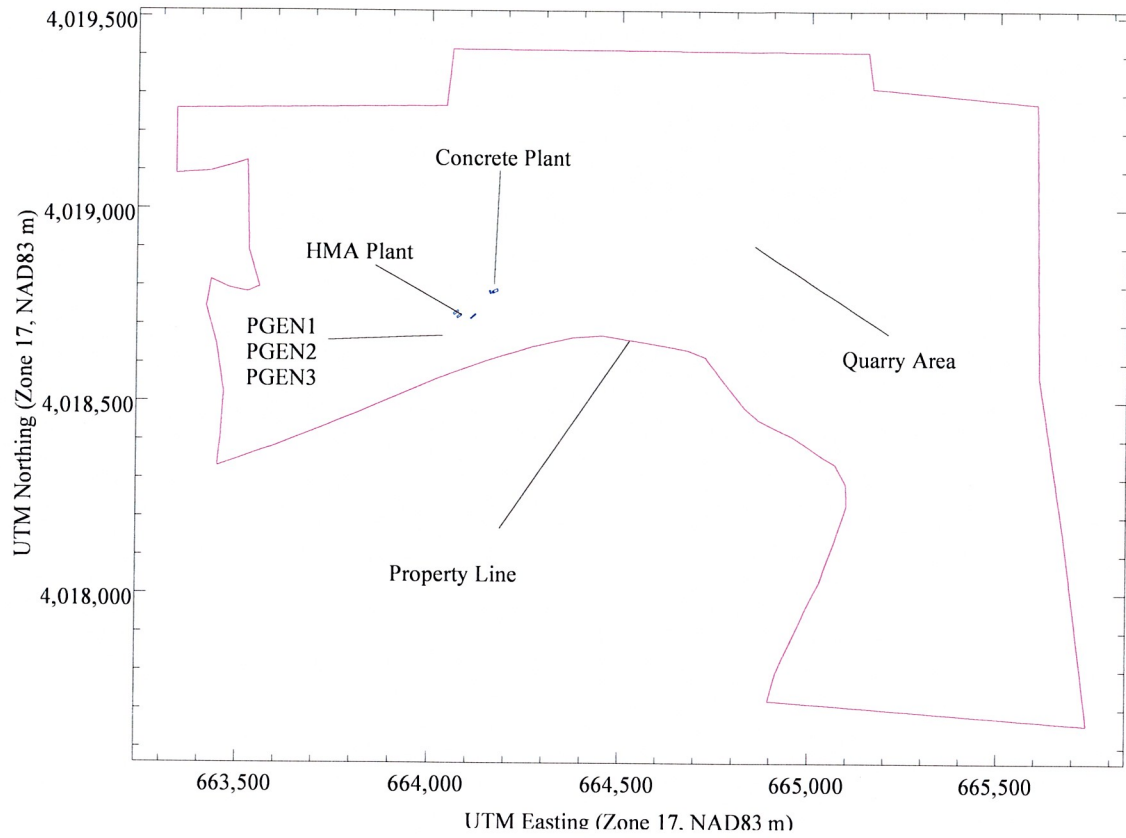
This equation is limited to stacks located within 5L of a structure. Stacks located at a distance greater than 5L are not subject to the wake effects of the structure. The wind direction-specific downwash dimensions and the dominant downwash structures used in this analysis are determined using BPIP. In general, the lowest GEP stack height for any source is 65 meters by default.⁹ None of the proposed emission units at the Prospect Hill facility will exceed GEP height.

⁸ US EPA, *Users Guide for the AERMOD Terrain Preprocessor (AERMAP)*, EPA-454/B-03-003, Research Triangle Park, NC.

⁹ 40 CFR §51.100(ii)

Figures 4-3 presents a site layout for the facility that shows the source and building arrangement as modeled. The electronic BPIP input and output files are included on the CD-ROM in Appendix B.

Figure 4-3. Carolina Sunrock Prospect Hill #2 Site Layout



4.7 TAP Modeling Results

Table 4-7 presents the model results for each of the triggered TAP. As shown, all impacts are below their respective AAL. The electronic modeling files used in the TAP analysis are contained on the CD-ROM in Appendix B.

Table 4-7. TAP Modeling Results

Pollutant	Avg. Period	UTM-E (m)	UTM-N (m)	Date/Time or Year	Max. Modeled	AAL ($\mu\text{g}/\text{m}^3$)	% of AAL (%)
					Impact ($\mu\text{g}/\text{m}^3$)		
Formaldehyde	1-Hour	664,020.1	4,018,559.7	14012802	94.50	150	63.00%
Mercury	24-Hour	664,247.2	4,018,636.3	14111424	2.45E-03	0.6	0.41%
Nickel	24-Hour	663,919.1	4,018,515.6	15100424	3.89E-02	6	0.65%
Arsenic	Annual	664,127.9	4,018,599.1	2018	1.20E-04	2.10E-03	5.71%
Benzene	Annual	663,964.9	4,018,535.6	2015	1.14E-01	0.12	94.81%
Cadmium	Annual	664,127.9	4,018,599.1	2018	6.00E-05	5.50E-03	1.09%

5. NCDEQ GENERAL FACILITY APPLICATION FORMS

This section contains DEQ permit application forms for the general facility.

FACILITY FORMS

- Form A – Facility (General Information)
- Form A2 – Emission Source Listing
- Form A3 – 112(r) Applicability Information
- Form D1 – Facility-wide Emissions Summary
- Form D4 – Exempt and Insignificant Activities Summary
- Form D5 – P.E. Seal Form

FORM A

GENERAL FACILITY INFORMATION

REVISED 09/22/16

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

A

NOTE- APPLICATION WILL NOT BE PROCESSED WITHOUT THE FOLLOWING:

- | | | |
|---|---|---|
| ☒ Local Zoning Consistency Determination (new or modification only) | ☒ Appropriate Number of Copies of Application | ☒ Application Fee (if required) |
| ☒ Responsible Official/Authorized Contact Signature | ☐ P.E. Seal (if required) | |

GENERAL INFORMATION

Legal Corporate/Owner Name: Carolina Sunrock LLC	
Site Name: Prospect Hill Quarry and Distribution Center	
Site Address (911 Address) Line 1: 1238 Wrenn Road	
Site Address Line 2:	
City: Prospect Hill	State: North Carolina
Zip Code: 27314	County: Caswell

CONTACT INFORMATION

Responsible Official/Authorized Contact:		Invoice Contact:	
Name/Title: Gregg W. Bowler - President		Name/Title: Accounts Payable	
Mailing Address Line 1: 200 Horizon Drive Suite 100		Mailing Address Line 1: 200 Horizon Drive Suite 100	
Mailing Address Line 2:		Mailing Address Line 2:	
City: Raleigh	State: NC	City: Raleigh	State: NC
Zip Code: 27615		Zip Code: 27615	
Primary Phone No.: (919) 747-6400	Fax No.: (919) 747-6357	Primary Phone No.: (919) 747-6400	Fax No.: (919) 747-6357
Secondary Phone No.:		Secondary Phone No.:	
Email Address: gbowler@thesunrockgroup.com		Email Address: ap@thesunrockgroup.com	

Facility/Inspection Contact:		Permit/Technical Contact:	
Name/Title: Scott Martino - Compliance Manager		Name/Title: Scott Martino - Compliance Manager	
Mailing Address Line 1: 200 Horizon Drive Suite 100		Mailing Address Line 1: 200 Horizon Drive Suite 100	
Mailing Address Line 2:		Mailing Address Line 2:	
City: Raleigh	State: NC	City: Raleigh	State: NC
Zip Code: 27615		Zip Code: 27615	
Primary Phone No.: (919) 747-6336	Fax No.: (919) 747-6357	Primary Phone No.: (919) 747-6336	Fax No.: (919) 747-6357
Secondary Phone No.: (984) 202-4761		Secondary Phone No.: (984) 202-4761	
Email Address: smartino@thesunrockgroup.com		Email Address: smartino@thesunrockgroup.com	

APPLICATION IS BEING MADE FOR

- | | | | |
|---|---|---|--|
| ☒ New Non-permitted Facility/Greenfield | ☐ Modification of Facility (permitted) | ☐ Renewal Title V | ☐ Renewal Non-Title V |
| ☐ Name Change | ☐ Ownership Change | ☐ Administrative Amendment | ☐ Renewal with Modification |

FACILITY CLASSIFICATION AFTER APPLICATION (Check Only One)

- | | | | | |
|----------------------------------|--------------------------------|--|---|----------------------------------|
| ☐ General | ☐ Small | ☐ Prohibitory Small | ☒ Synthetic Minor | ☐ Title V |
|----------------------------------|--------------------------------|--|---|----------------------------------|

FACILITY (Plant Site) INFORMATION

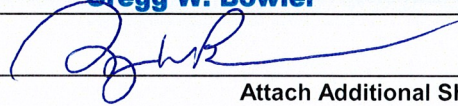
Describe nature of (plant site) operation(s): **This is a proposal for a Drum Mix Hot Asphalt Plant, Truck Mix Concrete Plant, and Quarry**

Primary SIC/NAICS Code: 2951,3273, 1423, 1429		Facility ID No.	
Facility Coordinates: Latitude: 36.297972		Current/Previous Air Permit No. Expiration Date:	
Longitude: -79.173845			
Does this application contain confidential data? ☐ YES ☒ NO		***If yes, please contact the DAQ Regional Office prior to submitting this application.*** (See Instructions)	

PERSON OR FIRM THAT PREPARED APPLICATION

Person Name: Aimee Andrews		Firm Name: Trinity Consultants	
Mailing Address Line 1:		Mailing Address Line 2: Suite 205	
City:	State:	Zip Code:	County:
Phone No.:	Fax No.:	Email Address:	

SIGNATURE OF RESPONSIBLE OFFICIAL/AUTHORIZED CONTACT

Name (typed): Gregg W. Bowler	Title: President
X Signature (Blue Ink): 	Date: 3/8/21

Attach Additional Sheets As Necessary

A2

File: Burlington Forms 2021-04-15.xlsx
Sheet: A2&A3

FORM D4

EXEMPT AND INSIGNIFICANT ACTIVITIES SUMMARY

REVISED: 12/01/01

NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate

D4

ACTIVITIES EXEMPTED PER 2Q .0102 OR INSIGNIFICANT ACTIVITIES PER 2Q .0503 FOR TITLE V SOURCES

DESCRIPTION OF EMISSION SOURCE	SIZE OR PRODUCTION RATE	BASIS FOR EXEMPTION OR INSIGNIFICANT ACTIVITY
IES-1 – Used Oil Storage Tank associated with asphalt plant	20,000 gallon	2Q .0102(g)(4)
IES-2 – Used Oil Storage Tank associated with asphalt plant	20,000 gallon	2Q .0102(g)(4)
IES-3 – Liquid Asphalt Tank	30,000 gallon	2Q .0102(g)(14)(B)
IES-4 – Liquid Asphalt Tank	30,000 gallon	2Q .0102(g)(14)(B)
IES-5 – Diesel Fuel Storage Tank associated with asphalt plant	20,000 gallon	2Q .0102(g)(4)
IES-6 – Diesel Fuel Storage Tank associated with asphalt plant	20,000 gallon	2Q .0102(g)(4)

Attach Additional Sheets As Necessary

FORM D1

FACILITY-WIDE EMISSIONS SUMMARY

REVISED 09/22/16

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

D1

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE				
		EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)
AIR POLLUTANT EMITTED		tons/yr	tons/yr	tons/yr
PARTICULATE MATTER (PM)			523	28.88
PARTICULATE MATTER < 10 MICRONS (PM ₁₀)			207	14.45
PARTICULATE MATTER < 2.5 MICRONS (PM _{2.5})			85.2	8.52
SULFUR DIOXIDE (SO ₂)			94.37	23.61
NITROGEN OXIDES (NO _x)			62.42	15.94
CARBON MONOXIDE (CO)			145.67	33.68
VOLATILE ORGANIC COMPOUNDS (VOC)			52.69	12.05
LEAD				
GREENHOUSE GASES (GHG) (SHORT TONS)				
OTHER				
HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE				
		EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITATIONS)	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITATIONS)
HAZARDOUS AIR POLLUTANT EMITTED	CAS NO.	tons/yr	tons/yr	tons/yr
Acetaldehyde				
Acrolein		See Appendix A		
Antimony unlisted compounds				
Arsenic unlisted cmpds (comp. of ASC)				
Benzene				
Beryllium metal (unreacted)				
Cadmium metal (elemental unreacted)				
Carbon disulfide				
Chromium unlisted cmpds (add w/chrom acid to get CRC)				
Chromic acid (VI) (component of solCR6 and CRC)				
Cobalt unlisted compounds				
Cumene				
Ethyl benzene				
Ethyl chloride (chloroethane)				
Formaldehyde				
Hexane, n-				
Hydrogen Chloride (hydrochloric acid)				
Lead unlisted compounds				
Mercury, vapor				
Methyl bromide				
Methyl chloride				
Methyl chloroform				
Methyl ethyl ketone				
Methylene chloride				
Napthalene				
Nickel metal				
Perchloroethylene (tetrachloroethylene)				
Phenol				
Phosphorus Metal, Yellow or White				

Polycyclic Organic Matter							
Propionaldehyde							
Quinone							
Selenium compounds							
Styrene							
Tetrachlorodibenzo-p-dioxin, 2,3,7,8-							
Toluene							
Trimethylpentane, 2,2,4-							
Xylene							
TOXIC AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE							
INDICATE REQUESTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS. EMISSIONS ABOVE THE TOXIC PERMIT EMISSION RATE (TPER) IN 15A NCAC 2Q .0711 MAY REQUIRE AIR DISPERSION MODELING. USE NETTING FORM D2 IF NECESSARY.							
					Modeling Required ?		
TOXIC AIR POLLUTANT EMITTED	CAS NO.	lb/hr	lb/day	lb/year	Yes	No	
See Appendix A							
COMMENTS:							

Attach Additional Sheets As Necessary

FORM D5

TECHNICAL ANALYSIS TO SUPPORT PERMIT APPLICATION

REVISED 09/22/16

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

D5

PROVIDE DETAILED TECHNICAL CALCULATIONS TO SUPPORT ALL EMISSION, CONTROL, AND REGULATORY DEMONSTRATIONS MADE IN THIS APPLICATION. INCLUDE A COMPREHENSIVE PROCESS FLOW DIAGRAM AS NECESSARY TO SUPPORT AND CLARIFY CALCULATIONS AND ASSUMPTIONS. ADDRESS THE FOLLOWING SPECIFIC ISSUES ON SEPARATE PAGES:

A SPECIFIC EMISSIONS SOURCE (EMISSION INFORMATION) (FORM B and B1 through B9) - SHOW CALCULATIONS USED, INCLUDING EMISSION FACTORS, MATERIAL BALANCES, AND/OR OTHER METHODS FROM WHICH THE POLLUTANT EMISSION RATES IN THIS APPLICATION WERE DERIVED. INCLUDE CALCULATION OF POTENTIAL BEFORE AND, WHERE APPLICABLE, AFTER CONTROLS. CLEARLY STATE ANY ASSUMPTIONS MADE AND PROVIDE ANY REFERENCES AS NEEDED TO SUPPORT MATERIAL BALANCE CALCULATIONS.

B SPECIFIC EMISSION SOURCE (REGULATORY INFORMATION)(FORM E2 - TITLE V ONLY) - PROVIDE AN ANALYSIS OF ANY REGULATIONS APPLICABLE TO INDIVIDUAL SOURCES AND THE FACILITY AS A WHOLE. INCLUDE A DISCUSSION OUTING METHODS (e.g. FOR TESTING AND/OR MONITORING REQUIREMENTS) FOR COMPLYING WITH APPLICABLE REGULATIONS, PARTICULARLY THOSE REGULATIONS LIMITING EMISSIONS BASED ON PROCESS RATES OR OTHER OPERATIONAL PARAMETERS. PROVIDE JUSTIFICATION FOR AVOIDANCE OF ANY FEDERAL REGULATIONS (PREVENTION OF SIGNIFICANT DETERIORATION (PSD), NEW SOURCE PERFORMANCE STANDARDS (NSPS), NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAPS), TITLE V), INCLUDING EXEMPTIONS FROM THE FEDERAL REGULATIONS WHICH WOULD OTHERWISE BE APPLICABLE TO THIS FACILITY. SUBMIT ANY REQUIRED INFORMATION TO DOCUMENT COMPLIANCE WITH ANY REGULATIONS. INCLUDE EMISSION RATES CALCULATED IN ITEM "A" ABOVE, DATES OF MANUFACTURE, CONTROL EQUIPMENT, ETC. TO SUPPORT THESE CALCULATIONS.

C CONTROL DEVICE ANALYSIS (FORM C and C1 through C9) - PROVIDE A TECHNICAL EVALUATION WITH SUPPORTING REFERENCES FOR ANY CONTROL EFFICIENCIES LISTED ON SECTION C FORMS, OR USED TO REDUCE EMISSION RATES IN CALCULATIONS UNDER ITEM "A" ABOVE. INCLUDE PERTINENT OPERATING PARAMETERS (e.g. OPERATING CONDITIONS, MANUFACTURING RECOMMENDATIONS, AND PARAMETERS AS APPLIED FOR IN THIS APPLICATION) CRITICAL TO ENSURING PROPER PERFORMANCE OF THE CONTROL DEVICES. INCLUDE AND LIMITATIONS OR MALFUNCTION POTENTIAL FOR THE PARTICULAR CONTROL DEVICES AS EMPLOYED AT THIS FACILITY. DETAIL PROCEDURES FOR ASSURING PROPER OPERATION OF THE CONTROL DEVICE INCLUDING MONITORING SYSTEMS AND MAINTENANCE TO BE PERFORMED.

D PROCESS AND OPERATIONAL COMPLIANCE ANALYSIS - (FORM E3 - TITLE V ONLY) - SHOWING HOW COMPLIANCE WILL BE ACHIEVED WHEN USING PROCESS, OPERATIONAL, OR OTHER DATA TO DEMONSTRATE COMPLIANCE. REFER TO COMPLIANCE REQUIREMENTS IN THE REGULATORY ANALYSIS IN ITEM "B" WHERE APPROPRIATE. LIST ANY CONDITIONS OR PARAMETERS THAT CAN BE MONITORED AND REPORTED TO DEMONSTRATE COMPLIANCE WITH THE APPLICABLE REGULATIONS.

E PROFESSIONAL ENGINEERING SEAL - PURSUANT TO 15A NCAC 2Q .0112 "APPLICATION REQUIRING A PROFESSIONAL ENGINEERING SEAL A PROFESSIONAL ENGINEER REGISTERED IN NORTH CAROLINA SHALL BE REQUIRED TO SEAL TECHNICAL PORTIONS OF THIS APPLICATION FOR NEW SOURCES AND MODIFICATIONS OF EXISTING SOURCES. (SEE INSTRUCTIONS FOR FURTHER APPLICABILITY).

I, Aimee Andrews attest that this application for Carolina Sunrock has been reviewed by me and is accurate, complete and consistent with the information supplied in the engineering plans, calculations, and all other supporting documentation to the best of my knowledge. I further attest that to the best of my knowledge the proposed design has been prepared in accordance with the applicable regulations. Although certain portions of this submittal package may have been developed by other professionals, inclusion of these materials under my seal signifies that I have reviewed this material and have judged it to be consistent with the proposed design. Note: In accordance with NC General Statutes 143-215.6A and 143-215.6B, any person who knowingly makes any false statement, representation, or certification in any application shall be guilty of a Class 2 misdemeanor which may include a fine not to exceed \$10,000 as well as civil penalties up to \$25,000 per violation.

(PLEASE USE BLUE INK TO COMPLETE THE FOLLOWING)

NAME: Aimee L. Andrews, P.E.
DATE: 4/15/2021
COMPANY: Trinity Consultants of NC, PC
ADDRESS: One Copley Parkway, Suite 205, Morrisville, NC 27560
TELEPHONE: (919) 462-9693
SIGNATURE: Aimee L. Andrews
PAGES CERTIFIED ALL

(IDENTIFY ABOVE EACH PERMIT FORM AND ATTACHMENT THAT IS BEING CERTIFIED BY THIS SEAL)

PLACE NORTH CAROLINA SEAL HERE



Attach Additional Sheets As Necessary

6. NCDEQ SOURCE SPECIFIC APPLICATION FORMS

This section contains DEQ source-specific permit application forms for the proposed operations.

HMA Plant:

- Form B – Specific Emissions Source Information (HMA Plant)
- Form B9 – Emission Source-Other (HMA Plant)
- Form B1 – Emission Source Burner (HMA Dryer Heater)
- Form B6 – Emission Source Storage Silo/Bins (HMA Silo 1)
- Form B6 – Emission Source Storage Silo/Bins (HMA Silo 2)
- Form B6 – Emission Source Storage Silo/Bins (HMA Silo 3)
- Form B6 – Emission Source Storage Silo/Bins (HMA Silo 4)
- Form B6 – Emission Source Storage Silo/Bins (HMA Silo 5)
- Form C1 – Control Device (HMA Fabric Filter)
- Form B – Specific Emissions Source Information (RAP Crushing)
- Form B9 – Emission Source-Other (RAP Crushing)

Truck Mix Concrete Batch Plant:

- Form B – Specific Emissions Source Information (Concrete Batch Plant)
- Form B9 – Emission Source-Other (Concrete Batch Plant)
- Form C1 – Control Device (Concrete Batch Fabric Filter)

Quarry Operations:

- Form B – Specific Emissions Source Information (Quarry)
- Form B9 – Emission Source-Other (Quarry)
- Form B – Specific Emissions Source Information (Quarry)
- Form B – Specific Emissions Source Information (Quarry) GEN1
- Form B2 – Emission Source (ICE) GEN1
- Form B – Specific Emissions Source Information (Quarry) GEN1a
- Form B2 – Emission Source (ICE) GEN1a
- Form B – Specific Emissions Source Information (Quarry) GEN2
- Form B2 – Emission Source (ICE) GEN2
- Form B – Specific Emissions Source Information (Quarry) GEN3
- Form B2 – Emission Source (ICE) GEN3
- Form B – Specific Emissions Source Information (Quarry) GEN4
- Form B2 – Emission Source (ICE) GEN4
- Form B – Specific Emissions Source Information (Quarry) GEN5
- Form B2 – Emission Source (ICE) GEN5
- Form B – Specific Emissions Source Information (Quarry) GEN7
- Form B2 – Emission Source (ICE) GEN7

Power Generators:

- Form B – Specific Emissions Source Information (PGEN1)
- Form B2 – Emission Source (ICE) PGEN1
- Form B – Specific Emissions Source Information (PGEN1)
- Form B2 – Emission Source (ICE) PGEN2
- Form B – Specific Emissions Source Information (PGEN2)
- Form B2 – Emission Source (ICE) PGEN3

FORM B1

EMISSION SOURCE (WOOD, COAL, OIL, GAS, OTHER FUEL-FIRED BURNER)

REVISED 09/22/16

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B1

EMISSION SOURCE DESCRIPTION: **Propane/Natural Gas/No. 2 Fuel Oil/Recycled No. 2 Fuel Oil/Recycled No.4 Fuel Oil-fired drum type hot asphalt plant (80 MMBtu/hr maximum heat input capacity)**

EMISSION SOURCE ID NO: **HMA-1**

CONTROL DEVICE ID NO(S): **HMA-CD1**

OPERATING SCENARIO: _____ OF _____

EMISSION POINT (STACK) ID NO(S): **CD1**

DESCRIBE USE: ☒ PROCESS HEAT ☐ SPACE HEAT ☐ ELECTRICAL GENERATION
☐ CONTINUOUS USE ☐ STAND BY/EMERGENCY ☐ OTHER (DESCRIBE): _____

HEATING MECHANISM: ☐ INDIRECT ☒ DIRECT

MAX. FIRING RATE (MMBTU/HOUR): **80**

WOOD-FIRED BURNER

WOOD TYPE: ☐ BARK ☐ WOOD/BARK ☐ WET WOOD ☐ DRY WOOD ☐ OTHER (DESCRIBE): _____

PERCENT MOISTURE OF FUEL: _____

☐ UNCONTROLLED ☐ CONTROLLED WITH FLYASH REINJECTION ☐ CONTROLLED W/O REINJECTION

FUEL FEED METHOD: _____ FLY ASH TRANSFER MEDIA: ☐ STEAM ☐ AIR ☐ OTHER (DESCRIBE) _____

COAL-FIRED BURNER

TYPE OF BOILER

IF OTHER DESCRIBE:

PULVERIZED ☐ WET BED ☐ DRY BED	OVERFEED STOKER ☐ UNCONTROLLED ☐ CONTROLLED	UNDERFEED STOKER ☐ UNCONTROLLED ☐ CONTROLLED	SPREADER STOKER ☐ UNCONTROLLED ☐ FLYASH REINJECTION ☐ NO FLYASH REINJECTION	FLUIDIZED BED ☐ CIRCULATING ☐ RECIRCULATING
--	---	--	---	---

OIL/GAS-FIRED BURNER

TYPE OF BOILER: ☐ UTILITY ☒ INDUSTRIAL ☐ COMMERCIAL ☐ INSTITUTIONAL
 TYPE OF FIRING: ☒ NORMAL ☐ TANGENTIAL ☐ LOW NOX BURNERS ☐ NO LOW NOX BURNER

OTHER FUEL-FIRED BURNER

TYPE(S) OF FUEL: _____ PERC
 TYPE OF BOILER: ☐ UTILITY ☒ INDUSTRIAL ☐ COMMERCIAL ☐ INSTITUTIONAL
 TYPE OF FIRING: _____ TYPE(S) OF CONTROL(S) (IF ANY): _____

FUEL USAGE (INCLUDE STARTUP/BACKUP FUELS)

FUEL TYPE	UNITS	MAXIMUM DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)
Propane/NG/ #2/ Rec #2/ Rec #4	cf/gallons	80 MMBtu/hr	

FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)

FUEL TYPE	SPECIFIC BTU CONTENT	SULFUR CONTENT (% BY WEIGHT)	ASH CONTENT (% BY WEIGHT)

COMMENTS:

Attach Additional Sheets As Necessary

FORM B6

EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 09/22/16 NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B6

EMISSION SOURCE DESCRIPTION: Hot Mix Asphalt Storage Silo (150-ton)				EMISSION SOURCE ID NO: HMA-Silo1	
OPERATING SCENARIO: <u>1</u> OF <u>1</u>				CONTROL DEVICE ID NO(S): NA	
EMISSION POINT(STACK) ID NO(S): HMASILO1					
DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM): Filling, Storage, and loadout of Hot Mix Asphalt Storage Silo (150-Ton)					
MATERIAL STORED: Hot Mix Asphalt				DENSITY OF MATERIAL (LB/FT3):	
CAPACITY	CUBIC FEET:			TONS: 150	
DIMENSIONS (FEET)	HEIGHT: 65	DIAMETER: 12 (OR)	LENGTH:	WIDTH:	HEIGHT:
ANNUAL PRODUCT THROUGHPUT (TONS)		ACTUAL:		MAXIMUM DESIGN CAPACITY: 150	
PNEUMATICALLY FILLED		MECHANICALLY FILLED		FILLED FROM	
☐ BLOWER ☐ COMPRESSOR ☐ OTHER:		☐ SCREW CONVEYOR ☐ BELT CONVEYOR ☒ BUCKET ELEVATOR ☐ OTHER:		☐ RAILCAR ☐ TRUCK ☐ STORAGE PILE ☒ OTHER: Plant	
NO. FILL TUBES:					
MAXIMUM ACFM:					
MATERIAL IS UNLOADED TO: Over the road Truck					
BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO? Gravity via Hydraulic Clam Hatch					
MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): 220					
MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR): 132					
COMMENTS: Oil filled Seal at top of Silo					

Attach Additional Sheets As Necessary

FORM B6

EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 09/22/16 NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B6

EMISSION SOURCE DESCRIPTION: Hot Mix Asphalt Storage Silo (150-ton)				EMISSION SOURCE ID NO: HMA-Silo2	
OPERATING SCENARIO: <u>1</u> OF <u>1</u>				CONTROL DEVICE ID NO(S): NA	
EMISSION POINT(STACK) ID NO(S): HMASILO2					
DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM): Filling, Storage, and loadout of Hot Mix Asphalt Storage Silo (150-Ton)					
MATERIAL STORED: Hot Mix Asphalt				DENSITY OF MATERIAL (LB/FT ³):	
CAPACITY	CUBIC FEET:			TONS: 150	
DIMENSIONS (FEET)	HEIGHT: 65	DIAMETER: 12 (OR)	LENGTH:	WIDTH:	HEIGHT:
ANNUAL PRODUCT THROUGHPUT (TONS)	ACTUAL:		MAXIMUM DESIGN CAPACITY: 150		
PNEUMATICALLY FILLED	MECHANICALLY FILLED		FILLED FROM		
☐ BLOWER	☐ SCREW CONVEYOR		☐ RAILCAR		
☐ COMPRESSOR	☐ BELT CONVEYOR		☐ TRUCK		
☐ OTHER:	☒ BUCKET ELEVATOR		☐ STORAGE PILE		
	☐ OTHER:		☒ OTHER: Plant		
NO. FILL TUBES:					
MAXIMUM ACFM:					
MATERIAL IS UNLOADED TO: Over the road Truck					
BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO? Gravity via Hydraulic Clam Hatch					
MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): 220					
MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR): 132					
COMMENTS: Oil filled Seal at top of Silo					

Attach Additional Sheets As Necessary

EMISSION SOURCE (STORAGE SILO/BINS)

B6

EMISSION SOURCE DESCRIPTION:			EMISSION SOURCE ID NO: HMA-Silo3		
Hot Mix Asphalt Storage Silo (200-ton)			CONTROL DEVICE ID NO(S): NA		
OPERATING SCENARIO: <u>1</u> OF <u>1</u>			EMISSION POINT (STACK) ID NO(S): HMA-Silo3		
DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):					
Filling, Storage, and loadout of Hot Mix Asphalt Storage Silo (200-Ton)					
MATERIAL STORED: Hot Mix Asphalt			DENSITY OF MATERIAL (LB/FT3):		
CAPACITY		CUBIC FEET:		TONS: 200	
DIMENSIONS (FEET)		HEIGHT: 65		DIAMETER: 14 (OR)	
ANNUAL PRODUCT THROUGHPUT (TONS)		ACTUAL:		MAXIMUM DESIGN CAPACITY: 200	
PNEUMATICALLY FILLED		MECHANICALLY FILLED		FILLED FROM	
☐ BLOWER		☐ SCREW CONVEYOR		☐ RAILCAR	
☐ COMPRESSOR		☐ BELT CONVEYOR		☐ TRUCK	
☐ OTHER:		☒ BUCKET ELEVATOR		☐ STORAGE PILE	
		☐ OTHER:		☒ OTHER: Plant	
NO. FILL TUBES:					
MAXIMUM ACFM:					
MATERIAL IS UNLOADED TO:					
Over the road Truck					
BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO?					
Gravity via Hydraulic Clam Hatch					
MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): 220					
MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR): 200					
COMMENTS:					
Oil filled Seal at top of Silo					

Section 6-6

File: PH2 Forms 2021-03-24.xlsx
Sheet: B6-HMA-Silo3

FORM B6

EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 09/22/16 NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B6

EMISSION SOURCE DESCRIPTION:				EMISSION SOURCE ID NO: HMA-Silo5	
Hot Mix Asphalt Storage Silo (200-ton)				CONTROL DEVICE ID NO(S): NA	
OPERATING SCENARIO: <u>1</u> OF <u>1</u>				EMISSION POINT(STACK) ID NO(S): HMA-SILO5	
DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):					
Filling, Storage, and loadout of Hot Mix Asphalt Storage Silo (200-Ton)					
MATERIAL STORED: Hot Mix Asphalt				DENSITY OF MATERIAL (LB/FT ³):	
CAPACITY	CUBIC FEET:			TONS: 200	
DIMENSIONS (FEET)	HEIGHT: 65	DIAMETER: 14 (OR)	LENGTH:	WIDTH:	HEIGHT:
ANNUAL PRODUCT THROUGHPUT (TONS)			ACTUAL:	MAXIMUM DESIGN CAPACITY: 200	
PNEUMATICALLY FILLED		MECHANICALLY FILLED		FILLED FROM	
☐ BLOWER ☐ COMPRESSOR ☐ OTHER:		☐ SCREW CONVEYOR ☐ BELT CONVEYOR ☒ BUCKET ELEVATOR ☐ OTHER:		☐ RAILCAR ☐ TRUCK ☐ STORAGE PILE ☒ OTHER: Plant	
NO. FILL TUBES:					
MAXIMUM ACFM:					
MATERIAL IS UNLOADED TO:					
Over the road Truck					
BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO?					
Gravity via Hydraulic Clam Hatch					
MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): 220					
MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR): 200					
COMMENTS:					
Oil filled Seal at top of Silo					

Attach Additional Sheets As Necessary

FORM C1

CONTROL DEVICE (FABRIC FILTER)

REVISED 09/22/16

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

C1

CONTROL DEVICE ID NO: HMA-CD1		CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): See Form A24																									
EMISSION POINT (STACK) ID NO		POSITION IN SERIES OF CONTROLS NO. 1 OF 1 UNITS																									
OPERATING SCENARIO:																											
		P.E. SEAL REQUIRED (PER 29a .0112) ☒ YES ☐ NO																									
DESCRIBE CONTROL SYSTEM: Astec Model RBH-45 - 45,000 CFM to control emissions from drying and mixing drums in the HMA Plant.																											
POLLUTANTS COLLECTED:	PM	PM10																									
BEFORE CONTROL EMISSION RATE (LB/HR):	See Appendix A																										
CAPTURE EFFICIENCY:	99.99 %	99.99 %																									
CONTROL DEVICE EFFICIENCY:	90 %	90 %																									
CORRESPONDING OVERALL EFFICIENCY:	90 %	90 %																									
EFFICIENCY DETERMINATION CODE:	1	1																									
TOTAL AFTER CONTROL EMISSION RATE (LB/HR)	See Appendix A																										
PRESSURE DROP (IN H ₂ O): MIN: MAX: GAUGE? ☒ YES ☐ NO																											
BULK PARTICLE DENSITY (LB/FT ³):		INLET TEMPERATURE (MIN Ambient MAX 350)																									
POLLUTANT LOADING RATE: ☐ LB/HR ☐ GR/FT ³		OUTLET TEMPERATURE MIN 180 MAX 350																									
INLET AIR FLOW RATE (ACFM): 45,000 cfm		FILTER OPERATING TEMP (°F):																									
NO. OF COMPARTMENTS: 1	NO. OF BAGS PER COMPARTMENT: 640	LENGTH OF BAG (IN.): 120.5																									
NO. OF CARTRIDGES: 640	FILTER SURFACE AREA PER CARTRIDGE (FT ²):	DIAMETER OF BAG (IN.): 4 5/8																									
TOTAL FILTER SURFACE AREA (FT ²): 7,778		AIR TO CLOTH RATIO: 5.78:1																									
DRAFT TYPE: ☒ INDUCED/NEGATIVE ☐ FORCED/POSITIVE		FILTER MATERIAL: ☐ WOVEN ☒ FELTED																									
DESCRIBE CLEANING PROCEDURE		PARTICLE SIZE DISTRIBUTION																									
☐ AIR PULSE ☐ SONIC ☒ REVERSE FLOW ☐ SIMPLE BAG COLLAPSE ☐ MECHANICAL/SHAKER ☐ RING BAG COLLAPSE ☐ OTHER:		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>SIZE (MICRONS)</th> <th>WEIGHT % OF TOTAL</th> <th>CUMULATIVE %</th> </tr> </thead> <tbody> <tr> <td>0-1</td> <td>40</td> <td>40.2</td> </tr> <tr> <td>1-10</td> <td>60</td> <td>100</td> </tr> <tr> <td>10-25</td> <td></td> <td></td> </tr> <tr> <td>25-50</td> <td></td> <td></td> </tr> <tr> <td>50-100</td> <td></td> <td></td> </tr> <tr> <td>>100</td> <td></td> <td></td> </tr> <tr> <td colspan="3" style="text-align: center;">TOTAL = 100</td> </tr> </tbody> </table>		SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %	0-1	40	40.2	1-10	60	100	10-25			25-50			50-100			>100			TOTAL = 100		
SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %																									
0-1	40	40.2																									
1-10	60	100																									
10-25																											
25-50																											
50-100																											
>100																											
TOTAL = 100																											
DESCRIBE INCOMING AIR STREAM: Hot Air from Drying and Mixing Drums in HMA Plant																											
ON A SEPARATE PAGE, ATTACH A DIAGRAM SHOWING THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S)																											
COMMENTS:																											

Attach Additional Sheets As Necessary

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B

EMISSION SOURCE DESCRIPTION: Asphalt Heaters		EMISSION SOURCE ID NO: ES-ACH1 & ES-ACH2						
OPERATING SCENARIO <u>1</u> OF <u>1</u>		CONTROL DEVICE ID NO(S): N/A						
EMISSION POINT (STACK) ID NO(S):								
DESCRIBE IN DETAIL THE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM): Asphalt Heaters associated with HMA plant								
TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):								
☒ Coal, wood, oil, gas, other burner (Form B1) ☐ Woodworking (Form B4) ☐ Manuf. of chemicals/coatings/inks (Form B7) ☐ Int. combustion engine/generator (Form B2) ☐ Coating/finishing/printing (Form B5) ☐ Incineration (Form B8) ☒ Liquid storage tanks (Form B3) ☒ Storage silos/bins (Form B6) ☒ Other (Form B9)								
START CONSTRUCTION DATE:		DATE MANUFACTURED:						
MANUFACTURER / MODEL NO.:		EXPECTED OP. SCHEDULE: 24 HR/DAY 7 DAY/WK						
IS THIS SOURCE SUBJECT TO NSPS (SUBPARTS?): ☐ NESHAP (SUBPARTS?): ☐								
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 15 MAR-MAY 30 JUN-AUG 30 SEP								
CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE								
AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL		POTENTIAL EMISSIONS				
		AFTER CONTROLS / LIMITS		BEFORE CONTROLS / LIMITS		AFTER CONTROLS / LIMITS		
		lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	
PARTICULATE MATTER (PM)	See DEQ Emission Spreadsheet Appendix A							
PARTICULATE MATTER <10 MICRONS (PM ₁₀)								
PARTICULATE MATTER <2.5 MICRONS (PM _{2.5})								
SULFUR DIOXIDE (SO ₂)								
NITROGEN OXIDES (NO _x)								
CARBON MONOXIDE (CO)								
VOLATILE ORGANIC COMPOUNDS (VOC)								
LEAD								
OTHER								
HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE								
HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL		POTENTIAL EMISSIONS			
			AFTER CONTROLS / LIMITS		BEFORE CONTROLS / LIMITS		AFTER CONTROLS / LIMITS	
			lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
		See DEQ Emission Spreadsheet Appendix A						
TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE								
TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATION					
			lb/hr	lb/day	lb/yr			
		See DEQ Emission Spreadsheet Appendix A						

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

USE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH
Attach Additional Sheets As Necessary

FORM B1

EMISSION SOURCE (WOOD, COAL, OIL, GAS, OTHER FUEL-FIRED BURNER)

REVISED 09/22/16

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B1

EMISSION SOURCE DESCRIPTION: **Natural gas/no.2 fuel (ultra-low sulfur diesel (0.0015% sulfur))oil-fired liquid asphalt cement heater (1.2 million btu per hour maximum heat input)**

EMISSION SOURCE ID NO: **ES-ACH1**

CONTROL DEVICE ID NO(S): **NA**

OPERATING SCENARIO: _____ OF _____

EMISSION POINT (STACK) ID NO(S): _____

DESCRIBE USE: ☒ PROCESS HEAT ☐ SPACE HEAT ☐ ELECTRICAL GENERATION
☐ CONTINUOUS USE ☐ STAND BY/EMERGENCY ☐ OTHER (DESCRIBE): _____

HEATING MECHANISM: ☒ INDIRECT ☐ DIRECT

MAX. FIRING RATE (MMBTU/HOUR): **1.2 MMBTU/hr**

WOOD-FIRED BURNER

WOOD TYPE: ☐ BARK ☐ WOOD/BARK ☐ WET WOOD ☐ DRY WOOD ☐ OTHER (DESCRIBE): _____

PERCENT MOISTURE OF FUEL: _____

☐ UNCONTROLLED ☐ CONTROLLED WITH FLYASH REINJECTION ☐ CONTROLLED W/O REINJECTION

FUEL FEED METHOD: _____ HEAT TRANSFER MEDIA: ☐ STEAM ☐ AIR ☐ OTHER (DESCRIBE) _____

COAL-FIRED BURNER

TYPE OF BOILER

IF OTHER DESCRIBE: _____

PULVERIZED ☐ WET BED ☐ DRY BED	OVERFEED STOKER ☐ UNCONTROLLED ☐ CONTROLLED	UNDERFEED STOKER ☐ UNCONTROLLED ☐ CONTROLLED	SPREADER STOKER ☐ UNCONTROLLED ☐ FLYASH REINJECTION ☐ NO FLYASH REINJECTION	FLUIDIZED BED ☐ CIRCULATING ☐ RECIRCULATING
--	---	--	---	---

OIL/GAS-FIRED BURNER

TYPE OF BOILER: ☐ UTILITY ☒ INDUSTRIAL ☐ COMMERCIAL ☐ INSTITUTIONAL
TYPE OF FIRING: ☒ NORMAL ☐ TANGENTIAL ☐ LOW NOX BURNERS ☐ NO LOW NOX BURNER

OTHER FUEL-FIRED BURNER

TYPE(S) OF FUEL: _____ PE
TYPE OF BOILER: ☐ UTILITY ☐ INDUSTRIAL ☐ COMMERCIAL ☐ INSTITUTIONAL
TYPE OF FIRING: _____ TYPE(S) OF CONTROL(S) (IF ANY): _____

FUEL USAGE (INCLUDE STARTUP/BACKUP FUELS)

FUEL TYPE	UNITS	MAXIMUM DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)

FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)

FUEL TYPE	SPECIFIC BTU CONTENT	SULFUR CONTENT (% BY WEIGHT)	ASH CONTENT (% BY WEIGHT)
Natural Gas			
No. 2 Fuel Oil/ultra-low sulfur diesel (0.0015% sulfur)		0.00015%	

COMMENTS:

Attach Additional Sheets As Necessary

FORM B1

EMISSION SOURCE (WOOD, COAL, OIL, GAS, OTHER FUEL-FIRED BURNER)

REVISED 09/22/16

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B1

EMISSION SOURCE DESCRIPTION: **Natural gas/no.2 fuel (ultra-low sulfur diesel (0.0015% sulfur))oil-fired liquid asphalt cement heater (1.1 million btu per hour maximum heat input)**

EMISSION SOURCE ID NO: **ES-ACH2**

CONTROL DEVICE ID NO(S): **NA**

OPERATING SCENARIO: _____ OF _____

EMISSION POINT (STACK) ID NO(S): **ES-ACH2**

DESCRIBE USE: ☒ PROCESS HEAT ☐ SPACE HEAT ☐ ELECTRICAL GENERATION
☐ CONTINUOUS USE ☐ STAND BY/EMERGENCY ☐ OTHER (DESCRIBE): _____

HEATING MECHANISM: ☒ INDIRECT ☐ DIRECT

MAX. FIRING RATE (MMBTU/HOUR): **1.1 MMBTU/hr**

WOOD-FIRED BURNER

WOOD TYPE: ☐ BARK ☐ WOOD/BARK ☐ WET WOOD ☐ DRY WOOD ☐ OTHER (DESCRIBE): _____

PERCENT MOISTURE OF FUEL: _____

☐ UNCONTROLLED ☐ CONTROLLED WITH FLYASH REINJECTION ☐ CONTROLLED W/O REINJECTION

FUEL FEED METHOD: _____ HEAT TRANSFER MEDIA: ☐ STEAM ☐ AIR ☐ OTHER (DESCRIBE) _____

COAL-FIRED BURNER

TYPE OF BOILER

IF OTHER DESCRIBE:

PULVERIZED ☐ WET BED ☐ DRY BED	OVERFEED STOKER ☐ UNCONTROLLED ☐ CONTROLLED	UNDERFEED STOKER ☐ UNCONTROLLED ☐ CONTROLLED	SPREADER STOKER ☐ UNCONTROLLED ☐ FLYASH REINJECTION ☐ NO FLYASH REINJECTION	FLUIDIZED BED ☐ CIRCULATING ☐ RECIRCULATING
--	---	--	---	---

OIL/GAS-FIRED BURNER

TYPE OF BOILER: ☐ UTILITY ☒ INDUSTRIAL ☐ COMMERCIAL ☐ INSTITUTIONAL
TYPE OF FIRING: ☒ NORMAL ☐ TANGENTIAL ☐ LOW NOX BURNERS ☐ NO LOW NOX BURNER

OTHER FUEL-FIRED BURNER

TYPE(S) OF FUEL: _____ PE

TYPE OF BOILER: ☐ UTILITY ☐ INDUSTRIAL ☐ COMMERCIAL ☐ INSTITUTIONAL

TYPE OF FIRING: _____ TYPE(S) OF CONTROL(S) (IF ANY): _____

FUEL USAGE (INCLUDE STARTUP/BACKUP FUELS)

FUEL TYPE	UNITS	MAXIMUM DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)

FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)

FUEL TYPE	SPECIFIC BTU CONTENT	SULFUR CONTENT (% BY WEIGHT)	ASH CONTENT (% BY WEIGHT)
Natural Gas			
No. 2 Fuel Oil/ultra-low sulfur diesel (0.0015% sulfur)		0.00015%	

COMMENTS:

Attach Additional Sheets As Necessary

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B

EMISSION SOURCE DESCRIPTION: RAP Crushing System	EMISSION SOURCE ID NO: RAP-CR1, RAP-SC1, RAP-C1 th
OPERATING SCENARIO 1 OF 1	CONTROL DEVICE ID NO(S): NA
EMISSION POINT (STACK) ID NO(S): NA	

DESCRIBE IN DETAIL THE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):

1. Recycle Asphalt Crushing consisting of one (1) 65 TPH crusher, one (1) 8'X20' double deck scene, and six (6) 36" conveyor Belts.

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- | | | |
|---|--|--|
| ☐ Coal, wood, oil, gas, other burner (Form B1) | ☐ Woodworking (Form B4) | ☐ Manuf. of chemicals/coatings/inks (Form B7) |
| ☐ Int. combustion engine/generator (Form B2) | ☐ Coating/finishing/printing (Form B) | ☐ Incineration (Form B8) |
| ☐ Liquid storage tanks (Form B3) | ☐ Storage silos/bins (Form B6) | ☒ Other (Form B9) |

START CONSTRUCTION DATE:

DATE MANUFACTURED:

MANUFACTURER / MODEL NO.: **Telsmith HIS 2421**

EXPECTED OP. SCHEDULE: **12** HR/DAY **6** DAY/WK **50** WK

IS THIS SOURCE SUBJEC ☒ NSPS (SUBPARTS?):

000

☐ NESHAP (SUBPARTS?):

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB

15

MAR-MAY

30

JUN-AUG

30

SEP-NOV **25**

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL		POTENTIAL EMISSIONS			
		(AFTER CONTROLS / LIMITS)		BEFORE CONTROLS / LIMITS		(AFTER CONTROLS / LIMITS)	
		lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER (PM)		See DEQ Emission Spreadsheet Appendix A					
PARTICULATE MATTER <10 MICRONS (PM ₁₀)							
PARTICULATE MATTER <2.5 MICRONS (PM _{2.5})							
SULFUR DIOXIDE (SO ₂)							
NITROGEN OXIDES (NO _x)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL		POTENTIAL EMISSIONS			
			(AFTER CONTROLS / LIMITS)		BEFORE CONTROLS / LIMITS		(AFTER CONTROLS / LIMITS)	
			lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
			See DEQ Emission Spreadsheet Appendix A					

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS		
			lb/hr	lb/day	lb/yr
			See DEQ Emission Spreadsheet Appendix A3		

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

FORM B9

EMISSION SOURCE (OTHER)

REVISED 09/22/16 NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B9

EMISSION SOURCE DESCRIPTION: **RAP Crushing System**

EMISSION SOURCE ID NO: **RAP-CR1, RAP-SC1, RAP-C1 thru C-6**

CONTROL DEVICE ID NO(S): **NA**

OPERATING SCENARIO: _____ OF _____

EMISSION POINT (STACK) ID NO(S): **NA**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

1. Recycle Asphalt Crushing consisting of one (1) 65 TPH crusher, one (1) 8'X20' double deck scene, and six (6) 36" conveyor Belts.

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/HR)	LIMITATION(UNIT/HR)
RAP	tons	65	
MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (UNIT/BATCH)

MAXIMUM DESIGN (BATCHES / HOUR):

REQUESTED LIMITATION (BATCHES / HOUR): (BATCHES/YR):

FUEL USED:

TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR):

MAX. CAPACITY HOURLY FUEL USE:

REQUESTED CAPACITY ANNUAL FUEL USE:

COMMENTS:

Attach Additional Sheets as Necessary

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B

EMISSION SOURCE DESCRIPTION: **Truck Mix Concrete Batch Plant (120 cubic yards per hour)** EMISSION SOURCE ID NO: **RMC-Silo1, RMC-Silo2, RMC-LO1, RMC-WB2**
CONTROL DEVICE ID NO(S): **RMC-CD2**

OPERATING SCENARIO **1** OF **1** EMISSION POINT (STACK) ID NO(S): **RMC-CD2**

DESCRIBE IN DETAIL THE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
Truck Mix Concrete Batch Plant (120 cubic yards per hour) Consisting of: One (1) 200-ton Cement Silo, One (1) 150-ton Flyash Silo, Truck Loadout point, 5-ton Cement/Flyash Weight Batcher, and One (1) 20-ton Aggregate Weight Batcher.

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- | | | |
|---|--|--|
| ☐ Coal, wood, oil, gas, other burner (Form B1) | ☐ Woodworking (Form B4) | ☐ Manuf. of chemicals/coatings/inks (Form B7) |
| ☐ Int. combustion engine/generator (Form B2) | ☐ Coating/finishing/printing (Form B5) | ☐ Incineration (Form B8) |
| ☐ Liquid storage tanks (Form B3) | ☒ Storage silos/bins (Form B6) | ☒ Other (Form B9) |

START CONSTRUCTION DATE: DATE MANUFACTURED:

MANUFACTURER / MODEL NO.: EXPECTED OP. SCHEDULE: **12** HR/DAY **6** DAY/WK **50** WK/YR

IS THIS SOURCE SUBJECT TO NSPS (SUBPARTS?): ☒ YES ☐ NO NESHAP (SUBPARTS?): ☐ YES ☐ NO

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB **15** MAR-MAY **30** JUN-AUG **30** SEP-NOV **25**

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL		POTENTIAL EMISSIONS			
		AFTER CONTROLS / LIMITS		BEFORE CONTROLS / LIMITS		(AFTER CONTROLS / LIMITS)	
		lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER (PM)		See DEQ Emission Spreadsheet Appendix A					
PARTICULATE MATTER <10 MICRONS (PM ₁₀)							
PARTICULATE MATTER <2.5 MICRONS (PM _{2.5})							
SULFUR DIOXIDE (SO ₂)							
NITROGEN OXIDES (NO _x)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL		POTENTIAL EMISSIONS			
			AFTER CONTROLS / LIMITS		BEFORE CONTROLS / LIMITS		(AFTER CONTROLS / LIMITS)	
			lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
			See DEQ Emission Spreadsheet Appendix A					

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS		
			lb/hr	lb/day	lb/yr
			See DEQ Emission Spreadsheet Appendix A		

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE
Attach Additional Sheets As Necessary

FORM C1

CONTROL DEVICE (FABRIC FILTER)

REVISED 09/22/16

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

C1

CONTROL DEVICE ID NO: RMC-CD2		CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): See Form A2																																									
EMISSION POINT (STACK) ID NC		POSITION IN SERIES OF CONTROLS NO. 1 OF 1 UNITS																																									
OPERATING SCENARIO:																																											
		P.E. SEAL REQUIRED (PER 29q .0114) ☐ YES ☒ NO																																									
DESCRIBE CONTROL SYSTEM: C&W Manufacturing - RA-140 - 6500 CFM to control emissions from cement/fly ash silos and aggregate and truck loading.																																											
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;"></th> <th style="width: 10%; text-align: center;">PM</th> <th style="width: 10%; text-align: center;">PM10</th> <th style="width: 10%;"></th> <th style="width: 10%;"></th> </tr> </thead> <tbody> <tr> <td>POLLUTANTS COLLECTED:</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>BEFORE CONTROL EMISSION RATE (LB/HR)</td> <td colspan="4" style="text-align: center;">See Appendix A</td> </tr> <tr> <td>CAPTURE EFFICIENCY:</td> <td style="text-align: center;">%</td> <td style="text-align: center;">%</td> <td style="text-align: center;">%</td> <td style="text-align: center;">%</td> </tr> <tr> <td>CONTROL DEVICE EFFICIENCY:</td> <td style="text-align: center;">99.9 %</td> <td style="text-align: center;">99.9 %</td> <td style="text-align: center;">%</td> <td style="text-align: center;">%</td> </tr> <tr> <td>CORRESPONDING OVERALL EFFICIENCY:</td> <td style="text-align: center;">%</td> <td style="text-align: center;">%</td> <td style="text-align: center;">%</td> <td style="text-align: center;">%</td> </tr> <tr> <td>EFFICIENCY DETERMINATION CODE:</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>TOTAL AFTER CONTROL EMISSION RATE (L</td> <td colspan="4" style="text-align: center;">See Appendix A</td> </tr> </tbody> </table>					PM	PM10			POLLUTANTS COLLECTED:					BEFORE CONTROL EMISSION RATE (LB/HR)	See Appendix A				CAPTURE EFFICIENCY:	%	%	%	%	CONTROL DEVICE EFFICIENCY:	99.9 %	99.9 %	%	%	CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%	EFFICIENCY DETERMINATION CODE:					TOTAL AFTER CONTROL EMISSION RATE (L	See Appendix A			
	PM	PM10																																									
POLLUTANTS COLLECTED:																																											
BEFORE CONTROL EMISSION RATE (LB/HR)	See Appendix A																																										
CAPTURE EFFICIENCY:	%	%	%	%																																							
CONTROL DEVICE EFFICIENCY:	99.9 %	99.9 %	%	%																																							
CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%																																							
EFFICIENCY DETERMINATION CODE:																																											
TOTAL AFTER CONTROL EMISSION RATE (L	See Appendix A																																										
PRESSURE DROP (IN H ₂ O): MIN: _____ MA GAUGE? ☒ YES ☐ NO																																											
BULK PARTICLE DENSITY (LB/FT ³):		INLET TEMPERATURE (MIN _____ MAX _____)																																									
POLLUTANT LOADING RATE: ☐ LB/HR ☐ LB/FT ³		OUTLET TEMPERATURE (MIN _____ MAX _____)																																									
INLET AIR FLOW RATE (ACFM): 6,500 cfm		FILTER OPERATING TEMP (°F): Ambient																																									
NO. OF COMPARTMENTS: 2	NO. OF BAGS PER COMPARTMENT: 36	LENGTH OF BAG (IN.): 114																																									
NO. OF CARTRIDGES: 72	FILTER SURFACE AREA PER CARTRIDGE (FT ²):	DIAMETER OF BAG (IN.): 8																																									
TOTAL FILTER SURFACE AREA (FT ²): 1,433		AIR TO CLOTH RATIO: 4.54:1 Filter material: felt polyester bags																																									
DRAFT TYPE: ☒ INDUCED/NEGATIVE ☐ FORCED/POSITIVE		FILTER MATERIAL: ☐ WOVEN ☒ FELTED																																									
DESCRIBE CLEANING PROCEDURE:		PARTICLE SIZE DISTRIBUTION																																									
☐ AIR PULSE ☐ SONIC ☒ REVERSE FLOW ☐ SIMPLE BAG COLLAPSE ☐ MECHANICAL/SHAKER ☐ RING BAG COLLAPSE ☐ OTHER:		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;">SIZE (MICRONS)</th> <th style="width: 20%;">WEIGHT % OF TOTAL</th> <th style="width: 20%;">CUMULATIVE %</th> </tr> </thead> <tbody> <tr> <td>0-1</td> <td style="text-align: center;">40</td> <td style="text-align: center;">40.2</td> </tr> <tr> <td>1-10</td> <td style="text-align: center;">60</td> <td style="text-align: center;">100</td> </tr> <tr> <td>10-25</td> <td></td> <td></td> </tr> <tr> <td>25-50</td> <td></td> <td></td> </tr> <tr> <td>50-100</td> <td></td> <td></td> </tr> <tr> <td>>100</td> <td></td> <td></td> </tr> <tr> <td colspan="3" style="text-align: center;">TOTAL = 100</td> </tr> </tbody> </table>		SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %	0-1	40	40.2	1-10	60	100	10-25			25-50			50-100			>100			TOTAL = 100																		
SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %																																									
0-1	40	40.2																																									
1-10	60	100																																									
10-25																																											
25-50																																											
50-100																																											
>100																																											
TOTAL = 100																																											
DESCRIBE INCOMING AIR STREAM: Hot Air from Drying and Mixing Drums in HMA Plant																																											
ON A SEPARATE PAGE, ATTACH A DIAGRAM SHOWING THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE																																											
COMMENTS:																																											

Attach Additional Sheets As Necessary

FORM B6

EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 09/22/16

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B6

EMISSION SOURCE DESCRIPTION:				EMISSION SOURCE ID NO: RMC-Silo1	
Ready Mix Cement Storage Silo (200-ton)				CONTROL DEVICE ID NO(S): RMC-CD2	
OPERATING SCENARIO: <u>1</u> OF <u>1</u>				EMISSION POINT(STACK) ID NO(S): RMC-CD2	
DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):					
Filling, Storage, and loadout of Cement Storage Silo (200-Ton)					
MATERIAL STORED: Cement				DENSITY OF MATERIAL (LB/FT3):	
CAPACITY	CUBIC FEET:			TONS: 200	
DIMENSIONS (FEET)	HEIGHT: 80	DIAMETER: 12 (OR)	LENGTH:	WIDTH:	HEIGHT:
ANNUAL PRODUCT THROUGHPUT (TONS)		ACTUAL:		MAXIMUM DESIGN CAPACITY: 200	
PNEUMATICALLY FILLED		MECHANICALLY FILLED		FILLED FROM	
☒ BLOWER ☐ COMPRESSOR ☐ OTHER:		☐ SCREW CONVEYOR ☐ BELT CONVEYOR ☐ BUCKET ELEVATOR ☐ OTHER:		☐ RAILCAR ☒ TRUCK ☐ STORAGE PILE ☐ OTHER: Plant	
NO. FILL TUBES: 1					
MAXIMUM ACFM:					
MATERIAL IS UNLOADED TO:					
Cement and Fly Ash Weight Batcher					
BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO?					
Gravity					
MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): 40					
MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR): 5					
COMMENTS:					

Attach Additional Sheets As Necessary

FORM B6

EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 09/22/16 NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B6

EMISSION SOURCE DESCRIPTION: Flyash Storage Silo (150-ton)		EMISSION SOURCE ID NO: RMC-Silo2
OPERATING SCENARIO: <u>1</u> OF <u>1</u>		CONTROL DEVICE ID NO(S): RMC-CD2
		EMISSION POINT(STACK) ID NO(S): RMC-CD2

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

Filling, Storage, and loadout of Fly Ash Storage Silo (150-Ton)

MATERIAL STORED: Fly ash		DENSITY OF MATERIAL (LB/FT ³):	
CAPACITY	CUBIC FEET:	TONS: 150	
DIMENSIONS (FEET)	HEIGHT: 65	DIAMETER: 12 (OR)	LENGTH: WIDTH: HEIGHT:
ANNUAL PRODUCT THROUGHPUT (TONS)		ACTUAL:	MAXIMUM DESIGN CAPACITY: 200
PNEUMATICALLY FILLED	MECHANICALLY FILLED		FILLED FROM
☒ BLOWER ☐ COMPRESSOR ☐ OTHER:	☐ SCREW CONVEYOR ☐ BELT CONVEYOR ☐ BUCKET ELEVATOR ☐ OTHER:		☐ RAILCAR ☒ TRUCK ☐ STORAGE PILE ☐ OTHER: Plant
NO. FILL TUBES: 1			
MAXIMUM ACFM:			

MATERIAL IS UNLOADED TO:

Cement and Fly Ash Weight Batcher

BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO?

Screw Conveyor

MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): **50**

MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR): **5**

COMMENTS:

Attach Additional Sheets As Necessary

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B

EMISSION SOURCE DESCRIPTION: 1200 TPH Quarry Operation	EMISSION SOURCE ID NO: ES-Conveying,Crushing, Screening
OPERATING SCENARIO 1 OF 1	CONTROL DEVICE ID NO(S):
EMISSION POINT (STACK) ID NO(S):	

DESCRIBE IN DETAIL THE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):

Quarry Operations: 1200 TPH Primary Crusher, Secondary Crushing, Aggregate Screening/Washing, and Aggregate Conveyance.

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

☐ Coal,wood,oil, gas, other burner (Form B1)	☐ Woodworking (Form B4)	☐ Manuf. of chemicals/coatings/inks (Form B7)
☐ Int.combustion engine/generator (Form B2)	☐ Coating/finishing/printing (Form B5)	☐ Incineration (Form B8)
☐ Liquid storage tanks (Form B3)	☐ Storage silos/bins (Form B6)	☒ Other (Form B9)

START CONSTRUCTION DATE:	DATE MANUFACTURED:
MANUFACTURER / MODEL NO.:	EXPECTED OP. SCHEDULE: 12 HR/DAY 6 DAY/WK 52 WK
IS THIS SOURCE SUBJEC ☐ NSPS (SUBPARTS?): 000	☐ NESHAP (SUBPARTS?):
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25 MAR-MAY 25 JUN-AUG 25 SEP-NOV 25	

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL		POTENTIAL EMISSIONS			
		AFTER CONTROLS / LIMITS		BEFORE CONTROLS / LIMITS		(AFTER CONTROLS / LIMITS)	
		lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER (PM)	See DEQ Quarry Spreadsheet, Appendix A						
PARTICULATE MATTER<10 MICRONS (PM ₁₀)							
PARTICULATE MATTER<2.5 MICRONS (PM _{2.5})							
SULFUR DIOXIDE (SO ₂)							
NITROGEN OXIDES (NO _x)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL		POTENTIAL EMISSIONS			
			AFTER CONTROLS / LIMITS		BEFORE CONTROLS / LIMITS		(AFTER CONTROLS / LIMITS)	
			lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
		See DEQ Quarry Spreadsheet, Appendix A						

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS		
			lb/hr	lb/day	lb/yr
			See DEQ Quarry Spreadsheet, Appendix A		

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE.

Attach Additional Sheets As Necessary

REVISED 09/22/16 NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

EMISSION SOURCE DESCRIPTION: 1200 TPH Quarry Operation

EMISSION SOURCE ID NO: **ES-Conveying,Crusher, Screening**

CONTROL DEVICE ID NO(S):

OPERATING SCENARIO: _____ OF _____

EMISSION POINT (STACK) ID NO(S):

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):

Quarry Operations: 1200 TPH Primary Crusher, Secondary Crushing, Aggregate Screening/Washing, and Aggregate Conveyance.

MAXIMUM DESIGN (BATCHES / HOUR):	
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/YR):
FUEL USED:	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR):
MAX. CAPACITY HOURLY FUEL USE:	REQUESTED CAPACITY ANNUAL FUEL USE:

COMMENTS:

File: PH2 Forms 2021-03-24.xlsx
Sheet: B9-Quarry

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B

EMISSION SOURCE DESCRIPTION: 2016 McCloskey J50V2 Track Jaw Crusher						EMISSION SOURCE ID NO: GEN-1 (J50V2)					
						CONTROL DEVICE ID NO(S): N/A					
OPERATING SCENARIO 1 OF 1						EMISSION POINT (STACK) ID NO(S):					
DESCRIBE IN DETAIL THE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM): 2016 McCoskey J50V2 Track Mounted Jaw Crusher 350HP engine											
TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):											
☐ Coal, wood, oil, gas, other burner (Form B1) ☒ Int. combustion engine/generator (Form B2) ☐ Liquid storage tanks (Form B3)											
☐ Woodworking (Form B4) ☐ Coating/finishing/printing (Form B5) ☐ Storage silos/bins (Form B6)											
☐ Manuf. of chemicals/coatings/inks (Form B7) ☐ Incineration (Form B8) ☐ Other (Form B9)											
START CONSTRUCTION DATE:						DATE MANUFACTURED: 2016					
MANUFACTURER / MODEL NO.:						EXPECTED OP. SCHEDULE: 12 HR/DAY 6 DAY/WK 52 WK/YR					
IS THIS SOURCE SUBJECT TO NSPS (SUBPARTS?):						NESHAQ (SUBPARTS?):					
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25 MAR-MAY 25 JUN-AUG 25 SEP-NOV 25											
CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE											
AIR POLLUTANT EMITTED			SOURCE OR EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS)		POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) (AFTER CONTROLS / LIMITS)					
				lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr		
PARTICULATE MATTER (PM)			See Combustion Calculations Appendix A								
PARTICULATE MATTER <10 MICRONS (PM10)											
PARTICULATE MATTER <2.5 MICRONS (PM2.5)											
SULFUR DIOXIDE (SO2)											
NITROGEN OXIDES (NOx)											
CARBON MONOXIDE (CO)											
VOLATILE ORGANIC COMPOUNDS (VOC)											
LEAD											
OTHER											
HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE											
HAZARDOUS AIR POLLUTANT		CAS NO.	SOURCE OR EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS)		POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) (AFTER CONTROLS / LIMITS)					
				lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr		
			See Combustion Calculations Appendix A2								
TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE											
TOXIC AIR POLLUTANT		CAS NO.	SOURCE OR EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATION							
				lb/hr		lb/day					
			See Combustion Calculations Appendix A2								
Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.											

FOR THIS SOURCE.

NOTE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH

File: PH2 Forms 2021-03-24.xlsx
Sheet: B-Gen-1 (J50V2)

FORM B2

EMISSION SOURCE (INTERNAL COMBUSTION ENGINES/TURBINES/GENERATORS)

REVISED 09/22/16

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B2

EMISSION SOURCE DESCRIPTION: 2016 McCloskey J50V2 Track Jaw Crusher		EMISSION SOURCE ID NO: GEN-1 (J50V2)				
OPERATING SCENARIO: _____ OF _____		CONTROL DEVICE ID NO(S): NA				
ENGINE SERVICE ☐ EMERGENCY ☐ SPACE HEAT ☐ ELECTRICAL GENERATION		EMISSION POINT (STACK) ID NO(S): GEN1				
(CHECK ALL THAT APPLY) ☐ PEAK SHAVER ☒ OTHER (DESCRIBE): <u>Engine to run Quarry Equipment</u>						
GENERATOR OUTPUT (KW): _____		ANTICIPATED ACTUAL HOURS OF OPERATION (HRS/YR): 3744				
ENGINE OUTPUT (HP): _____						
TYPE ICE: ☐ GASOLINE ENGINE ☒ DIESEL ENGINE UP TO 600 HP ☐ DIESEL ENGINE GREATER THAN 600 HP ☐ DUAL FUEL ENGINE ☐ OTHER (DESCRIBE): _____ (complete below)						
ENGINE TYPE ☐ RICH BURN ☐ LEAN BURN						
EMISSION REDUCTION MODIFICATION ☐ INJECTION TIMING RETARD ☐ PREIGNITION CHAMBER COMBUSTION ☐ OTHER _____						
OR ☐ STATIONARY GAS TURBINE (complete below) ☐ NATURAL GAS PIPELINE COMPRESSOR OR TURBINE (complete below)						
FUEL: ☐ NATURAL GAS ☐ OIL ☐ OTHER (DESCRIBE): _____		ENGINE TYPE ☐ 2-CYCLE LEAN BURN ☐ 4-CYCLE LEAN BURN ☐ TURBINE				
CYCLE: ☐ COGENERATION ☐ SIMPLE ☐ REGENERATIVE ☐ COMBINED		CONTROLS: ☐ COMBUSTION MODIFICATIONS (DESCRIBE): _____				
CONTROLS: ☐ WATER-STEAM INJECTION ☐ CLEAN BURN AND PRECOMBUSTION C ☐ UNCONTROLLED						
☐ UNCONTROLLED ☐ LEAN-PREMIX						
☐ OTHER (SPECIFY): _____						
FUEL USAGE (INCLUDE STARTUP/BACKUP FUEL)						
FUEL TYPE	UNITS	MAXIMUM DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)			
Diesel/No. 2 Fuel Oil	Btu					
FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)						
FUEL TYPE	BTU/UNIT	UNITS	SULFUR CONTENT (% BY WEIGHT)			
Diesel/No. 2 Fuel Oil	0.138	MMBtu/gal	0.0015%			
MANUFACTURER'S SPECIFIC EMISSION FACTORS (IF AVAILABLE)						
POLLUTANT	NOX	CO	PM	PM10	VOC	OTHER
EMISSION FACTOR LB/UNIT						
UNIT						
DESCRIBE METHODS TO MINIMIZE VISIBLE EMISSIONS DURING IDLING, OR LOW LOAD OPERATIONS:						
COMMENTS:						

Attach Additional Sheets As Necessary

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B

EMISSION SOURCE DESCRIPTION: 2015 McCloskey J45 Track Jaw Crusher.	EMISSION SOURCE ID NO: GEN-1a (J45)
OPERATING SCENARIO <u>1</u> OF <u>1</u>	CONTROL DEVICE ID NO(S): N/A
	EMISSION POINT (STACK) ID NO(S): GEN1a

DESCRIBE IN DETAIL THE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):

2015 McCoskey J45 Track Mounted Jaw Crusher 350HP engine

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

☐ Coal,wood,oil, gas, other burner (Form B1)	☐ Woodworking (Form B4)	☐ Manuf. of chemicals/coatings/inks (Form B7)
☒ Int.combustion engine/generator (Form B2)	☐ Coating/finishing/printing (Form B5)	☐ Incineration (Form B8)
☐ Liquid storage tanks (Form B3)	☐ Storage silos/bins (Form B6)	☐ Other (Form B9)

START CONSTRUCTION DATE: DATE MANUFACTURED: **2015**

MANUFACTURER / MODEL NO.: EXPECTED OP. SCHEDULE: **12** HR/DAY **6** DAY/WK **52** WK/YR

IS THIS SOURCE SUBJEC' ☐ NSPS (SUBPARTS?): ☐ NESHAP (SUBPARTS?):

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB **25** MAR-MAY **25** JUN-AUG **25** SEP-NOV **25**

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL		POTENTIAL EMISSIONS			
		AFTER CONTROLS / LIMITS		BEFORE CONTROLS / LIMITS		AFTER CONTROLS / LIMITS	
		lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER (PM)							
PARTICULATE MATTER<10 MICRONS (PM ₁₀)		See Combustion Calculations Appendix A					
PARTICULATE MATTER<2.5 MICRONS (PM _{2.5})							
SULFUR DIOXIDE (SO ₂)							
NITROGEN OXIDES (NO _x)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL		POTENTIAL EMISSIONS			
			AFTER CONTROLS / LIMITS		BEFORE CONTROLS / LIMITS		AFTER CONTROLS / LIMITS	
			lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
			See Combustion Calculations Appendix A					

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATION		
			lb/hr	lb/day	lb/yr
			See Combustion Calculations Appendix A		

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE.

Attach Additional Sheets As Necessary

FORM B2

EMISSION SOURCE (INTERNAL COMBUSTION ENGINES/TURBINES/GENERATORS)

REVISED 09/22/16

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B2

EMISSION SOURCE DESCRIPTION: **2015 McCloskey J45 Track Jaw Crusher**

EMISSION SOURCE ID NO: **GEN-1a (J45)**

CONTROL DEVICE ID NO(S): **NA**

OPERATING SCENARIO: _____ OF _____

EMISSION POINT (STACK) ID NO(S): **GEN1a**

ENGINE SERVICE ☐ EMERGENCY ☐ SPACE HEAT ☐ ELECTRICAL GENERATION

(CHECK ALL THAT APPLY) ☐ PEAK SHAVER ☒ OTHER (DESCRIBE): Engine to run Quarry Equipment

GENERATOR OUTPUT (KW): _____

ANTICIPATED ACTUAL HOURS OF OPERATION (HRS/YR): **3744**

ENGINE OUTPUT (HP): **350**

TYPE ICE: ☐ GASOLINE ENGINE ☒ DIESEL ENGINE UP TO 600 HP ☐ DIESEL ENGINE GREATER THAN 600 HP ☐ DUAL FUEL ENGINE
☐ OTHER (DESCRIBE): _____ (complete below)

ENGINE TYPE ☐ RICH BURN ☐ LEAN BURN

EMISSION REDUCTION MODIFICATION ☐ INJECTION TIMING RETARD ☐ PREIGNITION CHAMBER COMBUSTION ☐ OTHER _____

OR ☐ STATIONARY GAS TURBINE (complete below) ☐ NATURAL GAS PIPELINE COMPRESSOR OR TURBINE (complete below)

FUEL: ☐ NATURAL GAS ☐ OIL

☐ OTHER (DESCRIBE): _____

ENGINE TYPE ☐ 2-CYCLE LEAN BURN ☐ 4-CYCLE LEAN ☐ TURBINE

☐ 4-CYCLE RICH BURN ☐ OTHER (DESCRIBE): _____

CYCLE: ☐ COGENERATION ☐ SIMPLE

☐ REGENERATIVE ☐ COMBINED

CONTROLS: ☐ COMBUSTION MODIFICATIONS (DESCRIBE): _____

☐ NONSELECTIVE CATALYTIC REDUCTION ☐ SELECTIVE CATALYTIC REDUCTION

CONTROLS: ☐ WATER-STEAM INJECTION

☐ CLEAN BURN AND PRECOMBUSTION C ☐ UNCONTROLLED

☐ UNCONTROLLED ☐ LEAN-PREMIX

☐ OTHER (SPECIFY): _____

FUEL USAGE (INCLUDE STARTUP/BACKUP FUEL)

FUEL TYPE	UNITS	MAXIMUM DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)
Diesel/No. 2 Fuel Oil	Btu		

FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)

FUEL TYPE	BTU/UNIT	UNITS	SULFUR CONTENT (% BY WEIGHT)
Diesel/No. 2 Fuel Oil	0.138	MMBtu/gal	0.0015%

MANUFACTURER'S SPECIFIC EMISSION FACTORS (IF AVAILABLE)

POLLUTANT	NOX	CO	PM	PM10	VOC	OTHER
EMISSION FACTOR LB/UNIT						
UNIT						

DESCRIBE METHODS TO MINIMIZE VISIBLE EMISSIONS DURING IDLING, OR LOW LOAD OPERATIONS:

COMMENTS:

Attach Additional Sheets As Necessary

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

File: PH2 Forms 2021-03-24.xlsx
Sheet: B-Gen-2 (S190dt)

FORM B2

EMISSION SOURCE (INTERNAL COMBUSTION ENGINES/TURBINES/GENERATORS)

REVISED 09/22/16

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B2

EMISSION SOURCE DESCRIPTION: 2016 McCloskey S190DT 2-deck
20'X5' Track Screen

EMISSION SOURCE ID NO: GEN-2 (S190dt)

CONTROL DEVICE ID NO(S): NA

OPERATING SCENARIO: OF

EMISSION POINT (STACK) ID NO(S): GEN2

ENGINE SERVICE ☐ EMERGENCY ☐ SPACE HEAT ☐ ELECTRICAL GENERATION

(CHECK ALL THAT APPLY) ☐ PEAK SHAVER ☒ OTHER (DESCRIBE): Engine to run Quarry Equipment

GENERATOR OUTPUT (KW):

ANTICIPATED ACTUAL HOURS OF OPERATION (HRS/YR): 3744

ENGINE OUTPUT (HP): 125

TYPE ICE: ☐ GASOLINE ENGINE ☒ DIESEL ENGINE UP TO 600 HP ☐ DIESEL ENGINE GREATER THAN 600 HP ☐ DUAL FUEL ENGINE
☐ OTHER (DESCRIBE): (complete below)

ENGINE TYPE ☐ RICH BURN ☐ LEAN BURN

EMISSION REDUCTION MODIFICATION ☐ INJECTION TIMING RETARD ☐ PREIGNITION CHAMBER COMBUSTION ☐ OTHER

OR ☐ STATIONARY GAS TURBINE (complete below) ☐ NATURAL GAS PIPELINE COMPRESSOR OR TURBINE (complete below)

FUEL: ☐ NATURAL GAS ☐ OIL

☐ OTHER (DESCRIBE):

ENGINE TYPE ☐ 2-CYCLE LEAN BURN ☐ 4-CYCLE LEAN BURN ☐ TURBINE

☐ 4-CYCLE RICH BURN ☐ OTHER (DESCRIBE):

CYCLE: ☐ COGENERATION ☐ SIMPLE

☐ REGENERATIVE ☐ COMBINED

CONTROLS: ☐ COMBUSTION MODIFICATIONS (DESCRIBE):

☐ NONSELECTIVE CATALYTIC REDUCTION ☐ SELECTIVE CATALYTIC REDUCTION

CONTROLS: ☐ WATER-STEAM INJECTION

☐ CLEAN BURN AND PRECOMBUSTION CONTROL ☐ UNCONTROLLED

☐ UNCONTROLLED

☐ LEAN-PREMIX

☐ OTHER (SPECIFY):

FUEL USAGE (INCLUDE STARTUP/BACKUP FUEL)

FUEL TYPE	UNITS	MAXIMUM DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)
Diesel/No. 2 Fuel Oil	Btu		

FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)

FUEL TYPE	BTU/UNIT	UNITS	SULFUR CONTENT (% BY WEIGHT)
Diesel/No. 2 Fuel Oil	0.138	MMBtu/gal	0.0015%

MANUFACTURER'S SPECIFIC EMISSION FACTORS (IF AVAILABLE)

POLLUTANT	NOX	CO	PM	PM10	VOC	OTHER
EMISSION FACTOR LB/UNIT						
UNIT						

DESCRIBE METHODS TO MINIMIZE VISIBLE EMISSIONS DURING IDLING, OR LOW LOAD OPERATIONS:

COMMENTS:

Attach Additional Sheets As Necessary

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B

EMISSION SOURCE DESCRIPTION: 2006 Powerscreen 1300 Maxtrak Cone Crusher	EMISSION SOURCE ID NO: GEN-3 (PS1300MaxTrak)
OPERATING SCENARIO <u>1</u> OF <u>1</u>	CONTROL DEVICE ID NO(S):
EMISSION POINT (STACK) ID NO(S):	

DESCRIBE IN DETAIL THE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):

2006 Powerscreen 1300 Maxtrak track mounted Cone Crusher

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

☐ Coal, wood, oil, gas, other burner (Form B1)	☐ Woodworking (Form B4)	☐ Manuf. of chemicals/coatings/inks (Form B7)
☒ Int. combustion engine/generator (Form B2)	☐ Coating/finishing/printing (Form B5)	☐ Incineration (Form B8)
☐ Liquid storage tanks (Form B3)	☐ Storage silos/bins (Form B6)	☐ Other (Form B9)

START CONSTRUCTION DATE: DATE MANUFACTURED: **2006**

MANUFACTURER / MODEL NO.: EXPECTED OP. SCHEDULE: **12** HR/DAY **6** DAY/WK **52** WK/YR

IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?): ☐ NESHAP (SUBPARTS?):

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB **25** MAR-MAY **25** JUN-AUG **25** SEP-NOV

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL		POTENTIAL EMISSIONS			
		AFTER CONTROLS / LIMITS		BEFORE CONTROLS / LIMITS		AFTER CONTROLS / LIMITS	
		lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER (PM)							
PARTICULATE MATTER <10 MICRONS (PM ₁₀)		See Combustion Calculations Appendix A					
PARTICULATE MATTER <2.5 MICRONS (PM _{2.5})							
SULFUR DIOXIDE (SO ₂)							
NITROGEN OXIDES (NO _x)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL		POTENTIAL EMISSIONS			
			AFTER CONTROLS / LIMITS		BEFORE CONTROLS / LIMITS		AFTER CONTROLS / LIMITS	
			lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
			See Combustion Calculations Appendix A					

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATION		
			lb/hr	lb/day	lb/yr
			See Combustion Calculations Appendix A		

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

FORM B2

EMISSION SOURCE (INTERNAL COMBUSTION ENGINES/TURBINES/GENERATORS)

REVISED 09/22/16

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B2

EMISSION SOURCE DESCRIPTION: 2006 Powerscreen 1300 Maxtrak Cone Crusher

EMISSION SOURCE ID NO: GEN-3 (PS1300 Maxtrak)

CONTROL DEVICE ID NO(S): NA

OPERATING SCENARIO: _____ OF _____

EMISSION POINT (STACK) ID NO(S): GEN3

ENGINE SERVICE ☐ EMERGENCY ☐ SPACE HEAT ☐ ELECTRICAL GENERATION

(CHECK ALL THAT APPLY) ☐ PEAK SHAVER ☒ OTHER (DESCRIBE): Engine to run Quarry Equipment

GENERATOR OUTPUT (KW): _____ ANTICIPATED ACTUAL HOURS OF OPERATION (HRS/YR): 3744

ENGINE OUTPUT (HP): 440

TYPE ICE: ☐ GASOLINE ENGINE ☒ DIESEL ENGINE UP TO 600 HP ☐ DIESEL ENGINE GREATER THAN 600 HP ☐ DUAL FUEL ENGINE
☐ OTHER (DESCRIBE): _____ (complete below)

ENGINE TYPE ☐ RICH BURN ☐ LEAN BURN

EMISSION REDUCTION MODIFICATION ☐ INJECTION TIMING RETARD ☐ PREIGNITION CHAMBER COMBUSTION ☐ OTHER _____

OR ☐ STATIONARY GAS TURBINE (complete below) ☐ NATURAL GAS PIPELINE COMPRESSOR OR TURBINE (complete below)

FUEL ☐ NATURAL GAS ☐ OIL

☐ OTHER (DESCRIBE): _____

ENGINE TYPE ☐ 2-CYCLE LEAN BURN ☐ 4-CYCLE LEAN ☐ TURBINE

☐ 4-CYCLE RICH BURN ☐ OTHER (DESCRIBE): _____

CONTROL: ☐ COGENERATION ☐ SIMPLE

CONTROLS: ☐ COMBUSTION MODIFICATIONS (DESCRIBE): _____

☐ REGENERATIVE ☐ COMBINED

☐ NONSELECTIVE CATALYTIC REDUCTION ☐ SELECTIVE CATALYTIC REDUCTION

CONTROLS: ☐ WATER-STEAM INJECTION

☐ CLEAN BURN AND PRECOMBUSTION C ☐ UNCONTROLLED

☐ UNCONTROLLED ☐ LEAN-PREMIX

☐ OTHER (SPECIFY): _____

FUEL USAGE (INCLUDE STARTUP/BACKUP FUEL)

FUEL TYPE	UNITS	MAXIMUM DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)
Diesel/No. 2 Fuel Oil	Btu		

FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)

FUEL TYPE	BTU/UNIT	UNITS	SULFUR CONTENT (% BY WEIGHT)
Diesel/No. 2 Fuel Oil	0.138	MMBtu/gal	0.0015%

MANUFACTURER'S SPECIFIC EMISSION FACTORS (IF AVAILABLE)

POLLUTANT	NOX	CO	PM	PM10	VOC	OTHER
EMISSION FACTOR LB/UNIT						
UNIT						

DESCRIBE METHODS TO MINIMIZE VISIBLE EMISSIONS DURING IDLING, OR LOW LOAD OPERATIONS:

COMMENTS:

Attach Additional Sheets As Necessary

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22,

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B

EMISSION SOURCE DESCRIPTION: 2016 McCloskey TF80 Track stockpiling ConveyorScreen	EMISSION SOURCE ID NO: GEN-4 (TF80)
OPERATING SCENARIO <u>1</u> OF <u>1</u>	CONTROL DEVICE ID NO(S):
EMISSION POINT (STACK) ID NO(S):	

DESCRIBE IN DETAIL THE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):

2016 McCloskey TF80 Track Mounted stockpiling ConveyorScreen

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

☐ Coal, wood, oil, gas, other burner (Form B1)	☐ Woodworking (Form B4)	☐ Manuf. of chemicals/coatings/inks (Form B7)
☒ Int. combustion engine/generator (Form B2)	☐ Coating/finishing/printing (Form B5)	☐ Incineration (Form B8)
☐ Liquid storage tanks (Form B3)	☐ Storage silos/bins (Form B6)	☐ Other (Form B9)

START CONSTRUCTION DATE:	DATE MANUFACTURED: 2016
MANUFACTURER / MODEL NO.:	EXPECTED OP. SCHEDULE: 12 HR/DAY 6 DAY/WK 52 WK/YR
IS THIS SOURCE SUBJEC ☐ NSPS (SUBPARTS?):	☐ NESHAP (SUBPARTS?):
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25 MAR-MAY 25 JUN-AUG 25 SEP.	

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL		POTENTIAL EMISSIONS			
		AFTER CONTROLS / LIMITS		BEFORE CONTROLS / LIMITS		AFTER CONTROLS / LIMITS	
		lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER (PM)							
PARTICULATE MATTER <10 MICRONS (PM ₁₀)							
PARTICULATE MATTER <2.5 MICRONS (PM _{2.5})							
SULFUR DIOXIDE (SO ₂)							
NITROGEN OXIDES (NO _x)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL		POTENTIAL EMISSIONS			
			AFTER CONTROLS / LIMITS		BEFORE CONTROLS / LIMITS		AFTER CONTROLS / LIMITS	
			lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATION		
			lb/hr	lb/day	lb/yr

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

TE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH
Attach Additional Sheets As Necessary

FORM B2

EMISSION SOURCE (INTERNAL COMBUSTION ENGINES/TURBINES/GENERATORS)

REVISED 09/22/16

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B2

EMISSION SOURCE DESCRIPTION: **2016 McCloskey TF80 Track stockpiling ConveyorScreen**

EMISSION SOURCE ID NO: **GEN-4 (TF80)**

CONTROL DEVICE ID NO(S): **NA**

OPERATING SCENARIO: _____ OF _____

EMISSION POINT (STACK) ID NO(S): **GEN4**

ENGINE SERVICE ☐ EMERGENCY ☐ SPACE HEAT ☐ ELECTRICAL GENERATION

(CHECK ALL THAT APPLY) ☐ PEAK SHAVER ☒ OTHER (DESCRIBE): Engine to run Quarry Equipment

GENERATOR OUTPUT (KW): _____ ANTICIPATED ACTUAL HOURS OF OPERATION (HRS/YR): **3744**

ENGINE OUTPUT (HP): **125**

TYPE ICE: ☐ GASOLINE ENGINE ☒ DIESEL ENGINE UP TO 600 HP ☐ DIESEL ENGINE GREATER THAN 600 HP ☐ DUAL FUEL ENGINE
☐ OTHER (DESCRIBE): _____ (complete below)

ENGINE TYPE ☐ RICH BURN ☐ LEAN BURN

EMISSION REDUCTION MODIFICATION ☐ INJECTION TIMING RETARD ☐ PREIGNITION CHAMBER COMBUSTION ☐ OTHER _____

OR ☐ STATIONARY GAS TURBINE (complete below) ☐ NATURAL GAS PIPELINE COMPRESSOR OR TURBINE (complete below)

FUEL: ☐ NATURAL GAS ☐ OIL

☐ OTHER (DESCRIBE): _____

ENGINE TYPE ☐ 2-CYCLE LEAN BURN ☐ 4-CYCLE LEAN BURN ☐ TURBINE

☐ 4-CYCLE RICH BURN ☐ OTHER (DESCRIBE): _____

CONTROL: ☐ COGENERATION ☐ SIMPLE

CONTROLS: ☐ COMBUSTION MODIFICATIONS (DESCRIBE): _____

☐ REGENERATIVE ☐ COMBINED

☐ NONSELECTIVE CATALYTIC REDUCTION ☐ SELECTIVE CATALYTIC REDUCTION

CONTROLS: ☐ WATER-STEAM INJECTION

☐ CLEAN BURN AND PRECOMBUSTION C ☐ UNCONTROLLED

☐ UNCONTROLLED ☐ LEAN-PREMIX

☐ OTHER (SPECIFY): _____

FUEL USAGE (INCLUDE STARTUP/BACKUP FUEL)

FUEL TYPE	UNITS	MAXIMUM DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)
Diesel/No. 2 Fuel Oil	Btu		

FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)

FUEL TYPE	BTU/UNIT	UNITS	SULFUR CONTENT (% BY WEIGHT)
Diesel/No. 2 Fuel Oil	0.138	MMBtu/gal	0.0015%

MANUFACTURER'S SPECIFIC EMISSION FACTORS (IF AVAILABLE)

POLLUTANT	NOX	CO	PM	PM10	VOC	OTHER
EMISSION FACTOR LB/UNIT						
UNIT						

DESCRIBE METHODS TO MINIMIZE VISIBLE EMISSIONS DURING IDLING, OR LOW LOAD OPERATIONS:

COMMENTS:

Attach Additional Sheets As Necessary

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

File: PH2 Forms 2021-03-24.xlsx
Sheet: B-Gen-5 (PS1300MaxTrak)

FORM B2

EMISSION SOURCE (INTERNAL COMBUSTION ENGINES/TURBINES/GENERATORS)

REVISED 09/22/16

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B2

EMISSION SOURCE DESCRIPTION: 2017 Powerscreen 1300 Maxtrak Cone Crusher		EMISSION SOURCE ID NO: GEN-5 (PS1300 Maxtra				
OPERATING SCENARIO: _____ OF _____		CONTROL DEVICE ID NO(S): NA				
ENGINE SERVICE ☐ EMERGENCY ☐ SPACE HEAT ☐ ELECTRICAL GENERATION		EMISSION POINT (STACK) ID NO(S): GEN5				
(CHECK ALL THAT APPLY) ☐ PEAK SHAVER ☒ OTHER (DESCRIBE): <u>Engine to run Quarry Equipment</u>						
GENERATOR OUTPUT (KW): _____		ANTICIPATED ACTUAL HOURS OF OPERATION (HRS/YR): 3744				
ENGINE OUTPUT (HP): 450						
TYPE ICE: ☐ GASOLINE ENGINE ☒ DIESEL ENGINE UP TO 600 HP ☐ DIESEL ENGINE GREATER THAN 600 HP ☐ DUAL FUEL ENGINE ☐ OTHER (DESCRIBE): _____ (complete below)						
ENGINE TYPE ☐ RICH BURN ☐ LEAN BURN						
EMISSION REDUCTION MODIFICATION ☐ INJECTION TIMING RETARD ☐ PREIGNITION CHAMBER COMBUSTION ☐ OTHER _____						
OR ☐ STATIONARY GAS TURBINE (complete below) ☐ NATURAL GAS PIPELINE COMPRESSOR OR TURBINE (complete below)						
FUEL ☐ NATURAL GAS ☐ OIL ☐ OTHER (DESCRIBE): _____		ENGINE TYPE ☐ 2-CYCLE LEAN BURN ☐ 4-CYCLE LEAN BURN ☐ TURBINE				
CYCLE: ☐ COGENERATION ☐ SIMPLE ☐ REGENERATIVE ☐ COMBINED		CONTROLS: ☐ COMBUSTION MODIFICATIONS (DESCRIBE): _____				
CONTROLS: ☐ WATER-STEAM INJECTION ☐ UNCONTROLLED ☐ LEAN-PREMIX ☐ OTHER (SPECIFY): _____		☐ NONSELECTIVE CATALYTIC REDUCTION ☐ SELECTIVE CATALYTIC REDUCTION ☐ CLEAN BURN AND PRECOMBUSTION C ☐ UNCONTROLLED				
FUEL USAGE (INCLUDE STARTUP/BACKUP FUEL)						
FUEL TYPE	UNITS	MAXIMUM DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)			
Diesel/No. 2 Fuel Oil	Btu					
FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)						
FUEL TYPE	BTU/UNIT	UNITS	SULFUR CONTENT (% BY WEIGHT)			
Diesel/No. 2 Fuel Oil	0.138	MMBtu/gal	0.0015%			
MANUFACTURER'S SPECIFIC EMISSION FACTORS (IF AVAILABLE)						
POLLUTANT	NOX	CO	PM	PM10	VOC	OTHER
EMISSION FACTOR LB/UNIT						
UNIT						
DESCRIBE METHODS TO MINIMIZE VISIBLE EMISSIONS DURING IDLING, OR LOW LOAD OPERATIONS:						
COMMENTS:						

Attach Additional Sheets As Necessary

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22.

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B

EMISSION SOURCE DESCRIPTION: 2017 Powerscreen 1000 Maxtrak Cone Crusher	EMISSION SOURCE ID NO: GEN-7 (PS1000 Maxtrak)
OPERATING SCENARIO <u>1</u> OF <u>1</u>	CONTROL DEVICE ID NO(S):
EMISSION POINT (STACK) ID NO(S):	

DESCRIBE IN DETAIL THE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):

2017 Powerscreen 1000 Maxtrak Cone Crusher

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

☐ Coal, wood, oil, gas, other burner (Form B1)	☐ Woodworking (Form B4)	☐ Manuf. of chemicals/coatings/inks (Form B5)
☒ Int. combustion engine/generator (Form B2)	☐ Coating/finishing/printing (Form B6)	☐ Incineration (Form B8)
☐ Liquid storage tanks (Form B3)	☐ Storage silos/bins (Form B6)	☐ Other (Form B9)

START CONSTRUCTION DATE: DATE MANUFACTURED: **2017**

MANUFACTURER / MODEL NO.: EXPECTED OP. SCHEDULE: **12** HR/DAY **6** DAY/WK **52** WK/YR

IS THIS SOURCE SUBJECT TO NSPS (SUBPARTS?): NESHAP (SUBPARTS?):

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB **25** MAR-MAY **25** JUN-AUG **25** SEP-

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL		POTENTIAL EMISSIONS			
		AFTER CONTROLS / LIMITS		BEFORE CONTROLS / LIMITS		AFTER CONTROLS / LIMITS	
		lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER (PM)							
PARTICULATE MATTER <10 MICRONS (PM ₁₀)		See Combustion Calculations Appendix A					
PARTICULATE MATTER <2.5 MICRONS (PM _{2.5})							
SULFUR DIOXIDE (SO ₂)							
NITROGEN OXIDES (NO _x)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL		POTENTIAL EMISSIONS			
			AFTER CONTROLS / LIMITS		BEFORE CONTROLS / LIMITS		AFTER CONTROLS / LIMITS	
			lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
			See Combustion Calculations Appendix A					

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATION		
			lb/hr	lb/day	lb/yr
			See Combustion Calculations Appendix A		

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

TE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH

Attach Additional Sheets As Necessary

FORM B2

EMISSION SOURCE (INTERNAL COMBUSTION ENGINES/TURBINES/GENERATORS)

REVISED 09/22/16

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B2

EMISSION SOURCE DESCRIPTION: **2017 Powerscreen 1000 Maxtrak Cone Crusher**

EMISSION SOURCE ID NO: **GEN-7 (PS1000MaxTra**

CONTROL DEVICE ID NO(S): **NA**

OPERATING SCENARIO: _____ OF _____

EMISSION POINT (STACK) ID NO(S): **GEN7**

ENGINE SERVICE ☐ EMERGENCY ☐ SPACE HEAT ☐ ELECTRICAL GENERATION

(CHECK ALL THAT APPLY) ☐ PEAK SHAVER ☒ OTHER (DESCRIBE): Engine to run Quarry Equipment

GENERATOR OUTPUT (KW): _____

ANTICIPATED ACTUAL HOURS OF OPERATION (HRS/YR): **3744**

ENGINE OUTPUT (HP): **350**

TYPE ICE: ☐ GASOLINE ENGINE ☒ DIESEL ENGINE UP TO 600 HP ☐ DIESEL ENGINE GREATER THAN 600 HP ☐ DUAL FUEL ENGINE
☐ OTHER (DESCRIBE): _____ (complete below)

ENGINE TYPE ☐ RICH BURN ☐ LEAN BURN

EMISSION REDUCTION MODIFICATION ☐ INJECTION TIMING RETARD ☐ PREIGNITION CHAMBER COMBUSTION ☐ OTHER _____

OR ☐ STATIONARY GAS TURBINE (complete below) ☐ NATURAL GAS PIPELINE COMPRESSOR OR TURBINE (complete below)

FUEL ☐ NATURAL GAS ☐ OIL

☐ OTHER (DESCRIBE): _____

ENGINE TYPE ☐ 2-CYCLE LEAN BURN ☐ 4-CYCLE LEAN BURN ☐ TURBINE

☐ 4-CYCLE RICH BURN ☐ OTHER (DESCRIBE): _____

CYCLE: ☐ COGENERATION ☐ SIMPLE

☐ REGENERATIVE ☐ COMBINED

CONTROLS: ☐ COMBUSTION MODIFICATIONS (DESCRIBE): _____

☐ NONSELECTIVE CATALYTIC REDUCTION ☐ SELECTIVE CATALYTIC REDUCTION

CONTROLS: ☐ WATER-STEAM INJECTION

☐ CLEAN BURN AND PRECOMBUSTION CONTROL ☐ UNCONTROLLED

☐ UNCONTROLLED ☐ LEAN-PREMIX

☐ OTHER (SPECIFY): _____

FUEL USAGE (INCLUDE STARTUP/BACKUP FUEL)

FUEL TYPE	UNITS	MAXIMUM DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)
Diesel/No. 2 Fuel Oil	Btu		

FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)

FUEL TYPE	BTU/UNIT	UNITS	SULFUR CONTENT (% BY WEIGHT)
Diesel/No. 2 Fuel Oil	0.138	MMBtu/gal	0.0015%

MANUFACTURER'S SPECIFIC EMISSION FACTORS (IF AVAILABLE)

POLLUTANT	NOX	CO	PM	PM10	VOC	OTHER
EMISSION FACTOR LB/UNIT						
UNIT						

DESCRIBE METHODS TO MINIMIZE VISIBLE EMISSIONS DURING IDLING, OR LOW LOAD OPERATIONS:

COMMENTS:

Attach Additional Sheets As Necessary

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B

EMISSION SOURCE DESCRIPTION: 2065 hp Natural Gas/Propane Generator	EMISSION SOURCE ID NO: ES-PGEN1
OPERATING SCENARIO <u>1</u> OF <u>1</u>	CONTROL DEVICE ID NO(S): CD-PGEN1
EMISSION POINT (STACK) ID NO(S): PGEN1	

DESCRIBE IN DETAIL THE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
2065 hp Natural Gas/Propane Power Generator equipped with catalytic oxidation

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

☐ Coal,wood,oil, gas, other burner (Form B1)	☐ Woodworking (Form B4)	☐ Manuf. of chemicals/coatings/inks (Form B5)
☒ Int.combustion engine/generator (Form B2)	☐ Coating/finishing/printing (Form B6)	☐ Incineration (Form B8)
☐ Liquid storage tanks (Form B3)	☐ Storage silos/bins (Form B6)	☐ Other (Form B9)

START CONSTRUCTION DATE:	DATE MANUFACTURED: 2019 or later
MANUFACTURER / MODEL NO.:	EXPECTED OP. SCHEDULE: 24 HR/DAY 7 DAY/WK 52 WK/YR
IS THIS SOURCE SUBJECT TO NSPS (SUBPARTS?): ☒ JJJJ	NESHAP (SUBPARTS?): ☒ ZZZZ
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25 MAR-MAY 25 JUN-AUG 25 SEP-NOV 25	

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL		POTENTIAL EMISSIONS			
		AFTER CONTROLS / LIMITS		BEFORE CONTROLS / LIMITS		AFTER CONTROLS / LIMITS	
		lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER (PM)							
PARTICULATE MATTER<10 MICRONS (PM ₁₀)		See Combustion Calculations Appendix A					
PARTICULATE MATTER<2.5 MICRONS (PM _{2.5})							
SULFUR DIOXIDE (SO ₂)							
NITROGEN OXIDES (NO _x)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL		POTENTIAL EMISSIONS			
			AFTER CONTROLS / LIMITS		BEFORE CONTROLS / LIMITS		AFTER CONTROLS / LIMITS	
			lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
			See Combustion Calculations Appendix A					

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATION		
			lb/hr	lb/day	lb/yr
			See Combustion Calculations Appendix A		

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

TE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH

Attach Additional Sheets As Necessary

FORM B2

EMISSION SOURCE (INTERNAL COMBUSTION ENGINES/TURBINES/GENERATORS)

REVISED 09/22/16

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B2

EMISSION SOURCE DESCRIPTION: **2065 hp Natural Gas/Propane Generator with catalytic oxidation**

EMISSION SOURCE ID NO: **ES-PGEN1**

CONTROL DEVICE ID NO(S): **CD-PGEN1**

OPERATING SCENARIO: _____ OF _____

EMISSION POINT (STACK) ID NO(S): **PGEN1**

ENGINE SERVICE ☐ EMERGENCY ☐ SPACE HEAT ☒ ELECTRICAL GENERATION

(CHECK ALL THAT APPLY) ☐ PEAK SHAVER ☐ OTHER (DESCRIBE): _____

GENERATOR OUTPUT (KW): _____

ANTICIPATED ACTUAL HOURS OF OPERATION (HRS/YR): **8760**

ENGINE OUTPUT (HP): **2065**

TYPE ICE: ☐ GASOLINE ENGINE ☐ DIESEL ENGINE UP TO 600 HP ☐ DIESEL ENGINE GREATER THAN 600 HP ☒ DUAL FUEL ENGINE
☐ OTHER (DESCRIBE): _____ (complete below)

ENGINE TYPE ☐ RICH BURN ☒ LEAN BURN

EMISSION REDUCTION MODIFICATION ☐ INJECTION TIMING RETARD ☐ PREIGNITION CHAMBER COMBUSTION ☐ OTHER _____

OR ☐ STATIONARY GAS TURBINE (complete below) ☐ NATURAL GAS PIPELINE COMPRESSOR OR TURBINE (complete below)

FUEL: ☐ NATURAL GAS ☐ OIL
☐ OTHER (DESCRIBE): _____

ENGINE TYPE ☐ 2-CYCLE LEAN BURN ☐ 4-CYCLE LEAN ☐ TURBINE
☐ 4-CYCLE RICH BURN ☐ OTHER (DESCRIBE): _____

CYCLE: ☐ COGENERATION ☐ SIMPLE
☐ REGENERATIVE ☐ COMBINED

CONTROLS: ☐ COMBUSTION MODIFICATIONS (DESCRIBE): _____
☐ NONSELECTIVE CATALYTIC REDUCTION ☐ SELECTIVE CATALYTIC REDUCTION

CONTROLS: ☐ WATER-STEAM INJECTION ☐ CLEAN BURN AND PRECOMBUSTION CONTROL ☐ UNCONTROLLED
☐ UNCONTROLLED ☐ LEAN-PREMIX
☐ OTHER (SPECIFY): _____

FUEL USAGE (INCLUDE STARTUP/BACKUP FUEL)

FUEL TYPE	UNITS	MAXIMUM DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)
Natural Gas/Propane	MMBtu	14.46	

FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)

FUEL TYPE	BTU/UNIT	UNITS	SULFUR CONTENT (% BY WEIGHT)
Natural Gas	1020	Btu/scf	
Propane	97500	Btu/gal	

MANUFACTURER'S SPECIFIC EMISSION FACTORS (IF AVAILABLE)

POLLUTANT	NOX	CO	PM	PM10	VOC	OTHER
EMISSION FACTOR LB/UNIT	1.0	0.7			0.7	
UNIT	g/hp-hr	g/hp-hr			g/hp-hr	

DESCRIBE METHODS TO MINIMIZE VISIBLE EMISSIONS DURING IDLING, OR LOW LOAD OPERATIONS:

COMMENTS:

Attach Additional Sheets As Necessary

FORM C3

CONTROL DEVICE (THERMAL OR CATALYTIC)

REVISED 09/22/16

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

C3

REQUIRED BY 15A NCAC 2Q .0112, THIS FORM MUST BE SEALED BY A PROFESSIONAL ENGINEER (P.E.) LICENSED IN NORTH CAROLINA

CONTROL DEVICE ID NO: CD-PGEN1	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): ES-PGEN1
EMISSION POINT (STACK) ID NO(S): PGEN1	POSITION IN SERIES OF CONTROLS NO. _____ OF _____ UNITS

MANUFACTURER: Miratech	MODEL NO: IQ2-28-14-HSG-0 (housing); MECB-OX-RB2894-2675-0000-29
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OPERATING SCENARIO: _____ OF _____	
---------------------------------------	--

TYP ☐ AFTERBURNER ☐ REGENERATIVE THERMAL OXIDATION ☐ RECUPERATIVE THERMAL OXIDATION ☒ CATALYTIC OXIDATION

EXPECTED LIFE OF CATALYST (YRS): **3** METHOD OF DETECTING WHEN CATALYST NEEDS REPLACEMENT: **Monitor**

CATALYST MASKING AGENT IN AIR ST ☐ HALOGEN ☐ SILICONE ☐ PHOSPHOROUS COMPOUND ☐ HEAVY METAL
☒ SULFUR COMPOUND ☐ OTHER (SPECIFY) _____ ☐ NONE

TYPE OF CATALYST: Platinum/Rhodium	CATALYST VOL (FT ³): TBD	VELOCITY THROUGH CATALYST (FPS):
---	---	----------------------------------

SCFM THROUGH CATALYST:

DESCRIBE CONTROL SYSTEM, INCLUDING RELATION TO OTHER CONTROL DEVICES AND SOURCES, AND ATTACH DIAGRAM OF SYSTEM:

POLLUTANT(S) COLLECTED:	CO			
BEFORE CONTROL EMISSION RATE (LB/HR):	9.55			
CAPTURE EFFICIENCY:	%	%	%	%
CONTROL DEVICE EFFICIENCY:	%	%	%	%
CORRESPONDING OVERALL EFFICIENCY:	66.7	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL AFTER CONTROL EMISSION RATE (LB/HR)	3.18			

PRESSURE DROP (IN. I MIN MAX 5.0	OUTLET TEMPERATURE (°F): MIN 1350 MAX
INLET TEMPERATURE: 550 MIN 1250 MAX	RESIDENCE TIME (SECONDS):
INLET AIR FLOW RATE (ACFM): (SCFM): 4162	COMBUSTION TEMPERATURE (°F):
COMBUSTION CHAMBER VOLUME (FT ³):	INLET MOISTURE CONTENT (%): 11
% EXCESS AIR:	CONCENTRATION (ppmv) _____ INLET _____ OUTLET
AUXILIARY FUEL USED: NA	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR):

DESCRIBE MAINTENANCE PROCEDURES:

DESCRIBE ANY AUXILIARY MATERIALS INTRODUCED INTO THE CONTROL SYSTEM:

COMMENTS:

Attach Additional Sheets As Necessary

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B

EMISSION SOURCE DESCRIPTION: 2065 hp Natural Gas/Propane Generator	EMISSION SOURCE ID NO: ES-PGEN2
OPERATING SCENARIO <u>1</u> OF <u>1</u>	CONTROL DEVICE ID NO(S): CD-PGEN2
EMISSION POINT (STACK) ID NO(S): PGEN2	

DESCRIBE IN DETAIL THE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
2065 hp Natural Gas/Propane Power Generator equipped with catalytic oxidation

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

☐ Coal, wood, oil, gas, other burner (Form B1)	☐ Woodworking (Form B4)	☐ Manuf. of chemicals/coatings/inks (Form B7)
☒ Int. combustion engine/generator (Form B2)	☐ Coating/finishing/printing (Form B5)	☐ Incineration (Form B8)
☐ Liquid storage tanks (Form B3)	☐ Storage silos/bins (Form B6)	☐ Other (Form B9)

START CONSTRUCTION DATE: _____ DATE MANUFACTURED: **2019 or later**

MANUFACTURER / MODEL NO.: _____ EXPECTED OP. SCHEDULE: **24** HR/DAY **7** DAY/WK **52** WK/YR

IS THIS SOURCE SUBJEC ☒ NSPS (SUBPARTS?): **JJJJ** ☒ NESHAP (SUBPARTS?): **ZZZZ**

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB **25** MAR-MAY **25** JUN-AUG **25** SEP **25**

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL		POTENTIAL EMISSIONS			
		AFTER CONTROLS / LIMITS		BEFORE CONTROLS / LIMITS		AFTER CONTROLS / LIMITS	
		lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER (PM)							
PARTICULATE MATTER <10 MICRONS (PM ₁₀)		See Combustion Calculations Appendix A					
PARTICULATE MATTER <2.5 MICRONS (PM _{2.5})							
SULFUR DIOXIDE (SO ₂)							
NITROGEN OXIDES (NO _x)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL		POTENTIAL EMISSIONS			
			AFTER CONTROLS / LIMITS		BEFORE CONTROLS / LIMITS		AFTER CONTROLS / LIMITS	
			lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
			See Combustion Calculations Appendix A					

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATION		
			lb/hr	lb/day	lb/yr
			See Combustion Calculations Appendix A		

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

TE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH
Attach Additional Sheets As Necessary

FORM B2

EMISSION SOURCE (INTERNAL COMBUSTION ENGINES/TURBINES/GENERATORS)

REVISED 09/22/16

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B2

EMISSION SOURCE DESCRIPTION: **2065 hp Natural Gas/Propane Generator with catalytic oxidation**

EMISSION SOURCE ID NO: **ES-PGEN2**

CONTROL DEVICE ID NO(S): **CD-PGEN2**

OPERATING SCENARIO: _____ OF _____

EMISSION POINT (STACK) ID NO(S): **PGEN2**

ENGINE SERVICE ☐ EMERGENCY ☐ SPACE HEAT ☒ ELECTRICAL GENERATION

(CHECK ALL THAT APPLY) ☐ PEAK SHAVER ☐ OTHER (DESCRIBE): _____

GENERATOR OUTPUT (KW): _____

ANTICIPATED ACTUAL HOURS OF OPERATION (HRS/YR): **8760**

ENGINE OUTPUT (HP): **2065**

TYPE ICE: ☐ GASOLINE ENGINE ☐ DIESEL ENGINE UP TO 600 HP ☐ DIESEL ENGINE GREATER THAN 600 HP ☒ DUAL FUEL ENGINE
☐ OTHER (DESCRIBE): _____ (complete below)

ENGINE TYPE ☐ RICH BURN ☒ LEAN BURN

EMISSION REDUCTION MODIFICATION ☐ INJECTION TIMING RETARD ☐ PREIGNITION CHAMBER COMBUSTION ☐ OTHER _____

OR ☐ STATIONARY GAS TURBINE (complete below) ☐ NATURAL GAS PIPELINE COMPRESSOR OR TURBINE (complete below)

FUEL: ☐ NATURAL GAS ☐ OIL

☐ OTHER (DESCRIBE): _____

ENGINE TYPE ☐ 2-CYCLE LEAN BURN ☐ 4-CYCLE LEAN BURN ☐ TURBINE

☐ 4-CYCLE RICH BURN ☐ OTHER (DESCRIBE): _____

CONTROLS: ☐ COGENERATION ☐ SIMPLE

CONTROLS: ☐ COMBUSTION MODIFICATIONS (DESCRIBE): _____

☐ REGENERATIVE ☐ COMBINED

☐ NONSELECTIVE CATALYTIC REDUCTION ☐ SELECTIVE CATALYTIC REDUCTION

CONTROLS: ☐ WATER-STEAM INJECTION

☐ CLEAN BURN AND PRECOMBUSTION C ☐ UNCONTROLLED

☐ UNCONTROLLED ☐ LEAN-PREMIX

☐ OTHER (SPECIFY): _____

FUEL USAGE (INCLUDE STARTUP/BACKUP FUEL)

FUEL TYPE	UNITS	MAXIMUM DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)
Natural Gas/Propane	MMBtu	14.46	

FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)

FUEL TYPE	BTU/UNIT	UNITS	SULFUR CONTENT (% BY WEIGHT)
Natural Gas	1020	Btu/scf	
Propane	97500	Btu/gal	

MANUFACTURER'S SPECIFIC EMISSION FACTORS (IF AVAILABLE)

POLLUTANT	NOX	CO	PM	PM10	VOC	OTHER
EMISSION FACTOR LB/UNIT	1.0	0.7			0.7	
UNIT	g/hp-hr	g/hp-hr			g/hp-hr	

DESCRIBE METHODS TO MINIMIZE VISIBLE EMISSIONS DURING IDLING, OR LOW LOAD OPERATIONS:

COMMENTS:

Attach Additional Sheets As Necessary

FORM C3

CONTROL DEVICE (THERMAL OR CATALYTIC)

REVISED 09/22/16

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

C3

REQUIRED BY 15A NCAC 2Q .0112, THIS FORM MUST BE SEALED BY A PROFESSIONAL ENGINEER (P.E.) LICENSED IN NORTH CAROLINA

CONTROL DEVICE ID NO: CD-PGEN2	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): ES-PGEN2
EMISSION POINT (STACK) ID NO(S): PGEN2	POSITION IN SERIES OF CONTROLS NO. _____ OF _____ UNITS

MANUFACTURER: Miratech	MODEL NO: IQ2-28-14-HSG-0 (housing); MECB-OX-RB2894-2675-0000-29
-------------------------------	---

OPERATING SCENARIO:	
_____ OF _____	

TYP ☐ AFTERBURNER ☐ REGENERATIVE THERMAL OXIDAT ☐ RECUPERATIVE THERMAL OXIDAT ☒ CATALYTIC OXIDAT

EXPECTED LIFE OF CATALYST (YRS): **3** METHOD OF DETECTING WHEN CATALYST NEEDS REPLACEMENT: **Monitor**

CATALYST MASKING AGENT IN AIR ☐ HALOGEN ☐ SILICONE ☐ PHOSPHOROUS COMPOUND ☐ HEAVY METAL
☒ SULFUR COMPOUND ☐ OTHER (SPECIFY) _____ ☐ NONE

TYPE OF CATALYST: **Platinum/Rhodium** CATALYST VOL (FT³): **TBD** VELOCITY THROUGH CATALYST (FPS):

SCFM THROUGH CATALYST:

DESCRIBE CONTROL SYSTEM, INCLUDING RELATION TO OTHER CONTROL DEVICES AND SOURCES, AND ATTACH DIAGRAM OF SYSTEM:

POLLUTANT(S) COLLECTED:	CO			
BEFORE CONTROL EMISSION RATE (LB/HR):	9.55			
CAPTURE EFFICIENCY:	%	%	%	%
CONTROL DEVICE EFFICIENCY:	%	%	%	%
CORRESPONDING OVERALL EFFICIENCY:	66.7 %	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL AFTER CONTROL EMISSION RATE (LB/HR):	3.18			

PRESSURE DROP (IN. I MIN MAX 5.0	OUTLET TEMPERATURE (°F): MIN 1350 MAX
---	--

INLET TEMPERATURE: 550 MIN 1250 MAX	RESIDENCE TIME (SECONDS):
---	---------------------------

INLET AIR FLOW RATE (ACFM): (SCFM): 4162	COMBUSTION TEMPERATURE (°F):
---	------------------------------

COMBUSTION CHAMBER VOLUME (FT ³):	INLET MOISTURE CONTENT (%): 11
---	---------------------------------------

% EXCESS AIR:	CONCENTRATION (ppmv) _____ INLET _____ OUTLET
---------------	---

AUXILIARY FUEL USED: NA	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR):
--------------------------------	---

DESCRIBE MAINTENANCE PROCEDURES:

DESCRIBE ANY AUXILIARY MATERIALS INTRODUCED INTO THE CONTROL SYSTEM:

COMMENTS:

Attach Additional Sheets As Necessary

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

EMISSION POINT (STACK) ID NO(S): **PGEN3**

1721 hp Natural Gas/Propane Power Generator equipped with catalytic oxidation

☐ Other (Form B9)

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB		25	MAR-MAY		25	JUN-AUG		25	SEP-NOV		25
---	--	----	---------	--	----	---------	--	----	---------	--	----

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE									
---	--	--	--	--	--	--	--	--	--

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

Attach Additional Sheets As Necessary

FORM B2

EMISSION SOURCE (INTERNAL COMBUSTION ENGINES/TURBINES/GENERATORS)

REVISED 09/22/16

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

B2

EMISSION SOURCE DESCRIPTION: 1721 hp Natural Gas/Propane Generator with catalytic oxidation

EMISSION SOURCE ID NO: ES-PGEN3

CONTROL DEVICE ID NO(S): CD-PGEN3

OPERATING SCENARIO: _____ OF _____

EMISSION POINT (STACK) ID NO(S): PGEN3

ENGINE SERVICE ☐ EMERGENCY ☐ SPACE HEAT ☒ ELECTRICAL GENERATION

(CHECK ALL THAT APPLY) ☐ PEAK SHAVER ☐ OTHER (DESCRIBE): _____

GENERATOR OUTPUT (KW): _____

ANTICIPATED ACTUAL HOURS OF OPERATION (HRS/YR): 8760

ENGINE OUTPUT (HP): 2065

TYPE ICE: ☐ GASOLINE ENGINE ☐ DIESEL ENGINE UP TO 600 HP ☐ DIESEL ENGINE GREATER THAN 600 HP ☒ DUAL FUEL ENGINE
☐ OTHER (DESCRIBE): _____ (complete below)

ENGINE TYPE ☐ RICH BURN ☒ LEAN BURN

EMISSION REDUCTION MODIFICATION ☐ INJECTION TIMING RETARD ☐ PREIGNITION CHAMBER COMBUSTION ☐ OTHER _____

OR ☐ STATIONARY GAS TURBINE (complete below) ☐ NATURAL GAS PIPELINE COMPRESSOR OR TURBINE (complete below)

FUEL ☐ NATURAL GAS ☐ OIL

☐ OTHER (DESCRIBE): _____

CYCLE: ☐ COGENERATION ☐ SIMPLE

☐ REGENERATIVE ☐ COMBINED

CONTROLS: ☐ WATER-STEAM INJECTION

☐ UNCONTROLLED ☐ LEAN-PREMIX

☐ OTHER (SPECIFY): _____

ENGINE TYPE ☐ 2-CYCLE LEAN BURN ☐ 4-CYCLE LEAN ☐ TURBINE

☐ 4-CYCLE RICH BURN ☐ OTHER (DESCRIBE): _____

CONTROLS: ☐ COMBUSTION MODIFICATIONS (DESCRIBE): _____

☐ NONSELECTIVE CATALYTIC REDUCTION ☐ SELECTIVE CATALYTIC REDUCTION

☐ CLEAN BURN AND PRECOMBUSTION CONTROL ☐ UNCONTROLLED

FUEL USAGE (INCLUDE STARTUP/BACKUP FUEL)

FUEL TYPE	UNITS	MAXIMUM DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)
Natural Gas/Propane	MMBtu	12.05	

FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)

FUEL TYPE	BTU/UNIT	UNITS	SULFUR CONTENT (% BY WEIGHT)
Natural Gas	1020	Btu/scf	
Propane	97500	Btu/gal	

MANUFACTURER'S SPECIFIC EMISSION FACTORS (IF AVAILABLE)

POLLUTANT	NOX	CO	PM	PM10	VOC	OTHER
EMISSION FACTOR LB/UNIT	1.0	0.7			0.7	
UNIT	g/hp-hr	g/hp-hr			g/hp-hr	

DESCRIBE METHODS TO MINIMIZE VISIBLE EMISSIONS DURING IDLING, OR LOW LOAD OPERATIONS:

COMMENTS:

Attach Additional Sheets As Necessary

FORM C3

CONTROL DEVICE (THERMAL OR CATALYTIC)

REVISED 09/22/16

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

C3

EQUIRED BY 15A NCAC 2Q .0112, THIS FORM MUST BE SEALED BY A PROFESSIONAL ENGINEER (P.E.) LICENSED IN NORTH CAROLINA

CONTROL DEVICE ID NO: CD-PGEN2	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): ES-PGEN2
EMISSION POINT (STACK) ID NO(S): PGEN2	POSITION IN SERIES OF CONTROLS NO. _____ OF _____ UNITS

MANUFACTURER: Miratech	MODEL NO: IQ2-28-14-HSG-0 (housing); MECB-OX-RB2894-2675-0000-291 (e
OPERATING SCENARIO:	

TYPE ☐ AFTERBURNER ☐ REGENERATIVE THERMAL OXIDAT ☐ RECUPERATIVE THERMAL OXIDAT ☒ CATALYTIC OXIDATION	
---	--

EXPECTED LIFE OF CATALYST (YRS): 3	METHOD OF DETECTING WHEN CATALYST NEEDS REPLACMENT: Monitor
---	--

CATALYST MASKING AGENT IN AIR ☐ HALOGEN ☐ SILICONE ☐ PHOSPHOROUS COMPOUND ☐ HEAVY METAL	
☒ SULFUR COMPOUND ☐ OTHER (SPECIFY) _____ ☐ NONE	

TYPE OF CATALYST: Platinum/Rho	CATALYST VOL (FT ³): TBD	VELOCITY THROUGH CATALYST (FPS):
---------------------------------------	---	----------------------------------

SCFM THROUGH CATALYST:

DESCRIBE CONTROL SYSTEM, INCLUDING RELATION TO OTHER CONTROL DEVICES AND SOURCES, AND ATTACH DIAGRAM OF SYSTEM:

POLLUTANT(S) COLLECTED:	CO			
BEFORE CONTROL EMISSION RATE (LB/HR):	9.55			
CAPTURE EFFICIENCY:		%	%	%
CONTROL DEVICE EFFICIENCY:		%	%	%
CORRESPONDING OVERALL EFFICIENCY:	66.7	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL AFTER CONTROL EMISSION RATE (LB/HR)	3.18			

PRESSURE DROP (IN. I MIN MAX 5.0	OUTLET TEMPERATURE (°F): MIN 1350 MAX
---	--

INLET TEMPERATURE: 550 MIN 1250 MAX	RESIDENCE TIME (SECONDS):
---	---------------------------

INLET AIR FLOW RATE (ACFM): (SCFM): 4162	COMBUSTION TEMPERATURE (°F):
---	------------------------------

COMBUSTION CHAMBER VOLUME (FT ³):	INLET MOISTURE CONTENT (%): 11
---	---------------------------------------

% EXCESS AIR:	CONCENTRATION (ppmv) _____ INLET _____ OUTLET
---------------	---

AUXILIARY FUEL USED: NA	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR):
--------------------------------	---

DESCRIBE MAINTENANCE PROCEDURES:

DESCRIBE ANY AUXILIARY MATERIALS INTRODUCED INTO THE CONTROL SYSTEM:

COMMENTS:

Attach Additional Sheets As Necessary

APPENDIX A. EMISSION SUMMARIES

Emission Calculation Summary - PM, PM₁₀, PM_{2.5}

Prospect Hill Quarry & Distribution Center
Carolina Sunrock

ID No.	Emission Source Description	PM Emissions			Potential Emissions			Notes 1	Notes 2
		lb/hr	tpy	PM ₁₀ Emissions lb/hr	PM ₁₀ Emissions tpy	PM _{2.5} Emissions lb/hr	PM _{2.5} Emissions tpy		
Asphalt Plant	CD1 Revised	8.2500	9.9000	5.7500	6.9000	5.425	5.425	From 11.1-4 PM ₁₀ filterable is .0042 lb/ton and PM _{2.5} filterable is .0029 lb/ton; therefore PM _{2.5} EF= PM ₁₀ tot - PM ₁₀ condensable + PM _{2.5} condensable = 0.023 - .0042 - .0029 = 0.0217	Based on DEQ HMA Plant Spreadsheet Calculator, except asphalt heaters are calculated separately in the DEQ Fuel Oil Spreadsheet Calculator due to use of USD
	ES-ACH1	0.0283	0.1129	0.0283	0.1239	0.0086	0.0375	Based on worst case fuel No. 2 fuel oil at 0.0015% sulfur USD fuel	Based on DEQ Fuel Oil Spreadsheet Calculator
	ES-ACH2	0.0259	0.1136	0.0259	0.1136	0.0079	0.0344	Based on worst case fuel No. 2 fuel oil at 0.0015% sulfur USD fuel	Based on DEQ Fuel Oil Spreadsheet Calculator
	HMASILO1	0.0293	0.0352	0.0293	0.0352	0.0210	0.0252	Set PM ₁₀ =PM _{2.5} ; PM _{2.5} calculated as an average of the Total PM and organic PM EF's in the DEQ spreadsheet	tpy based on proposed permit limit; calculated as: lb/hr * 600,000 tpy / 250 tons/hr / 2000 lb/ton
	HMASILO2	0.0293	0.0352	0.0293	0.0352	0.0210	0.0252	Set PM ₁₀ =PM _{2.5} ; PM _{2.5} calculated as an average of the Total PM and organic PM EF's in the DEQ spreadsheet	tpy based on proposed permit limit; calculated as: lb/hr * 600,000 tpy / 250 tons/hr / 2000 lb/ton
	HMASILO3	0.0293	0.0352	0.0293	0.0352	0.0210	0.0252	Set PM ₁₀ =PM _{2.5} ; PM _{2.5} calculated as an average of the Total PM and organic PM EF's in the DEQ spreadsheet	tpy based on proposed permit limit; calculated as: lb/hr * 600,000 tpy / 250 tons/hr / 2000 lb/ton
	HMASILO4	0.0293	0.0352	0.0293	0.0352	0.0210	0.0252	Set PM ₁₀ =PM _{2.5} ; PM _{2.5} calculated as an average of the Total PM and organic PM EF's in the DEQ spreadsheet	tpy based on proposed permit limit; calculated as: lb/hr * 600,000 tpy / 250 tons/hr / 2000 lb/ton
	HMASILO5	0.0293	0.0352	0.0293	0.0352	0.0210	0.0252	Set PM ₁₀ =PM _{2.5} ; PM _{2.5} calculated as an average of the Total PM and organic PM EF's in the DEQ spreadsheet	tpy based on proposed permit limit; calculated as: lb/hr * 600,000 tpy / 250 tons/hr / 2000 lb/ton
	Silo Filling Subtotal	0.1465	0.1758	0.1465	0.1758	0.1050	0.1260	Set PM ₁₀ =PM _{2.5} ; PM _{2.5} calculated as an average of the Total PM and organic PM EF's in the DEQ spreadsheet	tpy based on proposed permit limit; calculated as: lb/hr * 600,000 tpy / 250 tons/hr / 2000 lb/ton
	HMALO1	0.0261	0.0313	0.0261	0.0313	0.0216	0.0259	Set PM ₁₀ =PM _{2.5} ; PM _{2.5} calculated as an average of the Total PM and organic PM EF's in the DEQ spreadsheet	tpy based on proposed permit limit; calculated as: lb/hr * 600,000 tpy / 250 tons/hr / 2000 lb/ton
RAP	HMALO2	0.0261	0.0313	0.0261	0.0313	0.0216	0.0259	Set PM ₁₀ =PM _{2.5} ; PM _{2.5} calculated as an average of the Total PM and organic PM EF's in the DEQ spreadsheet	tpy based on proposed permit limit; calculated as: lb/hr * 600,000 tpy / 250 tons/hr / 2000 lb/ton
	HMALO3	0.0261	0.0313	0.0261	0.0313	0.0216	0.0259	Set PM ₁₀ =PM _{2.5} ; PM _{2.5} calculated as an average of the Total PM and organic PM EF's in the DEQ spreadsheet	tpy based on proposed permit limit; calculated as: lb/hr * 600,000 tpy / 250 tons/hr / 2000 lb/ton
	HMALO4	0.0261	0.0313	0.0261	0.0313	0.0216	0.0259	Set PM ₁₀ =PM _{2.5} ; PM _{2.5} calculated as an average of the Total PM and organic PM EF's in the DEQ spreadsheet	tpy based on proposed permit limit; calculated as: lb/hr * 600,000 tpy / 250 tons/hr / 2000 lb/ton
	HMALO5	0.0261	0.0313	0.0261	0.0313	0.0216	0.0259	Set PM ₁₀ =PM _{2.5} ; PM _{2.5} calculated as an average of the Total PM and organic PM EF's in the DEQ spreadsheet	tpy based on proposed permit limit; calculated as: lb/hr * 600,000 tpy / 250 tons/hr / 2000 lb/ton
	Loadout Subtotal	0.1305	0.1566	0.1305	0.1566	0.1079	0.1294	Set PM ₁₀ =PM _{2.5} ; PM _{2.5} calculated as an average of the Total PM and organic PM EF's in the DEQ spreadsheet	tpy based on proposed permit limit; calculated as: lb/hr * 600,000 tpy / 250 tons/hr / 2000 lb/ton
	RAP-CR1	0.3510	0.6480	0.1560	0.2880	0.0236	0.0436	Used TCEQ's Rock Crushing Facility Emission Rate Calculation Worksheet (Rock Crushing Worksheet Version No.: Version 1.0 APD6490V1 Last Revision Date: February 19, 2019) for PM _{2.5} emission estimates. Where PM _{2.5} emission factors (EF) are not provided in AP-42 Ch. 11.19.2-2, a ratio of aerodynamic particle size multipliers from AP-42 Ch. 13.2.4 was used to estimate PM _{2.5} emission factors. PM _{2.5} EF = (PM ₁₀ EF/0.35)*0.053	RAP is limited to 40% of the asphalt plant production. Tpy calculated as: lb/hr * 240,000 tpy / 65 tons/hr / 2000 lb/ton
	RAP-C1	0.1950	0.3600	0.0715	0.1320	0.0140	0.0612	Used drop point PM _{2.5} fraction from AP-42 13.2.4: PM _{2.5} fraction of PM = 0.053 / 0.74 = 0.0716	RAP is limited to 40% of the asphalt plant production. Tpy calculated as: lb/hr * 240,000 tpy / 65 tons/hr / 2000 lb/ton
	RAP-C2	0.1950	0.3600	0.0715	0.1320	0.0140	0.0612	Used drop point PM _{2.5} fraction from AP-42 13.2.4: PM _{2.5} fraction of PM = 0.053 / 0.74 = 0.0716	RAP is limited to 40% of the asphalt plant production. Tpy calculated as: lb/hr * 240,000 tpy / 65 tons/hr / 2000 lb/ton
	RAP-C3	0.1950	0.3600	0.0715	0.1320	0.0140	0.0612	Used drop point PM _{2.5} fraction from AP-42 13.2.4: PM _{2.5} fraction of PM = 0.053 / 0.74 = 0.0716	RAP is limited to 40% of the asphalt plant production. Tpy calculated as: lb/hr * 240,000 tpy / 65 tons/hr / 2000 lb/ton
	RAP-C4	0.1950	0.3600	0.0715	0.1320	0.0140	0.0612	Used drop point PM _{2.5} fraction from AP-42 13.2.4: PM _{2.5} fraction of PM = 0.053 / 0.74 = 0.0716	RAP is limited to 40% of the asphalt plant production. Tpy calculated as: lb/hr * 240,000 tpy / 65 tons/hr / 2000 lb/ton
RAP	RAP-C5	0.1950	0.3600	0.0715	0.1320	0.0140	0.0612	Used drop point PM _{2.5} fraction from AP-42 13.2.4: PM _{2.5} fraction of PM = 0.053 / 0.74 = 0.0716	RAP is limited to 40% of the asphalt plant production. Tpy calculated as: lb/hr * 240,000 tpy / 65 tons/hr / 2000 lb/ton
	RAP-C6	0.1950	0.3600	0.0715	0.1320	0.0140	0.0612	Used drop point PM _{2.5} fraction from AP-42 13.2.4: PM _{2.5} fraction of PM = 0.053 / 0.74 = 0.0716	RAP is limited to 40% of the asphalt plant production. Tpy calculated as: lb/hr * 240,000 tpy / 65 tons/hr / 2000 lb/ton
	6 Conveyors (total)	1.1700	2.1600	0.4290	0.7920	0.0838	0.1547	Used drop point PM _{2.5} fraction from AP-42 13.2.4: PM _{2.5} fraction of PM = 0.053 / 0.74 = 0.0716	RAP is limited to 40% of the asphalt plant production. Tpy calculated as: lb/hr * 240,000 tpy / 65 tons/hr / 2000 lb/ton
	RAP-BF1	Emissions accounted for under other RAP sources; no bin/freeder listed in RAP equipment in DAQ spreadsheet							

RAP-SCN	8' x 20' Double Deck Screen	1.6250	3.0000	0.5655	1.0440	0.0856	0.1581	Used TCEQ's Rock Crushing Facility Emission Rate Calculation Worksheet (Rock Crushing Worksheet Version No. - Version 1.0 APD656490V1 Last Revision Date: February 19, 2019) for PM ₁₀ emission estimates. Where PM ₁₀ emission factors (EF) are not provided in AP-42 Ch. 11.19 2-2, a ratio of aerodynamic particle size multipliers from AP-42 Ch. 13.2.4 was used to estimate PM ₁₀ emission factors. PM ₁₀ EF = (PM ₁₀ EF/0.35) ^{0.053} RAP is limited to 40% of the asphalt plant production. Top calculated as: lb/hr * 240,000 tpy / 65 tons/hr / 2000 lb/ton
SYP1	RAP Subtotal	3.1460	5.0000	1.1505	2.1240	0.1931	0.3564	
SYP1	Stockyard Piles 1 - Truck Unloading	0.1117	0.1341	0.0528	0.0634	0.0080	0.0096	
	Stockyard Piles 1 - Wind Erosion	0.0071	0.0309	0.0035	0.0154	0.0005	0.0023	
	SYP1 Subtotal	0.1188	0.1650	0.0564	0.0789	0.0085	0.0119	
RMC-CD2	Concrete Plant Baghouse (Cement Storage Silo, Fly Ash Silo, Truck Loadout Point, Cement/Fly Ash Weigh Batchers RMC-L01, RMC-Silo1&2)							Concrete Plant
RMC-CD2	Revised CD2 total without sand/agg conveyors	1.1069	4.8483	0.4281	1.8752	0.4281	1.8752	
RM-WB2	Sand Agg Conveyor Drop Points (refined)	0.3756	1.6453	0.1777	0.7782	0.0369	0.1178	
SYP2	Aggregate Weigh Batchers (50 ton max capacity) (weigh hopper in DEQ SS)	0.9850	4.3141	0.5746	2.5166	0.0705	0.3090	
SYP2	Stockyard Piles 2 - Truck Unloading	0.0939	0.4113	0.0444	0.1945	0.0067	0.0295	
	Stockyard Piles 2 - Wind Erosion	0.0071	0.0309	0.0035	0.0154	0.0005	0.0023	
	SYP2 Subtotal	0.1010	0.4422	0.0479	0.2100	0.0073	0.0318	
ES-PGEN1	Power Engine 1	0.1444	0.6323	0.1444	0.6323	0.1444	0.6323	
ES-PGEN2	Power Engine 2	0.1444	0.6323	0.1444	0.6323	0.1444	0.6323	
ES-PGEN3	Power Engine 3	0.1203	0.5270	0.1203	0.5270	0.1203	0.5270	
GEN1	Quarry Generator	0.0115	0.0504	0.0115	0.0504	0.0115	0.0504	
GEN1A	Quarry Generator	0.0115	0.0504	0.0115	0.0504	0.0115	0.0504	
GEN2	Quarry Generator	0.0041	0.0180	0.0041	0.0180	0.0041	0.0180	
GEN3	Quarry Generator	0.0145	0.0633	0.0145	0.0633	0.0145	0.0633	
GEN4	Quarry Generator	0.0041	0.0180	0.0041	0.0180	0.0041	0.0180	
GEN5	Quarry Generator	0.0148	0.0647	0.0148	0.0647	0.0148	0.0647	
GEN7	Quarry Generator	0.0115	0.0504	0.0115	0.0504	0.0115	0.0504	
ES-Conveying	Conveyors listed on DEQ Quarry Spreadsheet	2.7175	0.8929	0.2523	11.9028	3.9109	1.1053	
ES-Crusher	Crushers listed on DEQ Quarry Spreadsheet	3.0000	1.3200	0.2140	13.1400	5.7816	0.9373	
ES-Screening	Screens listed on DEQ Quarry Spreadsheet	6.5010	2.1867	0.1478	28.4744	9.5777	0.6471	
QSP1	Quarry Stockpile 1	0.1764	0.7726	0.0841	0.3682	0.0127	0.0557	
QSP2	Quarry Stockpile 2	0.0441	0.1932	0.0210	0.0921	0.0032	0.0139	
QSP3	Quarry Stockpile 3	0.0387	0.1694	0.0183	0.0802	0.0028	0.0121	
QSP4	Quarry Stockpile 4	0.0387	0.1694	0.0183	0.0802	0.0028	0.0121	
QSP5	Quarry Stockpile 5	0.0387	0.1694	0.0183	0.0802	0.0028	0.0121	
QSP6	Quarry Stockpile 6	0.0387	0.1694	0.0183	0.0802	0.0028	0.0121	
QSP7	Quarry Stockpile 7	0.0387	0.1694	0.0183	0.0802	0.0028	0.0121	
ROAD-P1	Asphalt/Concrete Plant Paved Road	0.5209	1.4918	0.1042	0.2394	0.0256	0.0722	
ROAD-P2	Quarry/Stockpile Yard Paved Road	0.3806	1.0898	0.0761	0.2180	0.0187	0.0355	
ROAD-U1	Asphalt/Concrete Plant Unpaved Rd	0.6983	1.4623	0.1780	0.3727	0.0178	0.0373	
ROAD-U2	Road to Ponds B & C (Unpaved)	0.0049	0.0102	0.0012	0.0036	0.0001	0.0003	
ROAD-U3	Quarry/Stockpile Yard (Unpaved)	7.4556	15.6138	1.9002	3.9794	0.1900	0.3979	
ROAD-U4	From Ponds to ODA 2 (Unpaved)	0.0958	0.2006	0.0244	0.0511	0.0024	0.0051	
ROAD-U5	From Ponds to ODA 3 (Unpaved)	0.1195	0.2502	0.0305	0.0638	0.0030	0.0064	
ROAD-U6	From Ponds to ODA 4 (Unpaved)	0.2853	0.5975	0.0727	0.1523	0.0073	0.0152	
ROAD-U7	Pit A to Crusher (Unpaved-Future)	6.6254	13.8752	1.6886	3.5363	0.1689	0.3536	
ROAD-U8	Pit B to Crusher (Unpaved-Future)	8.6526	18.1206	2.2052	4.6183	0.2205	0.4618	
ROAD-USA	Road to Pit B Access (Unpaved-Future)	0.1694	0.3343	0.0432	0.0852	0.0043	0.0085	
TOTAL		52.54	89.06	16.13	84.92	26.83	14.79	

Emission Calculation Summary - Facility Wide NO_x, SO₂, CO, and VOC

Carolina Sunrock
Prospect Hill Quarry & Distribution Center

ID No.	Emission Source Description	Potential Emissions				Potential Uncontrolled Emissions				Potential Controlled Emissions				Notes
		NOx lb/hr	SO ₂ lb/hr	CO lb/hr	VOC lb/hr	NOx tpy	SO ₂ tpy	CO tpy	VOC tpy	NOx tpy	SO ₂ tpy	CO tpy	VOC tpy	
Asphalt Plant	CD1 (HMA Driver/Drum Emissions)	13.75	20.93	32.50	12.03	60.23	91.69	142.35	35.04	16.50	25.12	39.00	9.60	From DEQ spreadsheet HMA plant
	ES-ACH1 Asphalt Cement Heater (1.2 MM8bu/hr)	0.1714	0.00183	0.0429	0.0075	0.7509	0.0080	0.1877	0.0075	0.7509	0.0080	0.1877	0.0075	Based on 15 ppm sulfur No. 2 fuel oil
	ES-ACH2 Asphalt Cement Heater (1.1 MM8bu/hr)	0.1571	0.00167	0.0393	0.0016	0.6883	0.0073	0.1721	0.0059	0.6883	0.0073	0.1721	0.0059	Based on 15 ppm sulfur No. 2 fuel oil
	ES-PGEN1 Power Engine 1	2.7291	0.0085	3.1839	3.1839	11.9533	0.0372	13.9456	13.9456	11.9533	0.0372	13.9456	13.9456	Note only 2 of 3 engines operate at the same time. Maximum emissions occur with Engines 1 & 2 operating.
Quarry	ES-PGEN2 Power Engine 2	2.7291	0.0085	3.1839	3.1839	11.9533	0.0372	13.9456	13.9456	11.9533	0.0372	13.9456	13.9456	
	ES-PGEN3 Quarry Generator	0.2300	0.0042	2.012	0.109	1.007	0.01860	8.81	0.48	0.546	0.010	4.774	0.259	
	GEN1A Quarry Generator	0.2300	0.0042	2.012	0.109	1.007	0.01860	8.81	0.48	0.546	0.010	4.774	0.259	
	GEN2 Quarry Generator	0.0821	0.0015	1.027	0.039	0.360	0.00664	4.50	0.17	0.195	0.004	2.436	0.093	Facility requests quarry operations be capped at 4,745 lbs/yr; therefore controlled emissions reflect this limit (See permit application Section 2.3).
	GEN3 Quarry Generator	0.2891	0.0053	2.529	0.137	1.266	0.02339	11.08	0.60	0.686	0.013	6.001	0.326	
	GEN4 Quarry Generator	0.0821	0.0015	1.027	0.039	0.360	0.00664	4.50	0.17	0.195	0.004	2.436	0.093	
	GEN5 Quarry Generator	0.2957	0.0055	2.587	0.140	1.295	0.02392	11.33	0.62	0.701	0.013	6.138	0.333	
	GEN7 Quarry Generator	0.2300	0.0042	2.012	0.109	1.007	0.01860	8.81	0.48	0.546	0.010	4.774	0.259	
	TOTAL	20.98	20.98	52.16	19.09	103.50	91.93	240.06	77.56	45.26	25.27	98.58	39.13	

Emission Source Description	Pollutant	TAP/HAP	CAS Number	POTENTIAL EMISSIONS					
				(BEFORE CONTROLS / LIMITS)			(AFTER CONTROLS / LIMITS)		
				lb/hr	lb/yr	tpy	lb/hr	lb/yr	tpy
Asphalt Plant	Acetaldehyde	TH	75070	0.325	2847.00	1.4235E+00	0.325	780	3.9000E-01
	Acrolein	TH	107028	0.007	56.94	2.8470E-02	0.007	15.6	7.8000E-03
	Antimony Unlisted Compounds	H	SBC-other	0.000	0.39	1.9710E-04	0.000	0.108	5.4000E-05
	Arsenic Unlisted Compounds	TH	ASC-other	0.000	1.23	6.1320E-04	0.000	0.336	1.6800E-04
	Benzene	TH	71432	0.099	867.38	4.3369E-01	0.099	237.6374	1.1882E-01
	Benzo(a)pyrene	T	50328	0.000	0.04	1.9317E-05	0.000	0.0106	5.2925E-06
	Beryllium Metal (unreacted)	TH	7440417	0.000	0.00	0.0000E+00	0.000	0	0.0000E+00
	Cadium Metal (elemental unreacted)	TH	7440439	0.000	0.90	4.4895E-04	0.000	0.246	1.2300E-04
	Carbon disulfide	TH	75150	0.001	5.45	2.7271E-03	0.001	1.49432	7.4716E-04
	Chromium unlisted cmpds (add w/chrom acid to get CRC)	H	CRC-other	0.001	11.06	5.5298E-03	0.001	3.03	1.5150E-03
	Chromic Acid (VI)	TH	7738945	0.000	0.99	4.9275E-04	0.000	0.27	1.3500E-04
	Cobalt Unlisted Compounds	H	COC-other	0.000	0.06	2.8470E-05	0.000	0.0156	7.8000E-06
	Cumene	H	98828	0.001	10.02	5.0095E-03	0.001	2.745	1.3725E-03
	Ethyl benzene	H	100414	0.064	561.24	2.8062E-01	0.064	153.766	7.6883E-02
	Ethyl chloride (chloroethane)	H	75003	0.000	0.02	9.5635E-06	0.000	0.005	2.6201E-06
	Formaldehyde	TH	50000	0.797	6981.17	3.4906E+00	0.797	1912.649	9.5632E-01
	Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8	T	57653857	0.000	0.00	1.4235E-09	0.000	0.000001	3.9000E-10
	Hexane, n-	TH	110543	0.239	2095.50	1.0478E+00	0.239	574.110129	2.8706E-01
	Hydrogen Chloride (hydrochloric acid)	TH	7647010	0.053	459.90	2.2995E-01	0.053	126	6.3000E-02
	Hydrogen Sulfide	T	7783064	0.014	119.84	5.9918E-02	0.014	32.832	1.6416E-02
	Lead Unlisted Compounds	H	PBC-other	0.004	32.85	1.6425E-02	0.004	9	4.5000E-03
	Manganese Unlisted Compounds	T	MNC-other	0.002	16.86	8.4315E-03	0.002	4.62	2.3100E-03
	Mercury, vapor	TH	7439976	0.001	5.69	2.8470E-03	0.001	1.56	7.8000E-04
	Methyl bromide	H	74839	0.000	2.18	1.0911E-03	0.000	0.597844	2.9892E-04
	Methyl chloride	H	74873	0.000	1.37	6.8311E-04	0.000	0.374305	1.8715E-04
	Methyl chloroform	TH	71556	0.012	105.12	5.2560E-02	0.012	28.8	1.4400E-02
	Methyl ethyl ketone	TH	78933	0.007	58.67	2.9336E-02	0.007	16.074415	8.0372E-03
	Methylene chloride	TH	75092	0.000	0.07	3.6030E-05	0.000	0.019742	9.8712E-06
	Napthalene	H	91203	0.165	1442.95	7.2148E-01	0.165	395.329499	1.9766E-01
	Nickle Metal	TH	7440020	0.016	137.97	6.8985E-02	0.016	37.8	1.8900E-02
	Perchloroethylene (tetrachloroethylene)	TH	127184	0.000	0.7013	3.5066E-04	0.000	0.192143	9.6072E-05
	Phenol	TH	108952	0.001	8.8105	4.4052E-03	0.001	2.413834	1.2069E-03
	Phosphorus Metal, Yellow or White	H	7723140	0.007	61.3200	3.0660E-02	0.007	16.8	8.4000E-03
	Polycyclic Organic Matter	H	POM	0.220	1927.20	9.6360E-01	0.220	528.00	2.6400E-01
	Propionaldehyde	H	123386	0.033	284.70	1.4235E-01	0.033	78.00	3.9000E-02
	Quinone	H	106514	0.040	350.40	1.7520E-01	0.040	96.00	4.8000E-02
	Selenium Compounds	H	SEC	0.000	0.77	3.8325E-04	0.000	0.21	1.0500E-04
	Styrene	TH	100425	0.000	2.11	1.0530E-03	0.000	0.58	2.8851E-04
	Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	TH	1746016	0.000	0.00	2.2995E-10	0.000	0.00	6.3000E-11
	Toluene	TH	108883	0.729	6386.67	3.1933E+00	0.729	1749.77	8.7489E-01
	Trichloroethylene	TH	79016	0.000	0.00	0.0000E+00	0.000	0.00	0.0000E+00
	Trichlorofluoromethane (CFC 111)	T	75694	0.000	0.12	5.9203E-05	0.000	0.03	1.6220E-05
	Trimethylpentane, 2,2,4-	H	540841	0.010	87.85	4.3923E-02	0.010	24.07	1.2034E-02
	Xylene	TH	1330207	0.060	528.72	2.6436E-01	0.060	144.86	7.2428E-02
	Xylene, o-	H	95476	0.003	22.50	1.1250E-02	0.003	6.16	3.0821E-03
ES-ACH1 Asphalt Heater	Antimony Unlisted Compounds	H	SBC-Other	0	0	0.0000E+00	0	0	0.0000E+00
	Arsenic Unlisted Compounds	TH	ASC-Other	0.0000048	0.042048	2.1024E-05	0.0000048	0.042048	2.1024E-05
	Benzene	TH	71432	2.35714E-05	0.206485714	1.0324E-04	2.35714E-05	0.206486	1.0324E-04
	Beryllium Metal (unreacted)	TH	7440417	0.0000036	0.031536	1.5768E-05	0.0000036	0.031536	1.5768E-05
	Cadium Metal (elemental unreacted)	TH	7440439	0.0000036	0.031536	1.5768E-05	0.0000036	0.031536	1.5768E-05
	Chromic Acid (VI)	TH	7738945	0.0000036	0.031536	1.5768E-05	0.0000036	0.031536	1.5768E-05
	Cobalt Unlisted Compounds	H	COC-Other	0	0	0.0000E+00	0	0	0.0000E+00
	Ethylbenzene	H	100414	7.00534E-06	0.061366782	3.0683E-05	7.00534E-06	0.061367	3.0683E-05
	Fluorides (sum fluoride compounds)	T	16984488	0.000319714	2.800697143	1.4003E-03	0.000319714	2.800697	1.4003E-03
	Formaldehyde	TH	50000	0.000411429	3.604114286	1.8021E-03	0.000411429	3.604114	1.8021E-03
	Lead Unlisted Compounds	H	PBC-Other	0.0000108	0.094608	4.7304E-05	0.0000108	0.094608	4.7304E-05
	Manganese Unlisted Compounds	TH	MNC-Other	0.0000072	0.063072	3.1536E-05	0.0000072	0.063072	3.1536E-05
	Mercury, vapor	TH	7439976	0.0000036	0.031536	1.5768E-05	0.0000036	0.031536	1.5768E-05
	Methyl chloroform	TH	71566	2.02286E-06	0.017720229	8.8601E-06	2.02286E-06	0.017720	8.8601E-06
	Napthalene	H	91203	2.85429E-06	0.025003543	1.2502E-05	2.85429E-06	0.025004	1.2502E-05
	Nickle Metal	TH	7440020	0.0000036	0.031536	1.5768E-05	0.0000036	0.031536	1.5768E-05
	Phosphorus Metal, Yellow or White	H	7723140	0	0	0.0000E+00	0	0	0.0000E+00
	Polycyclic Organic Matter	H	POM	2.82857E-05	0.247782857	1.2389E-04	2.82857E-05	0.247783	1.2389E-04
	Selenium Compounds	H	SEC	0.000018	0.15768	7.8840E-05	0.000018	0.15768	7.8840E-05
	Toluene	TH	108883	0.000682911	5.982296395	2.9911E-03	0.000682911	5.982296	2.9911E-03
	Xylene	TH	1330207	1.2006E-05	0.10517263	5.2586E-05	1.2006E-05	0.10517263	5.2586E-05

ES-ACH2 Asphalt Heater	Antimony Unlisted Compounds	H	SBC-Other	0	0	0.0000E+00	0	0	0.0000E+00
	Arsenic Unlisted Compounds	TH	ASC-Other	0.0000044	0.038544	1.9272E-05	0.0000044	0.038544	1.9272E-05
	Benzene	TH	71432	2.16071E-05	0.189278571	9.4639E-05	2.16071E-05	0.189279	9.4639E-05
	Beryllium Metal (unreacted)	TH	7440417	0.0000033	0.028908	1.4454E-05	0.0000033	0.028908	1.4454E-05
	Cadium Metal (elemental unreacted)	TH	7440439	0.0000033	0.028908	1.4454E-05	0.0000033	0.028908	1.4454E-05
	Chromic Acid (VI)	TH	7738945	0.0000033	0.028908	1.4454E-05	0.0000033	0.028908	1.4454E-05
	Cobalt Unlisted Compounds	H	COC-Other	0	0	0.0000E+00	0	0	0.0000E+00
	Ethylbenzene	H	100414	6.42156E-06	0.056252884	2.8126E-05	6.42156E-06	0.056253	2.8126E-05
	Fluorides (sum fluoride compounds)	T	16984488	0.000293071	2.567305714	1.2837E-03	0.000293071	2.567306	1.2837E-03
	Formaldehyde	TH	50000	0.000377143	3.303771429	1.6519E-03	0.000377143	3.303771	1.6519E-03
	Lead Unlisted Compounds	H	PBC-Other	0.0000099	0.086724	4.3362E-05	0.0000099	0.086724	4.3362E-05
	Manganese Unlisted Compounds	TH	MNC-Other	0.0000066	0.057816	2.8908E-05	0.0000066	0.057816	2.8908E-05
	Mercury, vapor	TH	7439976	0.0000033	0.028908	1.4454E-05	0.0000033	0.028908	1.4454E-05
	Methyl chloroform	TH	71566	1.85429E-06	0.016243543	8.1218E-06	1.85429E-06	0.016244	8.1218E-06
	Napthalene	H	91203	2.61643E-06	0.022919914	1.1460E-05	2.61643E-06	0.022920	1.1460E-05
	Nickle Metal	TH	7440020	0.0000033	0.028908	1.4454E-05	0.0000033	0.028908	1.4454E-05
	Phosphorus Metal, Yellow or White	H	7723140	0	0	0.0000E+00	0	0	0.0000E+00
	Polycyclic Organic Matter	H	POM	2.59286E-05	0.227134286	1.1357E-04	2.59286E-05	0.227134	1.1357E-04
	Selenium Compounds	H	SEC	0.0000165	0.14454	7.2270E-05	0.0000165	0.14454	7.2270E-05
	Toluene	TH	108883	0.000626001	5.483771696	2.7419E-03	0.000626001	5.483772	2.7419E-03
Xylene	TH	1330207	1.10055E-05	0.096408244	4.8204E-05	1.10055E-05	0.096408	4.8204E-05	
Concrete Batch Plant	Arsenic Unlisted Compounds	TH	ASC-OTHER	2.49E-03	2.18E+01	1.0887E-02	6.59E-05	5.77E-01	2.8843E-04
	Beryllium Metal (unreacted)	TH	7440-41-7	1.00E-05	8.77E-02	4.3841E-05	4.53E-06	3.97E-02	1.9863E-05
	Cadium Metal (elemental unreacted)	TH	7440-43-9	7.69E-06	6.74E-02	3.3677E-05	5.00E-07	4.38E-03	2.1892E-06
	Chromic Acid (VI)	TH	7738-94-5	4.25E-04	3.73E+00	1.8627E-03	1.58E-04	1.39E+00	6.9304E-04
	Lead Unlisted Compounds	H	PBC-OTHER	1.32E-03	1.16E+01	5.7768E-03	5.96E-05	5.22E-01	2.6115E-04
	Manganese Unlisted Compounds	TH	MNC-OTHER	7.67E-03	6.72E+01	3.3613E-02	7.49E-04	6.56E+00	3.2816E-03
	Nickle Metal	TH	7440-02-0	9.19E-04	8.05E+00	4.0247E-03	1.92E-04	1.68E+00	8.4229E-04
	Phosphorus Metal, Yellow or White	H	7223-14-0	1.72E-03	1.51E+01	7.5415E-03	4.71E-04	4.13E+00	2.0642E-03
	Selenium Compounds	H	SEC	9.43E-05	8.26E-01	4.1318E-04	4.68E-06	4.10E-02	2.0515E-05
Quarry Power Generators	Acenaphthene	H		3.61E-05	3.17E-01	1.5828E-04	3.61E-05	3.17E-01	1.5828E-04
	Acenaphthylene	H		1.60E-04	1.40E+00	7.0024E-04	1.60E-04	1.40E+00	7.0024E-04
	Acetaldehyde	TH		2.71E-01	2.37E+03	1.1852E+00	2.71E-01	2.37E+03	1.1852E+00
	Acrolein	TH		1.49E-01	1.30E+03	6.5086E-01	1.49E-01	1.30E+03	6.5086E-01
	Anthracene	H		0.00E+00	0.00E+00	0.0000E+00	0.00E+00	0.00E+00	0.0000E+00
	Benzo(a)anthracene	H		0.00E+00	0.00E+00	0.0000E+00	0.00E+00	0.00E+00	0.0000E+00
	Benzene	TH		1.27E-02	1.11E+02	5.5715E-02	1.27E-02	1.11E+02	5.5715E-02
	Benzo(a)pyrene	TH		0.00E+00	0.00E+00	0.0000E+00	0.00E+00	0.00E+00	0.0000E+00
	Benzo(b)fluoranthene	H		4.80E-06	4.20E-02	2.1020E-05	4.80E-06	4.20E-02	2.1020E-05
	Benzo(k)fluoranthene	H		0.00E+00	0.00E+00	0.0000E+00	0.00E+00	0.00E+00	0.0000E+00
	Benzo(g,h,i)perylene	H		1.20E-05	1.05E-01	5.2423E-05	1.20E-05	1.05E-01	5.2423E-05
	Biphenyl	H		6.13E-03	5.37E+01	2.6845E-02	6.13E-03	5.37E+01	2.6845E-02
	Carbon Tetrachloride	TH		1.06E-03	9.29E+00	4.6472E-03	1.06E-03	9.29E+00	4.6472E-03
	Chlorobenzene	TH		8.79E-04	7.70E+00	3.8494E-03	8.79E-04	7.70E+00	3.8494E-03
	Chloroform	TH		8.24E-04	7.22E+00	3.6088E-03	8.24E-04	7.22E+00	3.6088E-03
	Chrysene	H		2.00E-05	1.76E-01	8.7752E-05	2.00E-05	1.76E-01	8.7752E-05
	Ethylbenzene	H		1.15E-03	1.01E+01	5.0270E-03	1.15E-03	1.01E+01	5.0270E-03
	Ethylene Dibromide	TH		1.28E-03	1.12E+01	5.6095E-03	1.28E-03	1.12E+01	5.6095E-03
	Fluoranthene	H		3.21E-05	2.81E-01	1.4055E-04	3.21E-05	2.81E-01	1.4055E-04
	Fluorene	H		1.64E-04	1.44E+00	7.1797E-04	1.64E-04	1.44E+00	7.1797E-04
	Formaldehyde	TH		1.53E+00	1.34E+04	6.6858E+00	1.53E+00	1.34E+04	6.6858E+00
	Indeno(1,2,3-c,d)pyrene	H		0.00E+00	0.00E+00	0.0000E+00	0.00E+00	0.00E+00	0.0000E+00
	Methanol	H		7.23E-02	6.33E+02	3.1656E-01	7.23E-02	6.33E+02	3.1656E-01
	Methylene Chloride	TH		5.78E-04	5.07E+00	2.5325E-03	5.78E-04	5.07E+00	2.5325E-03
	Hexane, n-	TH		3.21E-02	2.81E+02	1.4055E-01	3.21E-02	2.81E+02	1.4055E-01
	Napthalene	H		2.15E-03	1.88E+01	9.4210E-03	2.15E-03	1.88E+01	9.4210E-03
	Phenanthrene	H		3.01E-04	2.63E+00	1.3169E-03	3.01E-04	2.63E+00	1.3169E-03
	Phenol	TH		6.94E-04	6.08E+00	3.0390E-03	6.94E-04	6.08E+00	3.0390E-03
	Pyrene	H		3.93E-05	3.44E-01	1.7221E-04	3.93E-05	3.44E-01	1.7221E-04
	Styrene	TH		6.82E-04	5.98E+00	2.9884E-03	6.82E-04	5.98E+00	2.9884E-03
	Toluene	TH		1.18E-02	1.03E+02	5.1663E-02	1.18E-02	1.03E+02	5.1663E-02
	Vinyl Chloride	TH		4.31E-04	3.77E+00	1.8867E-03	4.31E-04	3.77E+00	1.8867E-03
Xylene	TH		5.32E-03	4.66E+01	2.3299E-02	5.32E-03	4.66E+01	2.3299E-02	
Quarry Equipment Generators	Acetaldehyde	TH		1.18E-02	1.03E+02	5.1501E-02	1.18E-02	1.03E+02	5.1501E-02
	Acrolein	TH		1.42E-03	1.24E+01	6.2109E-03	1.42E-03	1.24E+01	6.2109E-03
	Arsenic Unlisted Compounds	TH		6.13E-05	5.37E-01	2.6858E-04	6.13E-05	5.37E-01	2.6858E-04
	Benzene	TH		1.43E-02	1.25E+02	6.2647E-02	1.43E-02	1.25E+02	6.2647E-02
	Benzo(a)pyrene	TH		2.88E-06	2.52E-02	1.2623E-05	2.88E-06	2.52E-02	1.2623E-05
	Beryllium Metal (unreacted)	TH		4.60E-05	4.03E-01	2.0144E-04	4.60E-05	4.03E-01	2.0144E-04
	1,3-Butadiene	TH		5.99E-04	5.25E+00	2.6254E-03	5.99E-04	5.25E+00	2.6254E-03
	Cadium Metal (elemental unreacted)	TH		4.60E-05	4.03E-01	2.0144E-04	4.60E-05	4.03E-01	2.0144E-04
	Chromic Acid (VI)	TH		4.60E-05	4.03E-01	2.0144E-04	4.60E-05	4.03E-01	2.0144E-04
	Formaldehyde	TH		1.81E-02	1.58E+02	7.9232E-02	1.81E-02	1.58E+02	7.9232E-02
	Lead	H		1.38E-04	1.21E+00	6.0431E-04	1.38E-04	1.21E+00	6.0431E-04
	Manganese Unlisted Compounds	TH		9.20E-05	8.06E-01	4.0287E-04	9.20E-05	8.06E-01	4.0287E-04
	Mercury, vapor	TH		4.60E-05	4.03E-01	2.0144E-04	4.60E-05	4.03E-01	2.0144E-04
	Napthalene	TH		1.30E-03	1.14E+01	5.6939E-03	1.30E-03	1.14E+01	5.6939E-03
	Nickle Metal	TH		4.60E-05	4.03E-01	2.0144E-04	4.60E-05	4.03E-01	2.0144E-04
	Selenium Compounds	TH		2.30E-04	2.01E+00	1.0072E-03	2.30E-04	2.01E+00	1.0072E-03
	Toluene	TH		6.27E-03	5.49E+01	2.7462E-02	6.27E-03	5.49E+01	2.7462E-02
	Xylene	TH		4.37E-03	3.83E+01	1.9136E-02	4.37E-03	3.83E+01	1.9136E-02

TOTAL	Acenaphthene	H	3.6138E-05	3.1656E-01	1.5828E-04	3.6138E-05	3.1656E-01	1.5828E-04
	Acenaphthylene	H	1.5987E-04	1.4005E+00	7.0024E-04	1.5987E-04	1.4005E+00	7.0024E-04
	Acetaldehyde	TH	3.3676E-01	2.9500E+03	1.4750E+00	3.3676E-01	8.8300E+02	4.4150E-01
	Acrolein	TH	6.5000E-03	5.6940E+01	2.8470E-02	6.5000E-03	1.5600E+01	7.8000E-03
	Antimony Unlisted Compounds	H	4.5000E-05	3.9420E-01	1.9710E-04	4.5000E-05	1.0800E-01	5.4000E-05
	Arsenic Unlisted Compounds	TH	2.6962E-03	2.3619E+01	1.1810E-02	2.7637E-04	1.5306E+00	7.6531E-04
	Benzene	TH	9.9016E-02	8.6738E+02	4.3369E-01	9.9016E-02	2.3764E+02	1.1882E-01
	Benzo(a)pyrene	T	4.4104E-06	3.8635E-02	1.9317E-05	4.4104E-06	1.0585E-02	5.2925E-06
	Benzo(b)fluoranthene	H	4.7991E-06	4.2040E-02	2.1020E-05	4.7991E-06	4.2040E-02	2.1020E-05
	Benzo(k)fluoranthene	H	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
	Benzo(g,h,i)perylene	H	1.1969E-05	1.0485E-01	5.2423E-05	1.1969E-05	1.0485E-01	5.2423E-05
	Biphenyl	H	6.1289E-03	5.3689E+01	2.6845E-02	6.1289E-03	5.3689E+01	2.6845E-02
	Carbon Tetrachloride	TH	1.0610E-03	9.2943E+00	4.6472E-03	1.0610E-03	9.2943E+00	4.6472E-03
	Chlorobenzene	TH	8.7886E-04	7.6988E+00	3.8494E-03	8.7886E-04	7.6988E+00	3.8494E-03
	Chloroform	TH	8.2394E-04	7.2177E+00	3.6088E-03	8.2394E-04	7.2177E+00	3.6088E-03
	Chrysene	H	2.0035E-05	1.7550E-01	8.7752E-05	2.0035E-05	1.7550E-01	8.7752E-05
	Beryllium Metal (unreacted)	TH	6.2899E-05	5.1000E-01	2.7550E-04	5.7425E-05	5.0304E-01	2.5152E-04
	1,3-Butadiene	TH	5.9940E-04	5.2508E+00	2.6254E-03	5.9940E-04	5.2508E+00	2.6254E-03
	Cadmium Metal (elemental unreacted)	TH	1.6308E-04	1.4286E+00	7.1428E-04	1.5589E-04	7.1369E-01	3.5685E-04
	Carbon disulfide	TH	6.2263E-04	5.4543E+00	2.7271E-03	6.2263E-04	1.4943E+00	7.4716E-04
	Chromium unlisted cmpds (add w/chrom acid to get CRC)	H	1.2625E-03	1.1060E+01	5.5298E-03	1.2625E-03	3.0300E+00	1.5150E-03
	Chromic Acid (VI)	TH	5.9066E-04	5.1742E+00	2.5871E-03	3.2362E-04	2.1194E+00	1.0597E-03
	Cobalt Unlisted Compounds	H	6.5000E-06	5.6940E-02	2.8470E-05	6.5000E-06	1.5600E-02	7.8000E-06
	Cumene	H	1.1437E-03	1.0019E+01	5.0095E-03	1.1437E-03	2.7449E+00	1.3725E-03
	Ethyl benzene	H	6.4069E-02	5.6124E+02	2.8062E-01	6.4069E-02	1.5377E+02	7.6883E-02
	Ethyl chloride (chloroethane)	H	2.1834E-06	1.9127E-02	9.5635E-06	2.1834E-06	5.2403E-03	2.6201E-06
	Ethylene Dibromide	TH						
	Fluoranthene	H						
	Fluorene	H						
	Formaldehyde	TH	7.9694E-01	6.9812E+03	3.4906E+00	7.9694E-01	1.9126E+03	9.5632E-01
	Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8	T	3.2500E-10	2.8470E-06	1.4235E-09	3.2500E-10	7.8000E-07	3.9000E-10
	Hexane, n-	TH	2.7130E-01	2.3766E+03	1.1883E+00	2.7130E-01	8.5522E+02	4.2761E-01
	Hydrogen Chloride (hydrochloric acid)	TH	5.2500E-02	4.5990E+02	2.2995E-01	5.2500E-02	1.2600E+02	6.3000E-02
	Hydrogen Sulfide	T	1.3680E-02	1.1984E+02	5.9918E-02	1.3680E-02	3.2832E+01	1.6416E-02
	Indeno(1,2,3-c,d)pyrene	H	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
	Lead Unlisted Compounds	H	5.0896E-03	4.4585E+01	2.2293E-02	3.8303E-03	9.7036E+00	4.8518E-03
	Methanol	H	7.2275E-02	6.3313E+02	3.1656E-01	7.2275E-02	6.3313E+02	3.1656E-01
	Methylene Chloride	TH	5.7820E-04	5.0650E+00	2.5325E-03	5.7820E-04	5.0650E+00	2.5325E-03
	Manganese Unlisted Compounds	T	9.7051E-03	8.5017E+01	4.2508E-02	2.7800E-03	1.2110E+01	6.0549E-03
	Mercury, vapor	TH	7.0289E-04	6.1573E+00	3.0787E-03	7.0289E-04	2.0233E+00	1.0117E-03
	Methyl bromide	H	2.4910E-04	2.1821E+00	1.0911E-03	2.4910E-04	5.9784E-01	2.9892E-04
	Methyl chloride	H	1.5596E-04	1.3662E+00	6.8311E-04	1.5596E-04	3.7431E-01	1.8715E-04
	Methyl chloroform	TH	1.2000E-02	1.0512E+02	5.2560E-02	1.2000E-02	2.8800E+01	1.4400E-02
	Methyl ethyl ketone	TH	6.6977E-03	5.8672E+01	2.9336E-02	6.6977E-03	1.6074E+01	8.0372E-03
	Methylene chloride	TH	8.2260E-06	7.2060E-02	3.6030E-05	8.2260E-06	1.9742E-02	9.8712E-06
	Napthalene	H	1.6472E-01	1.4430E+03	7.2148E-01	1.6472E-01	3.9533E+02	1.9766E-01
	Nickle Metal	TH	1.6722E-02	1.4648E+02	7.3241E-02	1.5995E-02	3.9948E+01	1.9974E-02
	Perchloroethylene (tetrachloroethylene)	TH	8.0060E-05	7.0132E-01	3.5066E-04	8.0060E-05	1.9214E-01	9.6072E-05
	Phenol	TH	1.0058E-03	8.8105E+00	4.4052E-03	1.0058E-03	2.4138E+00	1.2069E-03
	Phenanthrene	H	3.0066E-04	2.6338E+00	1.3169E-03	3.0066E-04	2.6338E+00	1.3169E-03
	Phenol	TH	6.9384E-04	6.0780E+00	3.0390E-03	6.9384E-04	6.0780E+00	3.0390E-03
	Pyrene	H	3.9318E-05	3.4442E-01	1.7221E-04	3.9318E-05	3.4442E-01	1.7221E-04
	Phosphorus Metal, Yellow or White	H	8.7218E-03	7.6403E+01	3.8201E-02	7.4713E-03	2.0928E+01	1.0464E-02
	Polycyclic Organic Matter	H	2.2005E-01	1.9277E+03	9.6384E-01	2.2005E-01	5.2847E+02	2.6424E-01
	Propionaldehyde	H	3.2500E-02	2.8470E+02	1.4235E-01	3.2500E-02	7.8000E+01	3.9000E-02
	Quinone	H	4.0000E-02	3.5040E+02	1.7520E-01	4.0000E-02	9.6000E+01	4.8000E-02
	Selenium Compounds	H	4.4628E-04	3.9094E+00	1.9547E-03	3.5663E-04	2.5676E+00	1.2838E-03
	Styrene	TH	2.4042E-04	2.1061E+00	1.0530E-03	2.4042E-04	5.7701E-01	2.8851E-04
	Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	TH	5.2500E-11	4.5990E-07	2.2995E-10	5.2500E-11	1.2600E-07	6.3000E-11
	Toluene	TH	7.2907E-01	6.3867E+03	3.1933E+00	7.2907E-01	1.7498E+03	8.7489E-01
	Trichloroethylene	TH	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
	Trichlorofluoromethane (CFC 111)	T	1.3517E-05	1.1841E-01	5.9203E-05	1.3517E-05	3.2440E-02	1.6220E-05
	Trimethylpentane, 2,2,4-	H	1.0028E-02	8.7847E+01	4.3923E-02	1.0028E-02	2.4068E+01	1.2034E-02
	Xylene	TH	7.0068E-02	6.1379E+02	3.0690E-01	7.0068E-02	2.2993E+02	1.1496E-01
	Xylene, o-	H	2.5684E-03	2.2499E+01	1.1250E-02	2.5684E-03	6.1641E+00	3.0821E-03
	TOTAL HAP		8.121	71136	35.568	8.102	34064.291	17.032

Source Name	Pollutant	Total Controlled Potential Emissions			TPER Threshold*			Above TPER Threshold		
		(lb/hr)	(lbs/day)	(lbs/yr)	lb/hr	lb/day	lb/yr	lb/hr	lb/day	lb/yr
Hot Mix Asphalt	Acetaldehyde	3.25E-01	7.80E+00	7.80E-02						
	Acrolein	6.50E-03	1.56E-01	1.56E+01						
	Arsenic unlisted cmpds (comp. of ASC)	1.40E-04	3.36E-03	3.36E-01						
	Benzene	9.90E-02	2.38E+00	2.38E+02						
	Benzo(a)pyrene	4.41E-06	1.06E-04	1.06E-02						
	Beryllium metal (unreacted)	0.00E+00	0.00E+00	0.00E+00						
	Cadmium metal (elemental unreacted)	1.03E-04	2.46E-03	2.46E-01						
	Carbon disulfide	6.23E-04	1.49E-02	1.49E+00						
	Soluble Chromate compounds as Chrome (VI)	1.13E-04	2.70E-03	2.70E-01						
	Formaldehyde	7.97E-01	1.91E+01	1.91E+03						
	Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8	3.25E-10	7.80E-09	7.80E-07						
	Hexane, n-	2.39E-01	5.74E+00	5.74E+02						
	Hydrogen Chloride (hydrochloric acid)	5.25E-02	1.26E+00	1.26E+02						
	Hydrogen Sulfide	1.37E-02	3.28E-01	3.28E+01						
	Manganese unlisted compounds	1.93E-03	4.62E-02	4.62E+00						
	Mercury, vapor	6.50E-04	1.56E-02	1.56E+00						
	Methyl chloroform	1.20E-02	2.88E-01	2.88E+01						
	Methyl ethyl ketone	6.70E-03	1.61E-01	1.61E+01						
	Methylene chloride	8.23E-06	1.97E-04	1.97E-02						
	Nickel metal	1.58E-02	3.78E-01	3.78E+01						
	Perchloroethylene (tetrachloroethylene)	8.01E-05	1.92E-03	1.92E-01						
	Phenol	1.01E-03	2.41E-02	2.41E+00						
	Styrene	2.40E-04	5.77E-03	5.77E-01						
	Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	5.25E-11	1.26E-09	1.26E-07						
	Toluene	7.29E-01	1.75E+01	1.75E+03						
	Trichloroethylene	0.00E+00	0.00E+00	0.00E+00						
	Trichlorofluoromethane (CFC 111)	1.35E-05	3.24E-04	3.24E-02						
	Xylene	6.04E-02	1.45E+00	1.45E+02						
Concrete Batch Plant	Arsenic unlisted cmpds (comp. of ASC)	6.59E-05	1.58E-03	5.77E-01						
	Beryllium metal (unreacted)	4.53E-06	1.09E-04	3.97E-02						
	Cadmium metal (elemental unreacted)	5.00E-07	1.20E-05	4.38E-03						
	Soluble Chromate compounds as Chrome (VI)	1.58E-04	3.80E-03	1.39E+00						
	Lead unlisted compounds	5.96E-05	1.43E-03	5.22E-01						
	Manganese unlisted compounds	7.49E-04	1.80E-02	6.56E+00						
	Nickel metal	1.92E-04	4.62E-03	1.68E+00						
	Acetaldehyde	1.78E-08	4.27E-07	1.56E-04						
	Acrolein	2.11E-08	5.05E-07	1.84E-04						
	Ammonia	3.74E-03	8.98E-02	3.28E+01						
Asphalt Cement Heater ES-ACH1	Benzene	2.36E-05	5.66E-04	2.06E-01						
	Benzo(a)pyrene	1.40E-09	3.37E-08	1.23E-05						
	Dichlorobenzene	1.40E-06	3.37E-05	1.23E-02						
	Formaldehyde	4.11E-04	9.87E-03	3.60E+00						
	Hexane, n-	2.11E-03	5.05E-02	1.84E+01						
	Toluene	6.83E-04	1.64E-02	5.98E+00						
	Xylene	1.20E-05	2.88E-04	1.05E-01						
	Arsenic unlisted cmpds (comp. of ASC)	4.80E-06	1.15E-04	4.20E-02						
	Beryllium metal (unreacted)	3.60E-06	8.64E-05	3.15E-02						
	Cadmium metal (elemental unreacted)	3.60E-06	8.64E-05	3.15E-02						
Liquid Asphalt Tank Heater ES-ACH2	Soluble Chromate compounds as Chrome (VI)	3.60E-06	8.64E-05	3.15E-02						
	Manganese unlisted compounds	7.20E-06	1.73E-04	6.31E-02						
	Mercury, vapor	3.60E-06	8.64E-05	3.15E-02						
	Nickel metal	3.60E-06	8.64E-05	3.15E-02						
	Acetaldehyde	1.63E-08	3.91E-07	1.43E-04						
	Acrolein	1.93E-08	4.63E-07	1.69E-04						
	Ammonia	3.43E-03	8.23E-02	3.01E+01						
	Benzene	2.16E-05	5.19E-04	1.89E-01						
	Benzo(a)pyrene	1.29E-09	3.09E-08	1.13E-05						
	Dichlorobenzene	1.29E-06	3.09E-05	1.13E-02						
Facility-wide	Formaldehyde	3.77E-04	9.05E-03	3.30E+00						
	Hexane, n-	1.93E-03	4.63E-02	1.69E+01						
	Toluene	6.26E-04	1.50E-02	5.49E+00						
	Xylene	1.10E-05	2.64E-04	9.64E-02						
	Arsenic unlisted cmpds (comp. of ASC)	4.40E-06	1.06E-04	3.85E-02						
	Beryllium metal (unreacted)	3.30E-06	7.92E-05	2.89E-02						
	Cadmium metal (elemental unreacted)	3.30E-06	7.92E-05	2.89E-02						
	Soluble Chromate compounds as Chrome (VI)	3.30E-06	7.92E-05	2.89E-02						
	Manganese unlisted compounds	6.60E-06	1.58E-04	5.78E-02						
	Mercury, vapor	3.30E-06	7.92E-05	2.89E-02						
Facility-wide	Nickel metal	3.30E-06	7.92E-05	2.89E-02						
	Acetaldehyde	3.25E-01	7.80E+00	7.80E+02	28.43			No		
	Acrolein	6.50E-03	1.56E-01	1.56E+01	0.08			No		
	Ammonia	7.17E-03	1.72E-01	6.28E+01	2.84			No		
	Benzo(a)pyrene	2.69E-09	6.46E-08	2.36E-05			3.044			No
	Dichlorobenzene	2.69E-06	6.46E-05	2.36E-02	69.5			Yes		
	Formaldehyde	7.98E-01	1.91E+01	1.92E+03	0.16			Yes		
	Hexane, n-	2.43E-01	5.84E+00	6.09E+02		46.3			No	
	Phenol	1.01E-03	2.41E-02	2.41E+00	1.00			No		
	Styrene	2.40E-04	5.77E-03	5.77E-01	11.16			No		
	Trichlorofluoromethane (CFC 111)	1.35E-05	3.24E-04	3.24E-02	589.66			No		
	Methyl chloroform	1.20E-02	2.88E-01	2.88E+01	257.98		505.4	No	No	
	Methyl ethyl ketone	6.70E-03	1.61E-01	1.61E+01			155.8	No	No	
	Toluene	7.30E-01	1.75E+01	1.76E+03	58.97		197.96	No	No	
	Xylene	6.04E-02	1.45E+00	1.45E+02	68.44		113.7	No	No	
	Methylene chloride	8.23E-06	1.97E-04	1.97E-02	1.79		2213.752	No	No	No
	Soluble Chromate compounds as Chrome (VI)	2.78E-04	6.66E-03	1.72E+00			2.6E-02		No	
	Hexane, n-	2.43E-01	5.84E+00	6.09E+02			46.3		No	
	Manganese unlisted compounds	2.69E-03	6.45E-02	1.13E+01			1.3		No	
	Mercury, vapor	6.57E-04	1.58E-02	1.62E+00			2.5E-02		No	
	Nickel metal	1.59E-02	3.83E-01	3.95E+01			0.3		Yes	
	Carbon disulfide	6.23E-04	1.49E-02	1.49E+00			7.8		No	
	Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	5.25E-11	1.26E-09	1.26E-07			2.767E-04			No
	Arsenic unlisted cmpds (comp. of ASC)	2.15E-04	5.16E-03	9.93E-01			0.194			Yes
	Benzene	9.91E-02	2.38E+00	2.38E+02			11.069			Yes
	Benzo(a)pyrene	4.41E-06	1.06E-04	1.06E-02			3.044			No
	Hydrogen Sulfide	1.37E-02	3.28E-01	3.28E+01		5.1		No		
	Beryllium metal (unreacted)	1.14E-05	2.74E-04	1.00E-01			0.378			No
	Cadmium metal (elemental unreacted)	1.10E-04	2.64E-03	3.11E-01			0.507			No
	Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8	3.25E-10	7.80E-09	7.80E-07			0.007			No
	Hydrogen Chloride (hydrochloric acid)	5.25E-02	1.26E+00	1.26E+02	0.74			No		
	Perchloroethylene (tetrachloroethylene)	8.01E-05	1.92E-03	1.92E-01			17525.534			No
	Trichloroethylene	0.00E+00	0.00E+00	0.00E+00			5442.140			No

* Per 15A NCAC 2Q. 0711(a) (vertically oriented emission release points)

** Chromic acid (VI) (component of solCR6 and CRC) from Concrete Batch and HMA emissions are counted towards the 'Soluble chromate compounds as Chrome (VI)' total

EMISSION CALCULATIONS
Fugitive Paved Roads

Carolina Sunrock
 Prospect Hill Quarry & Distribution Center

For some states and projects fugitive emissions from paved roads are required to be calculated. This sheet incorporates fugitive emissions from paved roads.

Main Inputs Required:
 trips/day
 miles/roundtrip
 days/yr trucks run
 Average Vehicle weight (tons)

Methods:
 Factors are calculated using the site specific silt content, Average vehicle weight, and the # of days with at least 0.254 mm of precipitation.
 Once the emission factors are calculated it is multiplied by the vehicle miles traveled (VMT)
 VMT is calculated by multiplying trips/day* miles per trip* days/yr vehicles run

Factors for Fugitive Paved Roads from AP-42, Ch. 13.2.1, Equations 1 and 2

Parameter	PM	PM ₁₀	PM _{2.5}	Parameter Explanation
k =	0.011	0.0022	0.00054	Particle Size Multiplier (lb/VMT)
sL =	8.2			Silt Loading (g/m ³). Choose from 0.03 - 400 g/m ³ . Used quarry silt loading factor
W =	29			Average Vehicle Weight (tons). Choose from 2.0 - 42 tons.
N =	365			Number of Days in the Averaging Period
P =	120			Number of Days with at least 0.254 mm of Precipitation. Check Fig. 13.2.1-2 of AP-42 for P value of a specific site.
Particulate Emission Factor - Daily Basis				
E =	2.32	0.46	0.11	$E \text{ (lb/VMT)} = k * sL^{0.91} * W^{1.02}$
Particulate Emission Factor - Annual Basis				
E =	2.13	0.43	0.10	$E \text{ (lb/VMT)} = k * sL^{0.91} * W^{1.02} * (1 - (P/4N))$

Road Parameters & Emissions

Road	trips/day	miles/roundtrip	days/yr	miles per day	miles per year	Assumed Control factor	PM Emissions lb/hr	PM Emissions lb/day	PM Emissions tons/yr	PM10 Emissions lb/hr	PM10 Emissions lb/day	PM10 Emissions tons/yr	PM2.5 Emissions lb/hr	PM2.5 Emissions lb/day	PM2.5 Emissions tons/yr
Asphalt/Concrete Plant	120	0.45	260	54	14040	90%	0.52	12.50	1.49	0.10	2.50	0.30	0.03	0.61	0.07
Quarry/Stockpile Yard	263	0.15	260	39	10257	90%	0.3806	9.13	1.09	0.07612	1.83	0.22	0.0187	0.45	0.05

The values in red are site-specific

Example Calculations

PM Emissions = $\frac{2.13 \text{ lb/VMT} * 14,040 \text{ mi/yr} * (1 - \%C)}{2000 \text{ lb/ton}} = 1.49 \text{ tons/yr}$

PM₁₀ Emissions = $\frac{0.43 \text{ lb/VMT} * 14,040 \text{ mi/yr} * (1 - \%C)}{2000 \text{ lb/ton}} = 0.30 \text{ tons/yr}$

PM_{2.5} Emissions = $\frac{0.10 \text{ lb/VMT} * 14,040 \text{ mi/yr} * (1 - \%C)}{2000 \text{ lb/ton}} = 0.07 \text{ tons/yr}$

EMISSION CALCULATIONS

Fugitive Unpaved Roads

Carolina Sunrock
Prospect Hill Quarry & Distribution Center

For some states and projects fugitive emissions from unpaved roads are required to be calculated. This sheet incorporates fugitive emissions from unpaved roads.

Main Inputs Required:

- trips/day
- miles/roundtrip
- days/yr trucks run
- Average Vehicle weight (tons)

Methods:

Factors are calculated using the site specific silt content, Average vehicle weight, and the # of days with at least 0.254mm of precipitation.
Once the emission factors are calculated it is multiplied by the vehicle miles traveled (VMT)
VMT is calculated by multiplying trips/day* miles per trip* days/yr vehicles run

Factors for Fugitive Unpaved Roads from AP-42, Ch. 13.2.2, Equations 1a and 2

Parameter	PM	PM ₁₀	PM _{2.5}	Parameter Explanation
k =	4.9	1.5	0.15	Particle Size Multiplier (lb/VMT)
s =	4.8			Silt Content (%). Choose from 1.8%-25.2%.
W(1) =	29			Mean Vehicle Weight (tons) - 22 ton truck
W(2) =	1			Mean Vehicle Weight - 1 ton truck
W(3) =	59.4			Mean Vehicle Weight - 45 ton truck
W(4) =	36.8			Empty Vehicle Weight - 45 ton truck
a =	0.7	0.9	0.9	Constants for Equation 1a
b =	0.45			
P =	120			Number of Days with at least 0.254mm of Precipitation. Check Fig. 13.2.1-2 of AP-42 for P value of a specific site.
Particulate Emission Factor - Daily Basis				
E(1) =	7.16	1.83	0.18	$E (lb/VMT) = [k * (s/12)^a * (W/3)^b]$
E(2) =	1.57	0.40	0.04	$E (lb/VMT) = [k * (s/12)^a * (W/3)^b]$
E(3) =	9.89	2.52	0.25	$E (lb/VMT) = [k * (s/12)^a * (W/3)^b]$
E(4) =	7.97	2.03	0.20	$E (lb/VMT) = [k * (s/12)^a * (W/3)^b]$
Particulate Emission Factor - Annual Basis				
E(1) =	4.81	1.23	0.12	$E (lb/VMT) = [k * (s/12)^a * (W/3)^b] * (365 - P)/365$
E(2) =	1.06	0.27	0.03	$E (lb/VMT) = [k * (s/12)^a * (W/3)^b] * (365 - P)/365$
E(3) =	6.64	1.69	0.17	$E (lb/VMT) = [k * (s/12)^a * (W/3)^b] * (365 - P)/365$
E(4) =	5.35	1.36	0.14	$E (lb/VMT) = [k * (s/12)^a * (W/3)^b] * (365 - P)/365$

The values in red are site-specific

Road Parameters & Emissions

Road	trips/day	miles/roundtrip	days/yr	Vehicle Weight tons	miles per day	miles per year	Assumed Control factor	PM Emissions lb/hr	PM Emissions lb/day	PM Emissions tons/yr	PM10 Emissions lb/hr	PM10 Emissions lb/day	PM10 Emissions tons/yr	PM2.5 Emissions lb/hr	PM2.5 Emissions lb/day	PM2.5 Emissions tons/yr
Asphalt/Concrete Plant	60	0.78	260	29	47	12168	95%	0.698	16.76	1.46	0.178	4.27	0.37	0.018	0.43	0.04
To Ponds B & C	4	0.37	260	1	1	384.8	95%	0.005	0.12	0.010	0.001	0.03	0.003	0.000	0.00	0.000
Quarry/Stockpile Yard	263	1.90	260	29	500	129922	95%	7.456	178.93	15.61	1.900	45.60	3.98	0.190	4.56	0.40
From Ponds to ODA 2	5	0.93	260	59.4	5	1209	95%	0.096	2.30	0.201	0.024	0.59	0.051	0.002	0.06	0.005
From Ponds to ODA 1	5	1.16	260	59.4	6	1508	95%	0.119	2.87	0.250	0.030	0.73	0.064	0.003	0.07	0.006
From Ponds to ODA 3	5	2.77	260	59.4	14	3601	95%	0.285	6.85	0.598	0.073	1.75	0.152	0.007	0.17	0.015
Pit A to Crusher (future)*	240	1.34	260	59.4	322	83616	95%	6.625	159.01	13.875	1.689	40.53	3.536	0.169	4.05	0.354
Road to Pit B Access (future)	12	0.85	245	36.8	10	2499	95%	0.169	4.07	0.334	0.043	1.04	0.085	0.004	0.10	0.009
Pit B to Crusher (future)*	240	1.75	260	59.4	420	109200	95%	8.653	207.66	18.121	2.205	52.93	4.618	0.221	5.29	0.462

* Only one of these roads would be used at any given time.

Example Calculations

PM Emissions =	4.81 lb/VMT * 12,168 mi/yr * (1-%C) =	1.46 tons/yr
PM ₁₀ Emissions =	1.23 lb/VMT * 12,168 mi/yr * (1-%C) =	0.37 tons/yr
PM _{2.5} Emissions =	0.12 lb/VMT * 12,168 mi/yr * (1-%C) =	0.04 tons/yr

Drop Point Calculations

Insignificant Sources

Drop Points at Storage Piles

Prospect Hill Quarry & Distribution Center

Carolina Sunrock

Factors for Drop Points:

Equations obtained from page 13.2.4-3 of AP-42.

$$E = k (0.0032) [(U/S)^{1.3} / (M/2)^{1.4}] (1 - \text{control eff}) / 100 \text{ lb/ton}$$

where: E = emission factor (lb/ton)

k = particle size multiplier (dimensionless)

U = mean wind speed mph (assume 1 mph since sources are located within the building; 15 mph for outside sources)

M = material moisture content (%) estimated from Table 13.2.4-1 of AP-42 or plant knowledge

Basis:

List out all drop points

Calculate PM₁₀, PM_{2.5} by changing Emission Factor based on wind speed and % moisture

Calculate the emission factor PER drop (transfer) using the above equation. For drop points including an enclosure building there are two methods for calculating emissions: Method 1 is to have a mean wind speed of 1 mph since transfer is within the building or Method 2 is to calculate as if outside using wind speed from actual met data and apply the corresponding building or enclosure control eff

For these sources the following assumptions were used and the appropriate control of enclosure

k = 0.74 for PM ≤ 30 microns;

k = 0.35 for PM ≤ 10 microns;

k = 0.053 for PM ≤ 2.5 microns;

U = 6.24 mph based on 2014 - 2018 met data from Danville, VA

M = 4.75 % estimated from Table 13.2.4-1 of AP-42 - average of various limestone products & sand

PM ≤ 30 microns: $[(6.24 \text{ mph}/5)^{1.3} / (4.75/2)^{1.4}] = 9.41\text{E-}04 \text{ lb/ton}$

PM ≤ 10 microns: $[(6.24 \text{ mph}/5)^{1.3} / (4.75/2)^{1.4}] = 4.45\text{E-}04 \text{ lb/ton}$

PM ≤ 2.5 microns: $[(6.24 \text{ mph}/5)^{1.3} / (4.75/2)^{1.4}] = 6.74\text{E-}05 \text{ lb/ton}$

Material Transfer	Source ID	# of Units	Percent Control Building or Device	Potential Emissions - Controlled			
				Max Throughput and Hours (tph) (hr/yr)	PM ₁₀ (lb/hr) (tpy)	PM _{2.5} (lb/hr) (tpy)	tpy
Truck Unloading to Stockpile 1 Piles (Asphalt Pile)	SYP1	1	50%	237.50 570,000	1.12E-01 1.34E-01	8.00E-03 9.60E-03	9.60E-03
Truck Unloading to Stockpile 2 Piles (Cone Pile)	SYP2	1	50%	178.694 8760	9.39E-02 4.11E-01	6.73E-03 2.95E-02	2.95E-02
Truck Loading at Quarry Stockpile 1	QSP1	1	50%	325.00 2,847,000	1.53E-01 6.70E-01	7.23E-02 3.17E-01	3.17E-01
Truck Loading at Quarry Stockpile 2	QSP2	1	50%	81.25 711,750	3.82E-02 1.67E-01	1.81E-02 7.92E-02	7.92E-02
Truck Loading at Quarry Stockpile 3	QSP3	1	50%	81.25 711,750	3.82E-02 1.67E-01	1.81E-02 7.92E-02	7.92E-02
Truck Loading at Quarry Stockpile 4	QSP4	1	50%	81.25 711,750	3.82E-02 1.67E-01	1.81E-02 7.92E-02	7.92E-02
Truck Loading at Quarry Stockpile 5	QSP5	1	50%	81.25 711,750	3.82E-02 1.67E-01	1.81E-02 7.92E-02	7.92E-02
Truck Loading at Quarry Stockpile 6	QSP6	1	50%	81.25 711,750	3.82E-02 1.67E-01	1.81E-02 7.92E-02	7.92E-02
Truck Loading at Quarry Stockpile 7	QSP7	1	50%	81.25 711,750	3.82E-02 1.67E-01	1.81E-02 7.92E-02	7.92E-02

Notes on Throughput: Asphalt plant maximum production rate is 250 tph and throughput limit is 600,000 tpy.

Typical aggregate content of hot mix asphalt is 95% (5% liquid asphalt binder); therefore aggregate throughput for asphalt plant is 600,000 x 0.95 = 570,000 tpy.

Concrete plant maximum production rate is 120 cy/hr; annual production is not limited.

1 cy concrete = 4024 lbs = 2,012 tons

Aggregate & sand content = (1884 + 1443) / 4024 x 100 = 85.68% of concrete mix

Aggregate & sand rate for concrete plant = 120 x 2,012 x 85.68 / 100 = 199.62 tpy. Annual throughput assumes 8760 hrs/yr.

Quarry throughput limit is 5,694,000 tons/yr (1200 tons/hr * 4745 hrs/yr). Assume pile throughput is proportional to pile area.

Total quarry stockpile area = 2.870 acres

QSP1 % of total = 40.0%

QSP2-7 % of total (each) = 10.0%

Based on 7,117,500 tons/yr for conservation (1500 tons/hr * 4745 hrs/yr)

Based on 7,117,500 tons/yr for conservation (1500 tons/hr * 4745 hrs/yr)

Example Calculations:

1. Uncontrolled Emissions

$$\text{Emissions (lb/hr)} = \text{Throughput (tons/hr)} * \text{Emission Factor (lb/ton)} * \text{Number of Drop Points}$$

$$\text{Emissions (tpy)} = \text{Throughput (tons/yr)} * \text{Emission Factor (lb/ton)} * \text{Number of Drop Points} * (1 \text{ ton}/2000 \text{ lb})$$

$$\text{OR Emissions (tpy)} = \text{Hourly Emission (lb/hr)} * \text{Hours of Operation (hr/yr)} * \text{Number of Drop Points} * (1 \text{ ton}/2000 \text{ lb})$$

$$\text{PM Potential Emissions (lbs/hr)} = 237.5 \text{ tpy} * 0.00094 \text{ lb/ton} * 1 \text{ drop point} = 0.223 \text{ lbs/hr}$$

$$\text{PM Potential Emissions (ton/yr)} = 570000 \text{ tpy} * 0.00094 \text{ lb/ton} * (1 \text{ ton}/2000 \text{ lb}) * 1 \text{ drop point} = 0.268 \text{ tpy}$$

$$\text{PM Potential Emissions (tpy)} = 0.22 \text{ lbs/hr} * 2400 \text{ hours of operation} * (1 \text{ ton}/2000 \text{ lb}) = 0.268 \text{ tpy}$$

OR

Drop Point Calculations

Sand & Aggregate Storage Piles - Drop Point Emissions

Carolina Sunrock
Prospect Hill Quarry & Distribution Center

Used in lieu of Sand/Agg emissions from NCDEQ emission spreadsheet Concrete Batch, per AP-42, Table 11.12-2, Footnote b.

Factors for Drop Points:

Equations obtained from page 13.2.4-3 of AP-42.

$$E = k (0.0032) [(U/5)^{1.3} / (M/2)^{1.4}] \text{ (1-control eff/100) lb/ton}$$

where:

E = emission factor (lb/ton)

k = particle size multiplier (dimensionless)

U = mean wind speed mph

M = material moisture content (%) estimated from Table 13.2.4-1 of AP-42 or plant knowledge

Basis:

List out all drop points

Calculate PM₁₀, PM₁₀ and PM_{2.5} by changing Emission Factor based on wind speed and % moisture

Calculate the emission factor PER drop (transfer) using the above equation. For drop points including an enclosure building there are two methods for calculating emissions: Method 1 is to have a mean wind speed of 1 mph since transfer is within the building or Method 2 is to calculate as if outside using wind speed from actual met data and apply the corresponding building or enclosure control efficiency

For these sources the following assumptions were used and the appropriate control of enclosure:

k = 0.74 for PM ≤ 30 microns;

k = 0.35 for PM ≤ 10 microns;

k = 0.053 for PM ≤ 2.5 microns;

U = 6.24 mph based on 2014 - 2018 met data from Danville, VA

M = 4.75 % estimated from Table 13.2.4-1 of AP-42 - average of various limestone products & sand

$$E = 1.7 \left(\frac{1.3}{2.35} \right) \left(\frac{(36.5 - p)}{2.35} \right) \left(\frac{f}{15} \right) \text{ (lb/day / acrc)}$$

$$PM \leq 30 \text{ microns: } * 0.0032 * [(6.24 \text{ mph}/5)^{1.3} / (4.75/2)^{1.4}] = 9.41E-04 \text{ lb/ton}$$

$$PM \leq 10 \text{ microns: } * 0.0032 * [(6.24 \text{ mph}/5)^{1.3} / (4.75/2)^{1.4}] = 4.45E-04 \text{ lb/ton}$$

$$PM \leq 2.5 \text{ microns: } * 0.0032 * [(6.24 \text{ mph}/5)^{1.3} / (4.75/2)^{1.4}] = 6.74E-05 \text{ lb/ton}$$

Material Transfer	Source ID	# of Units ¹	Potential Emissions - Controlled									
			Percent Control Building or Device	Max Throughput and Hours			PM		PM10		PM2.5	
				(tph)	(tpy)	(hr/yr)	lb/hr	tpy	lb/hr	tpy		
Conveyors to Stockyard 2 Piles (Conc Pit)	SYP2	2	0%	199.62	1,748,694	8760	3.76E-01	1.65E+00	1.78E-01	7.78E-01	2.69E-02	1.18E-01

Notes on Throughput: Concrete plant maximum production rate is 120 cy/hr; annual production is not limited.

1 cy concrete = 4024 lbs = 2.012 tons

Aggregate & sand content = (1884 + 1443)/4024 x 100 = 82.68% of concrete mix

Ref: Concrete Batch Emissions Calculator, NC DEQ

Aggregate & sand rate for concrete plant = 120 x 2.012 x 82.68/100 = 199.62 tpy. Annual throughput assumes 8760 hrs/yr.

Quarry throughput limit is 7,117,500 tons/yr. Assume pile throughput is proportional to pile area.

Sand & agg piles have 2 conveyor drop points: One from hopper to the weight batcher then weight batch to truck. Per email from Scott Martino 11/18/2020

Example Calculations:

1- Uncontrolled Emissions

$$\begin{aligned} \text{Emissions (lb/hr)} &= \text{Throughput (tons/hr)} * \text{Emission Factor (lb/ton)} * \text{Number of Drop Points} \\ \text{Emissions (tpy)} &= \text{Throughput (tons/yr)} * \text{Emission Factor (lb/ton)} * \text{Number of Drop Points} * (1 \text{ ton}/2000 \text{ lb}) \\ \text{OR} \quad \text{Emissions (tpy)} &= \text{Hourly Emission (lb/hr)} * \text{Hours of Operation (hr/yr)} * (1 \text{ ton}/2000 \text{ lb}) \end{aligned}$$

$$\begin{aligned} \text{PM Potential Emissions (lbs/hr)} &= 199.62 \text{ tpy} * 0.00094 \text{ lb/ton} * 2 \text{ drop points} = 0.376 \text{ lbs/hr} \\ \text{PM Potential Emissions (ton/yr)} &= 1748694 \text{ tpy} * 0.00094 \text{ lb/ton} * (1\text{-ton}/2000 \text{ lb}) * 2 \text{ drop points} = 1.645 \text{ tpy} \end{aligned}$$

OR

$$\text{PM Potential Emissions (tpy)} = 0.376 \text{ lbs/hr} * 8760 \text{ hours of operation} * (1 \text{ ton}/2000 \text{ lb}) = 1.645 \text{ tpy}$$

Fugitive Storage Pile (Wind Erosion) Calculations

Insignificant Sources

Prospect Hill Quarry & Distribution Center
Carolina Sunrock

Asphalt Plant/Concrete Plant and Quarry Storage Piles - Wind Erosion

Emission factor based on U.S. EPA Control of Open Fugitive Dust Sources. Research Triangle Park, North Carolina, EPA-450/3-88-008.

Source	TSP Emission Factor ¹ lb/day/acre	Water Spray Control %	Silt Content %	Surface Area ² acre	PM			PM-10			PM-2.5		
					lb/hr	tpy	lb/hr	lb/hr	tpy	lb/hr	lb/hr	tpy	tpy
Stockyard Piles 1	2.46	80%	3.900	0.344	7.05E-03	3.09E-02	3.53E-03	3.53E-03	1.54E-02	5.29E-04	5.29E-04	2.32E-03	2.32E-03
Stockyard Piles 2	2.46	80%	3.900	0.344	7.05E-03	3.09E-02	3.53E-03	3.53E-03	1.54E-02	5.29E-04	5.29E-04	2.32E-03	2.32E-03
Quarry Stockpile 1	2.46	80%	3.900	1.148	2.35E-02	1.03E-01	1.18E-02	1.18E-02	5.15E-02	1.76E-03	1.76E-03	7.72E-03	7.72E-03
Quarry Stockpile 2	2.46	80%	3.900	0.287	5.88E-03	2.57E-02	2.94E-03	2.94E-03	1.29E-02	4.41E-04	4.41E-04	1.93E-03	1.93E-03
Quarry Stockpile 3	0.38	90%	0.600	0.287	4.52E-04	1.98E-03	2.26E-04	2.26E-04	9.90E-04	3.39E-05	3.39E-05	1.49E-04	1.49E-04
Quarry Stockpile 4	0.38	90%	0.600	0.287	4.52E-04	1.98E-03	2.26E-04	2.26E-04	9.90E-04	3.39E-05	3.39E-05	1.49E-04	1.49E-04
Quarry Stockpile 5	0.38	90%	0.600	0.287	4.52E-04	1.98E-03	2.26E-04	2.26E-04	9.90E-04	3.39E-05	3.39E-05	1.49E-04	1.49E-04
Quarry Stockpile 6	0.38	90%	0.600	0.287	4.52E-04	1.98E-03	2.26E-04	2.26E-04	9.90E-04	3.39E-05	3.39E-05	1.49E-04	1.49E-04
Quarry Stockpile 7	0.38	90%	0.600	0.287	4.52E-04	1.98E-03	2.26E-04	2.26E-04	9.90E-04	3.39E-05	3.39E-05	1.49E-04	1.49E-04

Asphalt plant
Concrete plant
Quarry radial stacker pile (largest)
Quarry radial stacker pile
Quarry radial stacker pile
Quarry radial stacker pile
Quarry radial stacker pile
Quarry radial stacker pile
Quarry radial stacker pile

1. TSP emission factor based on U.S. EPA Control of Open Fugitive Dust Sources. Research Triangle Park, North Carolina, EPA-450/3-88-008. September 1988. Page 4-17.

$$E = 1.7 \left(\frac{s}{1.5} \right)^{\frac{(365-p)}{235}} \left(\frac{f}{1.5} \right) \left(\frac{lb}{day/acre} \right)$$

where:

s, silt content (%):

3.9

s - silt content(%) for stone quarrying and processing, various limestone products, from AP-42 Table 13.2.4-1

For Stockyard Piles 1 & 2, Quarry Stockpiles 1 & 2

0.6

s - silt content(%) for stone quarrying and processing, various limestone products, from AP-42 Table 13.2.4-1

For Quarry Stockpiles 3 - 7

p, number of days with rainfall greater than 0.01 inch:

120

f (time that wind exceeds 5.36 m/s - 12 mph) (%):

8.0

Based on AP-42, Section 13.2.2, Figure 13.2.2-2.

Based on 2014 - 2018 met data from Danville, VA

PM₁₀ is assumed to equal 50% of TSP based on U.S. EPA Control of Open Fugitive Dust Sources, Research Triangle Park, North Carolina, EPA-450/3-88-008. September 1988.

PM_{2.5} is assumed to equal 7.5 % of TSP U.S. EPA Background Document for Revisions to Fine Fraction Ratios

Used for AP-42 Fugitive Dust Emission Factors. November 2006.

PM₁₀/TSP ratio: 50%

PM_{2.5}/TSP ratio: 7.5%

2. Approximate pile dimensions:

Stockyard Piles = 75 ft x 200 ft =

15000 ft² =

0.344 acres

Quarry Stockpile 1 = 100 ft x 500 ft =

50000 ft² =

1.148 acres

Quarry Stockpiles 2-7 = 50 ft x 250 ft =

12500 ft² =

0.287 acres (each)

Reference:

Prospect Hill Quarry & Distribution Center - Initial Mine Map, Sheet 5A 07-29-2019

EMISSION CALCULATIONS

Source: Large Natural Gas/Propane Fired Generator

Carolina Sunrock

Prospect Hill Quarry & Distribution Center

The Generator can burn propane or natural gas. Emissions were calculated below using vendor supplied guarantees, and NERS/JULI emission factors, and AP-42. Compilation of Air Pollutant Emission Factors Vol. 1: Stationary Sources USEPA, 5th ed. Section 3.2, 10/96. The quarry will permit 3 propane/natural gas fired generators, operating only 2 simultaneously. Therefore, the Total with Synthetic Minor Limits column below totals the two largest generators, assuming only they will operate at one time. The third is redundant for backup power!

Average Brake Specific Fuel Consumption = 7.000 Btu/hp-hr Source AP-42, Table 3.3-1, Note (b)

1 hp = 0.74558 kw, Per AP-42 Appendix A to convert from kw to hp

Annual Hours of Operation = 8,760 hrs/yr

Source ID	Source Description	Power Output	Units	Maximum Fuel Usage (MMBtu/hr)
ES-PGEN1	Jenbacher J420-GS-885	2055	hp	14.46
ES-PGEN2	Jenbacher J420-GS-885	2055	hp	14.46
ES-PGEN3	Jenbacher J420-GS-C885	1721	hp	12.05

Equipped with catalytic oxidation

Equipped with catalytic oxidation

Equipped with catalytic oxidation

Generator Emissions:

Pollutant	Pollutant Type	Uncontrolled Emission Factor for Engines Vendor for 420- GS-886 (lb/gp-hr)	Uncontrolled Emission Factor for Engines Vendor for 420- GS-886 (lb/gp-hr)	Uncontrolled Emission Factor for Engines Vendor for 420- GS-886 (lb/gp-hr)	Uncontrolled Emission Factor for Engines Vendor for 420- GS-886 (lb/gp-hr)	ES-PGEN1			ES-PGEN2			ES-PGEN3			TOTAL			Propane/NG Potential Emissions	Propane/NG Potential Emissions	Propane/NG Potential Emissions	Total w/ Synthetic Minor Limits																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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						lb/hr	tpy	lb/yr	lb/hr	tpy	lb/yr	lb/hr	tpy	lb/yr	lb/hr	tpy	lb/yr					lb/hr	tpy	lb/yr	lb/hr	tpy	lb/yr																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
PM10	Criteria	0.01	1.95E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	1.28E-03	6.32E-01	1.44E-01	

EMISSION CALCULATIONS

Sources:

Quarry Equipment Generators

Emission Source ID	Description	Rating	Units
GEN-1 (J50V2)	Primary crusher generator - Mobile	350	hp
GEN-1a (J45)	Primary crusher generator - Mobile	350	hp
GEN-2 (S190dt)	Screen generator	125	hp
GEN-3 (PS1300 Maxtrack)	Cone crusher generator	440	hp
GEN-4 (TF80)		125	hp
	Pegson Autamax 1300 Cone Crusher Generator		
GEN-5 (PS1300 Maxtrack)	Pegson Autamax 1100 Cone Crusher Generator	450	hp
GEN-7 (PS100 Maxtrack)		350	hp

Prospect Hill Quarry & Distribution Center
Carolina Sunrock

Assumed that all engines associated with this equipment will be model year 2019 or later.

Maximum Hours of Operation = 8760 hr/yr

Actual Hours of Operation = 4160 hr/yr

Sulfur Content = 0.0015% or 15 ppm

Heating Value = 0.138 MMbtu/gal

Pollutant	Pollutant Type	Emission Factor ¹	Units	Emission Factor ²	Emission Factor ³	Units	Potential Emissions						
							GEN-1 (J50V2)	GEN-1a (J45)	GEN-2 (S190dt)	GEN-3 (PS1300 Maxtrack)	GEN-4 (TF80)	GEN-5 (PS1300 Maxtrack)	GEN-7 (PS100 Maxtrack)
PM	Criteria		lb/hp-hr	3.29E-05		lb/hp-hr	0.011	0.011	0.004	0.014	0.004	0.015	0.011
PM10	Criteria		lb/hp-hr	3.29E-05		lb/hp-hr	0.011	0.011	0.004	0.014	0.004	0.015	0.011
PM2.5	Criteria		lb/hp-hr	3.29E-05		lb/hp-hr	0.011	0.011	0.004	0.014	0.004	0.015	0.011
SO _x	Criteria	1.21E-05	lb/hp-hr			lb/hp-hr	0.004	0.004	0.002	0.005	0.002	0.005	0.004
NO _x	Criteria		lb/hp-hr	6.57E-04		lb/hp-hr	0.23	0.23	0.08	0.29	0.08	0.30	0.23
CO	Criteria		lb/hp-hr	5.75E-03		lb/hp-hr	2.01	2.01	1.03	2.53	1.03	2.59	2.01
VOC	Criteria		lb/hp-hr	3.12E-04		lb/hp-hr	0.11	0.11	0.04	0.14	0.04	0.14	0.11
Acetaldehyde	H/T	5.37E-06	lb/hp-hr			lb/hp-hr	1.88E-03	1.88E-03	6.71E-04	2.36E-03	6.71E-04	2.42E-03	1.88E-03
Acrolein	H/T	6.48E-07	lb/hp-hr			lb/hp-hr	2.27E-04	2.27E-04	8.09E-05	2.85E-04	8.09E-05	2.91E-04	2.27E-04
Arsenic	H/T	2.80E-08	lb/hp-hr			lb/hp-hr	9.80E-06	9.80E-06	3.50E-06	1.23E-05	3.50E-06	1.26E-05	9.80E-06
Benzene	H/T	6.53E-06	lb/hp-hr			lb/hp-hr	2.29E-03	2.29E-03	8.16E-04	2.87E-03	8.16E-04	2.94E-03	2.29E-03
Benzof(a)pyrene	H/T	1.32E-09	lb/hp-hr			lb/hp-hr	4.61E-07	4.61E-07	1.65E-07	5.79E-07	1.65E-07	5.92E-07	4.61E-07
Beryllium	H/T	2.10E-08	lb/hp-hr			lb/hp-hr	7.35E-06	7.35E-06	2.63E-06	9.24E-06	2.63E-06	9.45E-06	7.35E-06
1,3-Butadiene	H/T	2.74E-07	lb/hp-hr			lb/hp-hr	9.58E-05	9.58E-05	3.42E-05	1.20E-04	3.42E-05	1.23E-04	9.58E-05
Cadmium	H/T	2.10E-08	lb/hp-hr			lb/hp-hr	7.35E-06	7.35E-06	2.63E-06	9.24E-06	2.63E-06	9.45E-06	7.35E-06
Chromium (as chromic acid)	H/T	2.10E-08	lb/hp-hr			lb/hp-hr	7.35E-06	7.35E-06	2.63E-06	9.24E-06	2.63E-06	9.45E-06	7.35E-06
Formaldehyde	H/T	8.26E-06	lb/hp-hr			lb/hp-hr	2.89E-03	2.89E-03	1.03E-03	3.63E-03	1.03E-03	3.72E-03	2.89E-03
Lead	H	6.30E-08	lb/hp-hr			lb/hp-hr	2.21E-05	2.21E-05	7.88E-06	2.77E-05	7.88E-06	2.84E-05	2.21E-05
Manganese unlisted compound	H/T	4.20E-08	lb/hp-hr			lb/hp-hr	1.47E-05	1.47E-05	5.25E-06	1.85E-05	5.25E-06	1.89E-05	1.47E-05
Mercury vapor	H/T	2.10E-08	lb/hp-hr			lb/hp-hr	7.35E-06	7.35E-06	2.63E-06	9.24E-06	2.63E-06	9.45E-06	7.35E-06
Naphthalene	H/T	5.94E-07	lb/hp-hr			lb/hp-hr	2.08E-04	2.08E-04	7.42E-05	2.61E-04	7.42E-05	2.67E-04	2.08E-04
Nickel metal	H/T	2.10E-08	lb/hp-hr			lb/hp-hr	7.35E-06	7.35E-06	2.63E-06	9.24E-06	2.63E-06	9.45E-06	7.35E-06
Selenium compounds	H/T	1.05E-07	lb/hp-hr			lb/hp-hr	3.68E-05	3.68E-05	1.31E-05	4.62E-05	1.31E-05	4.73E-05	3.68E-05
Toluene	H/T	2.86E-06	lb/hp-hr			lb/hp-hr	1.00E-03	1.00E-03	3.58E-04	1.26E-03	3.58E-04	1.29E-03	1.00E-03
Xylene	H/T	2.00E-06	lb/hp-hr			lb/hp-hr	6.98E-04	6.98E-04	2.49E-04	8.78E-04	2.49E-04	8.98E-04	6.98E-04
Highest HAP (Formaldehyde)		8.26E-06	lb/hp-hr			lb/hp-hr	2.89E-03	2.89E-03	1.03E-03	3.63E-03	1.03E-03	3.72E-03	2.89E-03
Total HAPs							9.41E-03	9.41E-03	3.36E-03	1.18E-02	3.36E-03	1.21E-02	9.41E-03
													5.89E-02

Pollutant	Pollutant Type	Potential Emissions							
		GEN-1 (J50V2)	GEN-1a (J45)	GEN-2 (S190dt)	GEN-3 (P51300 Maxtrack)	GEN-4 (TF80)	GEN-5 (P51300 Maxtrack)	GEN-7 (P5100 Maxtrack)	Total lb/yr
		lb/yr	tpy	lb/yr	lb/yr	lb/yr	lb/yr	lb/yr	
PM	Criteria	101	0.50	36	127	36	129	101	630
PM10	Criteria	101	0.50	36	127	36	129	101	630
PM2.5	Criteria	101	0.50	36	127	36	129	101	630
SO ₂	Criteria	37.21	0.019	13.29	46.77	13.29	47.84	37.21	232.80
NOx	Criteria	2014	0.81	719	2532	719	2590	2014	12604
CO	Criteria	17626	0.008	8993	22158	8993	22662	17626	115683
VOC	Criteria	957	0.004	342	1203	342	1230	957	5987
Acetaldehyde	H/T	16.46	0.000	5.88	20.69	5.88	21.16	16.46	103.00
Acrolein	H/T	1.99	0.000	0.71	2.50	0.71	2.55	1.99	12.42
Arsenic	H/T	0.09	0.000	0.03	0.11	0.03	0.11	0.09	0.54
Benzene	H/T	20.02	0.000	7.15	25.17	7.15	25.75	20.02	125.29
Benzol(a)pyrene	H/T	0.00	0.000	0.00	0.01	0.00	0.01	0.00	0.03
Beryllium	H/T	0.06	0.000	0.02	0.08	0.02	0.08	0.06	0.40
1,3-Butadiene	H/T	0.84	0.000	0.30	1.05	0.30	1.08	0.84	5.25
Cadmium	H/T	0.06	0.000	0.02	0.08	0.02	0.08	0.06	0.40
Chromium (as chromic acid)	H/T	0.06	0.000	0.02	0.08	0.02	0.08	0.06	0.40
Formaldehyde	H/T	25.33	0.000	9.04	31.84	9.04	32.56	25.33	158.46
Lead	H	0.19	0.000	0.07	0.24	0.07	0.25	0.19	1.21
Manganese unlisted compou	H/T	0.13	0.000	0.05	0.16	0.05	0.17	0.13	0.81
Mercury vapor	H/T	0.06	0.000	0.02	0.08	0.02	0.08	0.06	0.40
Napthalene	H/T	1.82	0.000	0.65	2.29	0.65	2.34	1.82	11.39
Nickel metal	H/T	0.06	0.000	0.02	0.08	0.02	0.08	0.06	0.40
Selenium compounds	H/T	0.32	0.000	0.11	0.40	0.11	0.41	0.32	2.01
Toluene	H/T	8.78	0.000	3.13	11.04	3.13	11.29	8.78	54.92
Xylene	H/T	6.12	0.000	2.18	7.69	2.18	7.86	6.12	38.27
Highest HAP (Formaldehyde)	H/T	25.33	0.000	9.04	31.84	9.04	32.56	25.33	158.46
Total HAPs		82.41	0.000	29.43	103.60	29.43	105.95	82.41	515.62

Pollutant	Pollutant Type	Potential Emissions							
		GEN-1 (J50V2)	GEN-1a (J45)	GEN-2 (S190dt)	GEN-3 (P51300 Maxtrack)	GEN-4 (TF80)	GEN-5 (P51300 Maxtrack)	GEN-7 (P5100 Maxtrack)	Total tpy
		tpy	tpy	tpy	tpy	tpy	tpy	tpy	
PM	Criteria	0.050	0.050	0.018	0.063	0.018	0.065	0.050	0.315
PM10	Criteria	0.050	0.050	0.018	0.063	0.018	0.065	0.050	0.315
PM2.5	Criteria	0.050	0.050	0.018	0.063	0.018	0.065	0.050	0.315
SO ₂	Criteria	0.019	0.019	0.007	0.023	0.007	0.024	0.019	0.116
NOx	Criteria	1.01	1.01	0.36	1.27	0.36	1.29	1.01	6.30
CO	Criteria	8.81	8.81	4.50	11.08	4.50	11.33	8.81	57.84
VOC	Criteria	0.48	0.48	0.17	0.60	0.17	0.62	0.48	2.99
Acetaldehyde	H/T	8.23E-03	8.23E-03	2.94E-03	1.03E-02	2.94E-03	1.06E-02	8.23E-03	5.15E-02
Acrolein	H/T	9.93E-04	9.93E-04	3.55E-04	1.25E-03	3.55E-04	1.28E-03	9.93E-04	6.21E-03
Arsenic	H/T	4.29E-05	4.29E-05	1.53E-05	5.40E-05	1.53E-05	5.52E-05	4.29E-05	2.69E-04
Benzene	H/T	1.00E-02	1.00E-02	3.58E-03	1.26E-02	3.58E-03	1.29E-02	1.00E-02	6.26E-02
Benzol(a)pyrene	H/T	2.02E-06	2.02E-06	7.21E-07	2.54E-06	7.21E-07	2.59E-06	2.02E-06	1.26E-05
Beryllium	H/T	3.22E-05	3.22E-05	1.15E-05	4.05E-05	1.15E-05	4.14E-05	3.22E-05	2.01E-04
1,3-Butadiene	H/T	4.20E-04	4.20E-04	1.50E-04	5.27E-04	1.50E-04	5.39E-04	4.20E-04	2.63E-03
Cadmium	H/T	3.22E-05	3.22E-05	1.15E-05	4.05E-05	1.15E-05	4.14E-05	3.22E-05	2.01E-04
Chromium (as chromic acid)	H/T	3.22E-05	3.22E-05	1.15E-05	4.05E-05	1.15E-05	4.14E-05	3.22E-05	2.01E-04
Formaldehyde	H/T	1.27E-02	1.27E-02	4.52E-03	1.59E-02	4.52E-03	1.63E-02	1.27E-02	7.92E-02
Lead	H	9.66E-05	9.66E-05	3.45E-05	1.21E-04	3.45E-05	1.24E-04	9.66E-05	6.04E-04
Manganese unlisted compou	H/T	6.44E-05	6.44E-05	2.30E-05	8.09E-05	2.30E-05	8.28E-05	6.44E-05	4.03E-04

Mercury vapor		H/T	3.22E-05	3.22E-05	1.15E-05	4.05E-05	1.15E-05	4.14E-05	3.22E-05	2.01E-04
Napthalene		H/T	9.10E-04	9.10E-04	3.25E-04	1.14E-03	3.25E-04	1.17E-03	9.10E-04	5.69E-03
Nickel metal		H/T	3.22E-05	3.22E-05	1.15E-05	4.05E-05	1.15E-05	4.14E-05	3.22E-05	2.01E-04
Selenium compounds		H/T	1.61E-04	1.61E-04	5.75E-05	2.02E-04	5.75E-05	2.07E-04	1.61E-04	1.01E-03
Toluene		H/T	4.39E-03	4.39E-03	1.57E-03	5.52E-03	1.57E-03	5.64E-03	4.39E-03	2.75E-02
Xylene		H/T	3.06E-03	3.06E-03	1.09E-03	3.84E-03	1.09E-03	3.93E-03	3.06E-03	1.91E-02
Highest HAP (Formaldehyde)			1.27E-02	1.27E-02	4.52E-03	1.59E-02	4.52E-03	1.63E-02	1.27E-02	7.92E-02
Total HAPs			0.041	0.041	0.015	0.052	0.015	0.053	0.041	0.258

¹ Emission factors from NCDEQ Emission Calculation Spreadsheet for GAS & DIESEL INTERNAL COMBUSTION ENGINES with power rating of <= 600 HP for diesel engines and <= 250 HP for gasoline engines
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HAP/TAP emission factors are from AP-42, Chapter 3.3 (revised 10/96) and Chapter 1.3 (revised 5/10) for metal HAP

² SOx factors for Diesel fuel are from AP-42 - Chapter 3.4 (revised 10/96).

³ Emission factors are for US Tier 4 engines based on NSPS Subpart IIII (assuming model year 2019 and later will be installed) for engines > 174 hp and < 751 hp.

⁴ Emission factors are for US Tier 4 engines based on NSPS Subpart IIII (assuming model year 2019 and later will be installed) for engines > 100 hp and < 173 hp.

ASPHALT EMISSIONS CALCULATOR REVISION F 07/18/2012 INPUT SCREEN



NOTICE: This spreadsheet is for your use only and should be used with caution. DENR does not guarantee the accuracy of the information contained. This spreadsheet is subject to continual revision and updating. It is your responsibility to be aware of the most current information available. DENR is not responsible for errors or omissions that may be contained herein.

- Instructions:**
1. Fill in all **BLUE** cells.
 2. Ensure all pull down boxes and **BLUE** cells reflect correct conditions.
 3. Read the README sheet.
 4. Use the mouse pointer to read the tips in the "red cornered" input cells.

(See Tools->Options->Comments if these are not displayed.)

Company Name: Carolina Sunrock LLC
 Facility ID No.: TBD
 Permit No.: TBD
 Facility City: West Hill Quarry & Distribution
 Facility County: Caswell
 Spreadsheet Prepared by: Scott Martino

Is this spreadsheet being used for emissions inventory 2. NO

Plant type: Drum mix
 Fuel type: Waste, No.4 or No.6 fuel oil-fired
 Fuel Sulfur Content: 0.50 % (default value is 0.5 %)
 Controls: Fabric filter controls

Dryer heat input: 80 million Btu per hour
 Plant maximum production capacity: 250 tons per hour

Asphalt Properties
 Asphalt temperature: 325 degrees F (default value of 325 degrees F)
 Volatility loss (V): -0.5 % (default value of -0.5 %)

Silo Filling? YES

RAP crushing on site? YES
 Crushing Capacity? 65 tons per hour
 Hours of operation: 8760 hours per year
 No. of crushers: 1
 No. of screens: 1
 No. of conveyors: 6

Asphalt Cement Heater
 AC heater heat input: 1.2 million Btu per hour (No.2 or diesel fuel oil -fired assumed)
 Fuel Sulfur Content: 0.50 % (default value is 0.5 %)
 Hours of operation: 8760 hours per year (default is 8760 hours per year unless specified otherwise)

Calculated Annual Production Limit: 1,491,177 tons per year
 Requested Annual Production Limit: 600,000 tons per year (if none desired leave default value =8760*tpb)
 Requested Daily Production Limit: tons per day
Are you SURE you want a restriction? If you do not want a daily restriction, make sure the cell has the value 24 hours/day *250 tons per hour = 6000 tons per day.

Is this plant NSPS Subpart I affected? YES
 Stack gas flow rate: 45,000 ACFM
 Stack gas temperature: 240 oF
 Stack % moisture: 33 %
 Allowable emission rate under NSPS Subpart I: 7.80 lb/hr
 Control efficiency required: 99.889 %
Does Method 5 data already exist? NO
 Method 5 determined emission rate: 40.00 lb/hr
 Control efficiency based on test data: 99.429 %

Allowable emission rate under 2 D .0506: 55.39 lb/hr
 Does this plant emit less than this limit?: Yes (based on emission factors)
 Control efficiency required: 99.209 %

**Dryer Emissions
Criteria Pollutants**

Pollutant	Uncontrolled Emission Factor (lb/ton)	Controlled Emission Factor (lb/ton)	uncontrolled emission rate (lb/hr)	controlled emission rate (lb/hr)	Title V, Potential Emissions (tpy) (no controls, 8760 hours per year operation)	PSD, Potential Emissions, (tpy) (with controls, 8760 hours per year operation)	Synthetic Minor, Potential Emissions (tpy) (with all operation restrictions)
Condensable PM (or PM ₁₀)	0.0654	0.0194	16.35	4.85			
Filterable PM	28	0.014	7000	3.5			
Filterable PM ₁₀	6.4	0.0039	1600	0.975			
Total PM	28	0.033	7000	8.25	55.4	36.1	9.9
Total PM ₁₀	6.5	0.023	1625	5.75	29.0	25.2	6.9
SO ₂	0.0837	0.0837	20.93	20.93	91.69	91.69	25.12
CO	0.1300	0.130	32.5	32.5	142.4	142.4	39.0
NO _x	0.0550	0.055	13.75	13.75	60.2	60.2	16.5
VOC	0.0320	0.032	8	8	35.0	35.0	9.6
HAPs, TOTAL		0.010		2.5	11.0	11.0	3.0

Silo Filling plus Load Out Emissions, Criteria Pollutants

Pollutant	Emission Factor, combined (lb/ton)	emission rate (lb/hr)	Title V, Potential Emissions (tpy) (no controls, 8760 hours per year operation)	PSD, Potential Emissions, (tpy) (8760 hours per year operation)	Synthetic Minor, Potential Emissions (tpy) (with all operation restrictions)
Total PM	1.11E-03	2.77E-01	1.2	1.2	0.3
CO	2.53E-03	6.32E-01	2.8	2.8	0.8
VOC	1.61E-02	4.02E+00	17.6	17.6	4.8
HAPs, TOTAL	2.74E-04	6.85E-02	0.3	0.3	0.1

Rap Crusher Emissions

Pollutant	Emission Factor, all sources combined (lb/ton)	emission rate (lb/hr)	Title V, Potential Emissions (tpy) (no controls, 8760 hours per year operation)	PSD, Potential Emissions, (tpy) (8760 hours per year operation)	Synthetic Minor, Potential Emissions (tpy) (with all operation restrictions)
Total PM	0.0484	3.15E+00	13.8	13.8	3.8
Total PM ₁₀	0.0177	1.15E+00	5.0	5.0	1.4

Asphalt Cement Heater Emissions

Pollutant	Uncontrolled Emission Factor (lb/MMBtu)	emission rate (lb/hr)	Title V, Potential Emissions (tpy) (no controls, 8760 hours per year operation)	PSD, Potential Emissions, (tpy) (8760 hours per year operation)	Synthetic Minor, Potential Emissions (tpy) (with all operation restrictions)
Total PM	0.0235714	2.83E-02	0.1	0.1	0.1
Total PM ₁₀	0.0235714	2.83E-02	0.1	0.1	0.1
SO ₂	0.5071429	6.09E-01	2.7	2.7	2.7
CO	0.0357143	4.29E-02	0.2	0.2	0.2
NO _x	0.1428571	1.71E-01	0.8	0.8	0.8
VOC	0.0024286	2.91E-03	0.0	0.0	0.0

Facility-wide Criteria Pollutant Emissions Summary

Pollutant	Controlled Emission Rate, lb/hr	Title V, Potential Emissions (tpy) (no controls, 8760 hours per year operation)	PSD, Potential Emissions, (tpy) (8760 hours per year operation)	Synthetic Minor, Potential Emissions (tpy) (with all operation restrictions)
Total PM	1.14E+01	70.5	51.3	14.1
Total PM ₁₀	6.93E+00	35.4	31.6	8.7
SO ₂	2.15E+01	94.4	94.4	27.8
CO	3.32E+01	145.3	145.3	39.9
NO _x	1.39E+01	61.0	61.0	17.3
VOC	1.20E+01	52.7	52.7	14.4
HAPs, TOTAL	2.57E+00	11.3	11.3	3.1

Facility-wide Toxic Air Pollutants Summary

TAP	CAS No.	Action	TAP	CAS No.	Action
Acetaldehyde (TH)	75070	NOTE 1	Mercury, vapor (TH)	7439976	NOTE 2
Acrolein (TH)	107028	NOTE 1	Methyl ethyl ketone (TH)	78933	NOTE 1
Arsenic unlisted cmpds (comp. of ASC) (TH)	ASC-other	NOTE 3	Methylene chloride (TH)	75092	NOTE 1
Benzene (TH)	71432	NOTE 3	Nickel metal (TH)	7440020	NOTE 2
Benzo(a)pyrene (T)	50328	NOTE 1	Perchloroethylene (tetrachloroethylene) (TH)	127184	NOTE 1
Beryllium metal (unreacted) (TH)	7440417	NOTE 1	Phenol (TH)	108952	NOTE 1
Cadmium metal (elemental unreacted) (TH)	7440439	NOTE 2	Soluble Chromate Compounds as Chrome VI (TH)	7738945	NOTE 1
Carbon disulfide (TH)	75150	NOTE 1	Styrene (TH)	100425	NOTE 1
Formaldehyde (TH)	50000	NOTE 3	Tetrachlorodibenzo-p-dioxin, 2,3,7,8- (TH)	1746016	NOTE 1
Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8 (T)	57653857	NOTE 1	Toluene (TH)	108883	NOTE 1
Hexane, n- (TH)	110543	NOTE 1	Trichloroethylene (TH)	79016	NOTE 1
Hydrogen Sulfide (T)	7783064	NOTE 1	Trichlorofluoromethane (CFC 111) (T)	75694	NOTE 1
Manganese unlisted compounds (T)	MNC-other	NOTE 1	Xylene (TH)	1330207	NOTE 1
Methyl chloroform (TH)	71556	NOTE 1			

NOTE 1: Include TAP in TPER stipulation.

NOTE 2: Include TAP in TPER stipulation with operation restrictions.

NOTE 3: Modeling Required. See "Toxic calculations" worksheet.

ASPHALT EMISSIONS CALCULATOR REVISION F 07/18/2012 - OUTPUT SCREEN



Instructions: Enter emission source / facility data on the "INPUT" tab/screen. The air emission results and summary of input data are viewed / printed on the "OUTPUT" tab/screen. The different tabs are on the bottom of this screen.

This spreadsheet is for your use only and should be used with caution. DENR does not guarantee the accuracy of the information contained. This spreadsheet is subject to continual revision and updating. It is your responsibility to be aware of the most current information available. DENR is not responsible for errors or omissions that may be contained herein.

SOURCE / FACILITY / USER INPUT SUMMARY (FROM INPUT SCREEN)

COMPANY:	Carolina Sunrock LLC	FACILITY ID NO.:	TBD
EMISSION SOURCE DESCRIPTION:	NSPS affected 250 tph Waste, No.4 or No.6 fuel oil-fired, Drum mix asphalt plant (80 mmBtu/hr heat input, w/silofill, with RAP, sulfur=0.5%)	PERMIT NUMBER:	TBD
		FACILITY CITY:	Hill Quarry & Distribut
		FACILITY COUNTY:	Caswell
Annual Production Limit:	600,000 ton/year	Daily Production Limit:	0 ton/day
SPREADSHEET PREPARED BY:	Scott Martino		

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION

AIR POLLUTANT EMITTED	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMISSIONS			
	lb/hr	tons/yr	(BEFORE CONTROLS / LIMITS)		(AFTER CONTROLS / LIMITS)	
PARTICULATE MATTER (PM)	11.42	14.13		70.51		14.13
PARTICULATE MATTER<10 MICRONS (PM ₁₀)	6.93	8.74		35.43		8.74
PARTICULATE MATTER<2.5 MICRONS (PM _{2.5})						
SULFUR DIOXIDE (SO ₂)	21.54	27.79		94.35		27.79
NITROGEN OXIDES (NO _x)	13.92	17.25		60.98		17.25
CARBON MONOXIDE (CO)	33.18	39.95		145.31		39.95
VOLATILE ORGANIC COMPOUNDS (VOC)	12.03	14.44		52.68		14.44
TOTAL HAP	2.57	3.08		11.25		3.08
LARGEST HAP (formaldehyde)	0.80	0.96		3.49		0.96

Attach INPUT worksheet

TOXIC / HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION

TOXIC / HAZARDOUS AIR POLLUTANT	CAS Number	ACTUAL EMISSIONS		POTENTIAL EMISSIONS				EMISSION FACTOR (lb/ton asphalt produced, with Fabric filter controls)
		(AFTER CONTROLS / LIMITS)		(BEFORE CONTROLS / LIMITS)		(AFTER CONTROLS / LIMITS)		
		lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	
Acetaldehyde (TH)	75070	3.25E-01	7.80E+02	3.25E-01	2847.00	3.25E-01	7.80E+02	1.3E-03
Acrolein (TH)	107028	6.50E-03	1.56E+01	6.50E-03	56.94	6.50E-03	1.56E+01	2.6E-05
Antimony unlisted compounds (H)	SBC-other	4.50E-05	1.08E-01	4.50E-05	0.39	4.50E-05	1.08E-01	1.8E-07
Arsenic unlisted cmpds (comp. of ASC) (TH)	ASC-other	1.40E-04	3.36E-01	1.40E-04	1.23	1.40E-04	3.36E-01	5.6E-07
Benzene (TH)	71432	9.90E-02	2.38E+02	9.90E-02	867.38	9.90E-02	2.38E+02	4.0E-04
Benzo(a)pyrene (T)	50328	4.41E-06	1.06E-02	4.41E-06	0.04	4.41E-06	1.06E-02	1.8E-08
Beryllium metal (unreacted) (TH)	7440417	0.00E+00	0.00E+00	0.00E+00	0.00	0.00E+00	0.00E+00	0.0E+00
Cadmium metal (elemental unreacted) (TH)	7440439	1.03E-04	2.46E-01	1.03E-04	0.90	1.03E-04	2.46E-01	4.1E-07
Carbon disulfide (TH)	75150	6.23E-04	1.49E+00	6.23E-04	5.45	6.23E-04	1.49E+00	2.5E-06
Chromium unlisted cmpds (add w/chrom acid to get CRC) (H)	CRC-other	1.26E-03	3.03E+00	1.26E-03	11.06	1.26E-03	3.03E+00	5.1E-06
Chromic acid (VI) (component of solCR6 and CRC) (TH)	7738945	1.13E-04	2.70E-01	1.13E-04	0.99	1.13E-04	2.70E-01	4.5E-07
Cobalt unlisted compounds (H)	COC-other	6.50E-06	1.56E-02	6.50E-06	0.06	6.50E-06	1.56E-02	2.6E-08
Cumene (H)	98828	1.14E-03	2.74E+00	1.14E-03	10.02	1.14E-03	2.74E+00	4.6E-06
Ethyl benzene (H)	100414	6.41E-02	1.54E+02	6.41E-02	561.24	6.41E-02	1.54E+02	2.6E-04
Ethyl chloride (chloroethane) (H)	75003	2.18E-06	5.24E-03	2.18E-06	0.02	2.18E-06	5.24E-03	8.7E-09
Formaldehyde (TH)	50000	7.97E-01	1.91E+03	7.97E-01	6981.17	7.97E-01	1.91E+03	3.2E-03
Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8 (T)	57653857	3.25E-10	7.80E-07	3.25E-10	0.00	3.25E-10	7.80E-07	1.3E-12
Hexane, n- (TH)	110543	2.39E-01	5.74E+02	2.39E-01	2095.50	2.39E-01	5.74E+02	9.6E-04
Hydrogen Chloride (hydrochloric acid) (TH)	7647010	5.25E-02	1.26E+02	5.25E-02	459.90	5.25E-02	1.26E+02	2.1E-04
Hydrogen Sulfide (T)	7783064	1.37E-02	3.28E+01	1.37E-02	119.84	1.37E-02	3.28E+01	5.5E-05
Lead unlisted compounds (H)	PBC-other	3.75E-03	9.00E+00	3.75E-03	32.85	3.75E-03	9.00E+00	1.5E-05
Manganese unlisted compounds (T)	MNC-other	1.93E-03	4.62E+00	1.93E-03	16.86	1.93E-03	4.62E+00	7.7E-06
Mercury, vapor (TH)	7439976	6.50E-04	1.56E+00	6.50E-04	5.69	6.50E-04	1.56E+00	2.6E-06
Methyl bromide (H)	74839	2.49E-04	5.98E-01	2.49E-04	2.18	2.49E-04	5.98E-01	1.0E-06
Methyl chloride (H)	74873	1.56E-04	3.74E-01	1.56E-04	1.37	1.56E-04	3.74E-01	6.2E-07
Methyl chloroform (TH)	71556	1.20E-02	2.88E+01	1.20E-02	105.12	1.20E-02	2.88E+01	4.8E-05
Methyl ethyl ketone (TH)	78933	6.70E-03	1.61E+01	6.70E-03	58.67	6.70E-03	1.61E+01	2.7E-05
Methylene chloride (TH)	75092	8.23E-06	1.97E-02	8.23E-06	0.07	8.23E-06	1.97E-02	3.3E-08
Naphthalene (H)	91203	1.65E-01	3.95E+02	1.65E-01	1442.95	1.65E-01	3.95E+02	6.6E-04
Nickel metal (TH)	7440020	1.58E-02	3.78E+01	1.58E-02	137.97	1.58E-02	3.78E+01	6.3E-05
Perchloroethylene (tetrachloroethylene) (TH)	127184	8.01E-05	1.92E-01	8.01E-05	0.70	8.01E-05	1.92E-01	3.2E-07
Phenol (TH)	108952	1.01E-03	2.41E+00	1.01E-03	8.81	1.01E-03	2.41E+00	4.0E-06
Phosphorus Metal, Yellow or White (H)	7723140	7.00E-03	1.68E+01	7.00E-03	61.32	7.00E-03	1.68E+01	2.8E-05
Polycyclic Organic Matter (H)	POM	2.20E-01	5.28E+02	2.20E-01	1927.20	2.20E-01	5.28E+02	8.8E-04
Propionaldehyde (H)	123386	3.25E-02	7.80E+01	3.25E-02	284.70	3.25E-02	7.80E+01	1.3E-04
Quinone (H)	106514	4.00E-02	9.60E+01	4.00E-02	350.40	4.00E-02	9.60E+01	1.6E-04
Selenium compounds (H)	SEC	8.75E-05	2.10E-01	8.75E-05	0.77	8.75E-05	2.10E-01	3.5E-07
Styrene (TH)	100425	2.40E-04	5.77E-01	2.40E-04	2.11	2.40E-04	5.77E-01	9.6E-07
Tetrachlorodibenzo-p-dioxin, 2,3,7,8- (TH)	1746016	5.25E-11	1.26E-07	5.25E-11	0.00	5.25E-11	1.26E-07	2.1E-13

Toluene (TH)	108883	7.29E-01	1.75E+03	7.29E-01	6386.67	7.29E-01	1.75E+03	2.9E-03
Trichloroethylene (TH)	79016	0.00E+00	0.00E+00	0.00E+00	0.00	0.00E+00	0.00E+00	0.0E+00
Trichlorofluoromethane (CFC 111) (T)	75694	1.35E-05	3.24E-02	1.35E-05	0.12	1.35E-05	3.24E-02	5.4E-08
Trimethylpentane, 2,2,4- (H)	540841	1.00E-02	2.41E+01	1.00E-02	87.85	1.00E-02	2.41E+01	4.0E-05
Xylene (TH)	1330207	6.04E-02	1.45E+02	6.04E-02	528.72	6.04E-02	1.45E+02	2.4E-04
Xylene, o- (H)	95476	2.57E-03	6.16E+00	2.57E-03	22.50	2.57E-03	6.16E+00	1.0E-05

TOXIC AIR POLLUTANT EMISSIONS INFORMATION (FOR PERMITTING PURPOSES)

Expected actual emissions after controls and limitations consisting of an annual production limit of 600000 tons and a daily production limit of 0 tons.						EMISSION FACTOR (lb/ton asphalt produced, with Fabric filter controls)
TOXIC AIR POLLUTANT	CAS Num.	lb/hr	lb/day	lb/yr	Modeling Required?	
Acetaldehyde (TH)	75070	3.25E-01	0.00E+00	7.80E+02	NO. Based on facility-wide potential.	1.30E-03
Acrolein (TH)	107028	6.50E-03	0.00E+00	1.56E+01	NO. Based on facility-wide potential.	2.60E-05
Arsenic unlisted cmpds (comp. of ASC) (TH)	ASC-other	1.40E-04	0.00E+00	3.36E-01	YES. Modeling required	5.60E-07
Benzene (TH)	71432	9.90E-02	0.00E+00	2.38E+02	YES. Modeling required	3.96E-04
Benzo(a)pyrene (T)	50328	4.41E-06	0.00E+00	1.06E-02	NO. Based on facility-wide potential.	1.76E-08
Beryllium metal (unreacted) (TH)	7440417	0.00E+00	0.00E+00	0.00E+00	NO. Based on facility-wide potential.	0.00E+00
Cadmium metal (elemental unreacted) (TH)	7440439	1.03E-04	0.00E+00	2.46E-01	NO. Because of operating restriction	4.10E-07
Carbon disulfide (TH)	75150	6.23E-04	0.00E+00	1.49E+00	NO. Based on facility-wide potential.	2.49E-06
Soluble Chromate compounds as Chrome (VI) (TH)	SOLCR6	1.13E-04	0.00E+00	2.70E-01	NO. Based on facility-wide potential.	4.50E-07
Formaldehyde (TH)	50000	7.97E-01	0.00E+00	1.91E+03	YES. Modeling required	3.19E-03
Hexane, n- (TH)	110543	2.39E-01	0.00E+00	5.74E+02	NO. Based on facility-wide potential.	9.57E-04
Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8 (T)	57653857	3.25E-10	0.00E+00	7.80E-07	NO. Based on facility-wide potential.	1.30E-12
Hydrogen Sulfide (T)	7783064	1.37E-02	0.00E+00	3.28E+01	NO. Based on facility-wide potential.	5.47E-05
Manganese unlisted compounds (T)	MNC-other	1.93E-03	0.00E+00	4.62E+00	NO. Based on facility-wide potential.	7.70E-06
Mercury, vapor (TH)	7439976	6.50E-04	0.00E+00	1.56E+00	NO. Because of operating restriction	2.60E-06
Methylene chloride (TH)	75092	8.23E-06	0.00E+00	1.97E-02	NO. Based on facility-wide potential.	3.29E-08
Methyl chloroform (TH)	71556	1.20E-02	0.00E+00	2.88E+01	NO. Based on facility-wide potential.	4.80E-05
Methyl ethyl ketone (TH)	78933	6.70E-03	0.00E+00	1.61E+01	NO. Based on facility-wide potential.	2.68E-05
Nickel metal (TH)	7440020	1.58E-02	0.00E+00	3.78E+01	NO. Because of operating restriction	6.30E-05
Perchloroethylene (tetrachloroethylene) (TH)	127184	8.01E-05	0.00E+00	1.92E-01	NO. Based on facility-wide potential.	3.20E-07
Phenol (TH)	108952	1.01E-03	0.00E+00	2.41E+00	NO. Based on facility-wide potential.	4.02E-06
Styrene (TH)	100425	2.40E-04	0.00E+00	5.77E-01	NO. Based on facility-wide potential.	9.62E-07
Tetrachlorodibenzo-p-dioxin, 2,3,7,8- (TH)	1746016	5.25E-11	0.00E+00	1.26E-07	NO. Based on facility-wide potential.	2.10E-13
Toluene (TH)	108883	7.29E-01	0.00E+00	1.75E+03	NO. Based on facility-wide potential.	2.92E-03
Trichloroethylene (TH)	79016	0.00E+00	0.00E+00	0.00E+00	NO. Based on facility-wide potential.	0.00E+00
Trichlorofluoromethane (CFC 111) (T)	75694	1.35E-05	0.00E+00	3.24E-02	NO. Based on facility-wide potential.	5.41E-08
Xylene (TH)	1330207	6.04E-02	0.00E+00	1.45E+02	NO. Based on facility-wide potential.	2.41E-04

This sheet presents the emission rate calculations that are necessary for modeling determinations.

emissions from handling										dryer		Silo Filling		Loadout		total handling		total		Controlled volumetric emissions (Bbl/day)		Controlled volumetric emissions (Bbl/ton)		Controlled volumetric emissions (Bbl/ton)		Comments			
Pollutant	CAS No.	dryer	TPER	Units	TPER	Units	Controlled Emission Factor (lb/ton)	Controlled Emission Rate (lb/hr)	Controlled Emission Rate (lb/ton)	Emission Factor (lb/ton)	Emission Rate (lb/hr)	Emission Rate (lb/ton)	Emission Factor (lb/ton)	Emission Rate (lb/hr)	Emission Rate (lb/ton)	Emission Factor (lb/ton)	Emission Rate (lb/hr)	Emission Rate (lb/ton)	Emission Factor (lb/ton)	Emission Rate (lb/hr)	Emission Rate (lb/ton)	Emission Factor (lb/ton)	Emission Rate (lb/hr)	Emission Rate (lb/ton)	Emission Factor (lb/ton)	Emission Rate (lb/hr)	Emission Rate (lb/ton)	Comments	
Acetaldehyde (TH)	7570	yes	no	6.8	bbl/hr	10728	3.35E-01	1.30E-03	7.00E-05											7.00E-05	2.85E-03	0.00E-00	7.00E-05	2.85E-03	0.00E-00	7.00E-05	2.85E-03	0.00E-00	NOTE 1
Acetone (TH)	67	yes	no	0.02	bbl/hr	10728	6.50E-05	2.80E-05	6.50E-05											3.95E-01	1.58E-01	0.00E-00	3.95E-01	1.58E-01	0.00E-00	3.95E-01	1.58E-01	0.00E-00	NOTE 1
Acrolein (TH)	107028	yes	yes	0.04	bbl/hr	10728	7.55E-01	3.10E-03	7.55E-01											7.97E-01	3.19E-01	0.00E-00	7.97E-01	3.19E-01	0.00E-00	7.97E-01	3.19E-01	0.00E-00	NOTE 3
Formaldehyde (TH)	50000	yes	yes	0.24	bbl/hr	10852														4.02E-06	1.01E-03	2.41E-02	4.02E-06	1.01E-03	2.41E-02	4.02E-06	1.01E-03	2.41E-02	NOTE 1
Phenol (TH)	10852	no	yes	2.7	bbl/hr	10852														2.90E-04	7.57E-03	0.00E-00	2.90E-04	7.57E-03	0.00E-00	2.90E-04	7.57E-03	0.00E-00	NOTE 1
Syrene (TH)	100425	no	yes	0.24	bbl/hr	10852														5.41E-08	1.35E-05	0.00E-00	5.41E-08	1.35E-05	0.00E-00	5.41E-08	1.35E-05	0.00E-00	NOTE 1
Trichloroethylene (CFC 113) (TH)	75384	yes	yes	140	bbl/hr	75384														4.80E-05	1.20E-02	0.00E-00	4.80E-05	1.20E-02	0.00E-00	4.80E-05	1.20E-02	0.00E-00	NOTE 1
Methy chloroform (TH)	71558	yes	yes	64	bbl/hr	250														4.80E-05	1.20E-02	0.00E-00	4.80E-05	1.20E-02	0.00E-00	4.80E-05	1.20E-02	0.00E-00	NOTE 1
Methy ethyl ketone (TH)	78	yes	yes	22.4	bbl/hr	78														4.80E-05	1.20E-02	0.00E-00	4.80E-05	1.20E-02	0.00E-00	4.80E-05	1.20E-02	0.00E-00	NOTE 1
Methy isobutyl ketone (TH)	108	yes	yes	10.4	bbl/hr	108														4.80E-05	1.20E-02	0.00E-00	4.80E-05	1.20E-02	0.00E-00	4.80E-05	1.20E-02	0.00E-00	NOTE 1
Methy isobutyl ketone (TH)	108	yes	yes	10.4	bbl/hr	108														4.80E-05	1.20E-02	0.00E-00	4.80E-05	1.20E-02	0.00E-00	4.80E-05	1.20E-02	0.00E-00	NOTE 1
Xylene (TH)	108483	yes	yes	18.4	bbl/hr	57														4.80E-05	1.20E-02	0.00E-00	4.80E-05	1.20E-02	0.00E-00	4.80E-05	1.20E-02	0.00E-00	NOTE 1
Xylene (TH)	1330207	yes	yes	18.4	bbl/hr	57														4.80E-05	1.20E-02	0.00E-00	4.80E-05	1.20E-02	0.00E-00	4.80E-05	1.20E-02	0.00E-00	NOTE 1
Methylene chloride (TH)	7502	no	yes	0.39	bbl/hr	1500														4.80E-05	1.20E-02	0.00E-00	4.80E-05	1.20E-02	0.00E-00	4.80E-05	1.20E-02	0.00E-00	NOTE 1
Soluble Chromatic compounds as Chrome (VI) (TH)	SOLICRE	yes	no	0.013	bbl/hr		4.50E-07	1.13E-04	4.50E-07											4.50E-07	1.13E-04	0.00E-00	4.50E-07	1.13E-04	0.00E-00	4.50E-07	1.13E-04	0.00E-00	NOTE 1
Heptane n-TH)	110543	yes	yes	23	bbl/day		9.36E-04	2.35E-01	9.36E-04											9.36E-04	2.35E-01	0.00E-00	9.36E-04	2.35E-01	0.00E-00	9.36E-04	2.35E-01	0.00E-00	NOTE 1
Manganese unilited compounds (T)	MNC-oilher	yes	no	0.63	bbl/day		7.70E-06	1.93E-03	7.70E-06											7.70E-06	1.93E-03	0.00E-00	7.70E-06	1.93E-03	0.00E-00	7.70E-06	1.93E-03	0.00E-00	NOTE 1
Mercury, vapor (TH)	743978	yes	no	0.13	bbl/day		6.00E-06	1.50E-04	6.00E-06											6.00E-06	1.50E-04	0.00E-00	6.00E-06	1.50E-04	0.00E-00	6.00E-06	1.50E-04	0.00E-00	NOTE 2
Nickel metal (TH)	744020	yes	no	0.13	bbl/day		6.00E-06	1.50E-04	6.00E-06											6.00E-06	1.50E-04	0.00E-00	6.00E-06	1.50E-04	0.00E-00	6.00E-06	1.50E-04	0.00E-00	NOTE 2
Nickel metal (TH)	744020	yes	no	0.13	bbl/day		6.00E-06	1.50E-04	6.00E-06											6.00E-06	1.50E-04	0.00E-00	6.00E-06	1.50E-04	0.00E-00	6.00E-06	1.50E-04	0.00E-00	NOTE 2
Carbon disulfide (TH)	75150	no	yes	3.9	bbl/day		2.10E-13	5.25E-11	2.10E-13											2.10E-13	5.25E-11	0.00E-00	2.10E-13	5.25E-11	0.00E-00	2.10E-13	5.25E-11	0.00E-00	NOTE 1
Tetrachlorodibenzo-p-dioxin, 2,3,7,8- (TH)	1746018	yes	no	0.0002	bbl/hr		6.00E-07	1.40E-04	6.00E-07											6.00E-07	1.40E-04	0.00E-00	6.00E-07	1.40E-04	0.00E-00	6.00E-07	1.40E-04	0.00E-00	NOTE 1
Arsenic unilited compds (comp. of ASC) (TH)	ASC-oilher	yes	no	0.016	bbl/hr		3.90E-04	9.75E-02	3.90E-04											3.90E-04	9.75E-02	0.00E-00	3.90E-04	9.75E-02	0.00E-00	3.90E-04	9.75E-02	0.00E-00	NOTE 1
Benzene (TH)	74322	yes	yes	6.1	bbl/hr		9.00E-09	2.45E-06	9.00E-09											9.00E-09	2.45E-06	0.00E-00	9.00E-09	2.45E-06	0.00E-00	9.00E-09	2.45E-06	0.00E-00	NOTE 1
Benzodipirene (TH)	50328	yes	yes	2.2	bbl/hr		5.18E-05	1.30E-02	5.18E-05											5.18E-05	1.30E-02	0.00E-00	5.18E-05	1.30E-02	0.00E-00	5.18E-05	1.30E-02	0.00E-00	NOTE 1
Benyltlen (unsubstituted) (TH)	773364	yes	yes	0.28	bbl/hr		4.10E-07	1.03E-04	4.10E-07											4.10E-07	1.03E-04	0.00E-00	4.10E-07	1.03E-04	0.00E-00	4.10E-07	1.03E-04	0.00E-00	NOTE 2
Cadmium metal (intermetal) (TH)	744039	yes	no	0.0051	bbl/hr		2.10E-04	5.25E-02	2.10E-04											2.10E-04	5.25E-02	0.00E-00	2.10E-04	5.25E-02	0.00E-00	2.10E-04	5.25E-02	0.00E-00	NOTE 1
Hexachlorodibenzo-p-dioxin, 1,2,3,6,7,8- (TH)	57653857	yes	no	0.0051	bbl/hr		2.10E-04	5.25E-02	2.10E-04											2.10E-04	5.25E-02	0.00E-00	2.10E-04	5.25E-02	0.00E-00	2.10E-04	5.25E-02	0.00E-00	NOTE 1
Hydrogen Chloride (hydrochloric acid) (TH)	7782010	yes	no	0.18	bbl/hr		2.10E-04	5.25E-02	2.10E-04											2.10E-04	5.25E-02	0.00E-00	2.10E-04	5.25E-02	0.00E-00	2.10E-04	5.25E-02	0.00E-00	NOTE 1
Pentachlorobenzene (TH)	127184	yes	no	1000	bbl/hr		2.10E-04	5.25E-02	2.10E-04											2.10E-04	5.25E-02	0.00E-00	2.10E-04	5.25E-02	0.00E-00	2.10E-04	5.25E-02	0.00E-00	NOTE 1
Pentachlorobenzene (TH)	127184	yes	no	1000	bbl/hr		2.10E-04	5.25E-02	2.10E-04											2.10E-04	5.25E-02	0.00E-00	2.10E-04	5.25E-02	0.00E-00	2.10E-04	5.25E-02	0.00E-00	NOTE 1
Trichloroethylene (TH)	79016	yes	yes	4000	bbl/hr		6.50E-04	1.63E-01	6.50E-04											6.50E-04	1.63E-01	0.00E-00	6.50E-04	1.63E-01	0.00E-00	6.50E-04	1.63E-01	0.00E-00	NOTE 1
Naphthalene (TH)	91203	yes	yes	4000	bbl/hr		6.50E-04	1.63E-01	6.50E-04											6.50E-04	1.63E-01	0.00E-00	6.50E-04	1.63E-01	0.00E-00	6.50E-04	1.63E-01	0.00E-00	NOTE 1
Phosphoric Metal, Yellow or White (H)	7723140	yes	no	8.00E-04	2.20E-01		8.00E-04	2.20E-01	8.00E-04											8.00E-04	2.20E-01	0.00E-00	8.00E-04	2.20E-01	0.00E-00	8.00E-04	2.20E-01	0.00E-00	NOTE 1
Polycyclic Organic Matter (H)	POM	yes	no	8.00E-04	2.20E-01		8.00E-04	2.20E-01	8.00E-04											8.00E-04	2.20E-01	0.00E-00	8.00E-04	2.20E-01	0.00E-00	8.00E-04	2.20E-01	0.00E-00	NOTE 1
Propionaldehyde (H)	123386	yes	no	1.30E-04	3.25E-02		1.30E-04	3.25E-02	1.30E-04											1.30E-04	3.25E-02	0.00E-00	1.30E-04	3.25E-02	0.00E-00	1.30E-04	3.25E-02	0.00E-00	NOTE 1
Quinone (H)	109514	yes	no	1.30E-04	3.25E-02		1.30E-04	3.25E-02	1.30E-04											1.30E-04	3.25E-02	0.00E-00	1.30E-04	3.25E-02	0.00E-00	1.30E-04	3.25E-02	0.00E-00	NOTE 1
Selenium compounds (H)	SEC	yes	no	3.50E-07	8.75E-05		3.50E-07	8.75E-05	3.50E-07											3.50E-07	8.75E-05	0.00E-00	3.50E-07	8.75E-05	0.00E-00	3.50E-07	8.75E-05	0.00E-00	NOTE 1
Trimethylamine, 2,2,4- (H)	540841	yes	no	4.00E-05	1.00E-02		4.00E-05	1.00E-02	4.00E-05											4.00E-05	1.00E-02	0.00E-00	4.00E-05	1.00E-02	0.00E-00	4.00E-05	1.00E-02	0.00E-00	NOTE 1
Antimony unilited compounds (H)	ASC-oilher	yes	no	0.0051	bbl/hr		2.10E-04	5.25E-02	2.10E-04											2.10E-04	5.25E-02	0.00E-00	2.10E-04	5.25E-02	0.00E-00	2.10E-04	5.25E-02	0.00E-00	NOTE 1
Cobalt unilited compounds (H)	COC-oilher	yes	no	0.0051	bbl/hr		2.10E-04	5.25E-02	2.10E-04											2.10E-04	5.25E-02	0.00E-00	2.10E-04	5.25E-02	0.00E-00	2.10E-04	5.25E-02	0.00E-00	NOTE 1
Enyl benzene (H)	100414	yes	no	0.0051	bbl/hr		2.10E-04	5.25E-02	2.10E-04											2.10E-04	5.25E-02	0.00E-00	2.10E-04	5.25E-02	0.00E-00	2.10E-04	5.25E-02	0.00E-00	NOTE 1
Lead unilited compounds (H)	PBC-oilher	yes	no	0.0051	bbl/hr		2.10E-04	5.25E-02	2.10E-04											2.10E-04	5.25E-02	0.00E-00	2.10E-04	5.25E-02	0.00E-00	2.10E-04	5.25E-02	0.00E-00	NOTE 1
Methyl bromide (H)	74839	yes	no	0.0051	bbl/hr		2.10E-04	5.25E-02	2.10E-04											2.10E-04	5.25E-02	0.00E-00	2.10E-04	5.25E-02	0.00E-00	2.10E-04	5.25E-02	0.00E-00	NOTE 1
Cumene (H)	98828	yes	no	0.0051	bbl/hr		2.10E-04	5.25E-02	2.10E-04											2.10E-04	5.25E-02	0.00E-00	2.10E-04	5.25E-02	0.00E-00	2.10E-04	5.25E-02	0.00E-00	NOTE 1
Ethyl chloride (chloroethane) (H)	75003	yes	no	0.0051	bbl/hr		2.10E-04	5.25E-02	2.10E-04											2.10E-04	5.25E-02	0.00E-00	2.10E-04	5.25E-02	0.00E-00	2.10E-04	5.25E-02	0.00E-00	NOTE 1
Methyl chloride (H)	74873	yes</																											

RAP crusher

maximum capacity 65 tph
 hours of operation 8760 hours

	emission factors (dry)		emissions		emissions	
	(lb/ton)	(lb/ton)	(lb/hr)	(lb/hr)	ton/yr	ton/yr
	TSP	PM-10	TSP	PM-10	TSP	PM-10
primary crusher	0.0054	0.0024	0.351	0.156	1.54	0.68
screening	0.025	0.0087	1.625	0.5655	7.12	2.48
conveyor transfer point	0.018	0.0066	1.17	0.429	5.12	1.88
total			3.15	1.15	13.78	5.04

combined EF 0.0484 0.0177

Emissions summary from Silo Filling and Loadout operations

Pollutant	CAS Nos.	Emission Factors		Potential Emissions		Emission factors
		(lb/ton)	(lb/ton)	(lb/hr)	(lb/hr)	(lb/ton)
		Silo Filling SCC-3-05- 002-13	Load out SCC-3-05- 002-14	Silo Filling SCC-3-05- 002-13	Load out SCC-3-05- 002-14	Silo Filling plus Load Out
Total PM		5.86E-04	5.22E-04	1.46E-01	1.30E-01	1.11E-03
CO		1.18E-03	1.35E-03	2.95E-01	3.37E-01	2.53E-03
VOC		1.22E-02	3.91E-03	3.05E+00	9.77E-01	1.61E-02
PAH HAPs TOTAL		2.89E-05	2.02E-05	7.24E-03	5.05E-03	4.92E-05
Volatile organic HAPs, TOTAL		1.58E-04	6.24E-05	3.96E-02	1.56E-02	2.21E-04
HAPs, TOTAL		1.87E-04	8.66E-05	4.68E-02	2.17E-02	2.74E-04
Benzo(a)pyrene (T)	50328	0.00E+00	7.84E-09	0.00E+00	1.96E-06	7.84E-09
Napthalene (H)	91203	4.62E-06	4.26E-06	1.16E-03	1.07E-03	8.88E-06
Phenol (TH)	108952	0.00E+00	4.02E-06	0.00E+00	1.01E-03	4.02E-06
Benzene (TH)	71432	3.90E-06	2.16E-06	9.75E-04	5.41E-04	6.06E-06
Methyl bromide (H)	74839	5.97E-07	3.99E-07	1.49E-04	9.98E-05	9.96E-07
Methyl ethyl ketone (TH)	78933	4.75E-06	2.04E-06	1.19E-03	5.09E-04	6.79E-06
Carbon disulfide (TH)	75150	1.95E-06	5.41E-07	4.87E-04	1.35E-04	2.49E-06
Cumene (H)	98828	0.00E+00	4.57E-06	0.00E+00	1.14E-03	4.57E-06
Ethyl benzene (H)	100414	4.63E-06	1.16E-05	1.16E-03	2.91E-03	1.63E-05
Ethyl chloride (chloroethane) (H)	75003	0.00E+00	8.73E-09	0.00E+00	2.18E-06	8.73E-09
Formaldehyde (TH)	50000	8.41E-05	3.66E-06	2.10E-02	9.15E-04	8.77E-05
Hexane, n- (TH)	110543	1.22E-05	6.24E-06	3.05E-03	1.56E-03	1.84E-05
Methyl chloride (H)	74873	0.00E+00	6.24E-07	0.00E+00	1.56E-04	6.24E-07
Methyl chloroform (TH)	71556	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Methylene chloride (TH)	75092	3.29E-08	0.00E+00	8.23E-06	0.00E+00	3.29E-08
Perchloroethylene (tetrachloroethylene) (TH)	127184	0.00E+00	3.20E-07	0.00E+00	8.01E-05	3.20E-07
Styrene (TH)	100425	6.58E-07	3.04E-07	1.65E-04	7.59E-05	9.62E-07
Toluene (TH)	108883	7.56E-06	8.73E-06	1.89E-03	2.18E-03	1.63E-05
Trichloroethylene (TH)	79016	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Trichlorofluoromethane (CFC 111) (T)	75694	0.00E+00	5.41E-08	0.00E+00	1.35E-05	5.41E-08
Trimethylpentane, 2,2,4- (H)	540841	3.78E-08	7.49E-08	9.44E-06	1.87E-05	1.13E-07
Xylene (TH)	1330207	2.44E-05	1.71E-05	6.09E-03	4.26E-03	4.14E-05
Xylene, o- (H)	95476	6.95E-06	3.33E-06	1.74E-03	8.32E-04	1.03E-05
Hydrgen Sulfide (T)	7783064	1.46E-06	1.46E-06	3.65E-04	3.65E-04	2.92E-06

Plant maximum production capacity:	250	tons per hour
Requested Annual Production Limit:	600,000	tons per year
Requested Daily Production Limit:	0	tons per day

V
t
-0.5 %
325 oF
785 oR

Table 11.1-14

Predictive Emission Factor Equations for Load-out and silo Filling Operations

source	pollutant	EF (lb/ton)
Load out SCC-3-05-002-14	Total PM	0.000521937
	Organic PM	0.000340937
	TOC	0.004158948
	CO	0.00134924
Silo Filling SCC-3-05-002-13	Total PM	0.000585889
	Organic PM	0.000253889
	TOC	0.012186685
	CO	0.001179981

Table 11.1-15

Speciation Profiles for Load-out, Silo Filling and Asphalt Storage Emissions - Organic PM based Compounds

		Spec. profile for Load-out and yard emissions % Compound / Organic PM	Spec. profile for Silo filling and asphalt storage tank emissions % Compound / Organic PM
Benzo(a)pyrene (T)	50328	0.0023	0
Napthalene (H)	91203	1.25	1.82
PAH HAPs TOTAL		5.93	11.4
Phenol (TH)	108952	1.18	0

loadout emission factors (lb/ton)	Silo filling emission factors (lb/ton)
7.84155E-09	0
4.26171E-06	4.62078E-06
2.02176E-05	2.89434E-05
4.02306E-06	0

Table 11.1-16

Speciation Profiles for Load-out, Silo Filling and Asphalt Storage Emissions - Organic Volatile based Compounds

		Spec. profile for Load-out and yard emissions % Compound / TOC	Spec. profile for Silo filling and asphalt % Compound / TOC
VOC	94	100	
Benzene (TH)	71432	0.052	0.032
Methyl bromide (H)	74839	0.0096	0.0049
Methyl ethyl ketone (TH)	78933	0.049	0.039
Carbon disulfide (TH)	75150	0.013	0.016
Cumene (H)	98828	0.11	0
Ethyl benzene (H)	100414	0.28	0.038
Ethyl chloride (chloroethane) (H)	75003	0.00021	
Formaldehyde (TH)	50000	0.088	0.69
Hexane, n- (TH)	110543	0.15	0.1
Methyl chloride (H)	74873	0.015	
Methyl chloroform (TH)	71556	0	0
Methylene chloride (TH)	75092	0	0.00027
Perchloroethylene (tetrachloroethylene) (TH)	127184	0.0077	0
Styrene (TH)	100425	0.0073	0.0054
Toluene (TH)	108883	0.21	0.062
Trichloroethylene (TH)	79016	0	0
Trichlorofluoromethane (CFC 111) (T)	75694	0.0013	0
Trimethylpentane, 2,2,4- (H)	540841	0.0018	0.00031
Xylene (TH)	1330207	0.41	0.2
Xylene, o- (H)	95476	0.08	0.057
Volatile organic HAPs, TOTAL		1.5	1.3

loadout emission factors (lb/ton)	Silo filling emission factors (lb/ton)
0.003909411	0.012186685
2.16265E-06	3.89974E-06
3.99259E-07	5.97148E-07
2.03788E-06	4.75281E-06
5.40663E-07	1.94987E-06
4.57484E-06	0
1.16451E-05	4.63094E-06
8.73379E-09	0
3.65987E-06	8.40881E-05
6.23842E-06	1.21867E-05
6.23842E-07	0
0	0
0	3.29041E-08
3.20239E-07	0
3.03603E-07	6.58081E-07
8.73379E-06	7.55574E-06
0	0
5.40663E-08	0
7.48611E-08	3.77787E-08
1.70517E-05	2.43734E-05
3.32716E-06	6.94641E-06
6.23842E-05	0.000158427

Hydrogen Sulfide 7783064

loadout emission factors (lb/ton)	Silo filling emission factors (lb/ton)
0.00000146	0.00000146

*** These emissions factors were taken from the October 12, 2005 letter from Keith Overcash stating the emissions factors resulting from testing at Mangum Asphalt Services, Knightdale, Wake County, and at S.T. Wooten Asphalt Services, Sanford, Lee County.

**FUEL OIL COMBUSTION EMISSIONS CALCULATOR REVISION G 11/5/2012 - INPUT SCREEN**

Instructions: Enter emission source / facility data on the "INPUT" tab/screen. The air emission results and summary of input data are viewed / printed on the "OUTPUT" tab/screen. The different tabs are on the bottom of this screen.

This spreadsheet is for your use only and should be used with caution. DENR does not guarantee the accuracy of the information contained. This spreadsheet is subject to continual revision and updating. It is your responsibility to be aware of the most current information available. DENR is not responsible for errors or omissions that may be contained herein.

Directions: Enter and select information in the boxes that are highlighted in blue:

COMPANY NAME:	Carolina Sunrock
FACILITY ID NUMBER:	
PERMIT NUMBER:	
FACILITY CITY:	Prospect Hill Quarry & Distribution Center
FACILITY COUNTY:	Caswell
SPREADSHEET PREPARED BY:	Aimee Andrews
EMISSION SOURCE DESCRIPTION:	No. 2 oil-fired Boiler
EMISSION SOURCE ID NO.:	ES-ACH1
LATEST CONSTRUCTION/MODIFICATION DATE:	2021
SELECT THE TYPE OF BOILER FROM THE LISTS BELOW:	26

Boilers >= 100 mmBtu/hr	Boilers >= 100 mmBtu/hr (cont'd)
1 = No. 6 oil-fired, normal firing (U)	17 = No. 2 oil-fired (C)
2 = No. 6 oil-fired, normal firing (I)	18 = No. 2 oil-fired, LNB/FGR (U)
3 = No. 6 oil-fired, normal firing (C)	19 = No. 2 oil-fired, LNB/FGR (I)
4 = No. 6 oil-fired, normal firing, low Nox burner (U)	20 = No. 2 oil-fired, LNB/FGR (C)
5 = No. 6 oil-fired, normal firing, low Nox burner (I)	
6 = No. 6 oil-fired, normal firing, low Nox burner (C)	21 = Vertical fired utility boiler
7 = No. 6 oil-fired, tangential firing (U)	
8 = No. 6 oil-fired, tangential firing, low Nox burner (U)	
9 = No. 5 oil-fired, normal firing (U)	Small Boilers < 100 mmBtu/hr
10 = No. 5 oil-fired, normal firing (I)	22 = No. 6 oil-fired (I)
11 = No. 5 oil-fired, tangential firing (U)	23 = No. 6 oil-fired (C)
12 = No. 4 oil-fired, normal firing (U)	24 = No. 5 oil-fired (C)
13 = No. 4 oil-fired, normal firing (I)	25 = No. 4 oil-fired (C)
14 = No. 4 oil-fired, tangential firing (U)	26 = No. 2 oil-fired (I)
15 = No. 2 oil-fired (U)	27 = No. 2 oil-fired (C)
16 = No. 2 oil-fired (I)	28 = Residential Furnace

Note: The emission factors for fuel oil-fired boilers depend on the boiler size and application type. In the listing of boiler types, the following notation is used: U = Utility boilers (producing steam for the generation of electricity), I = Industrial boilers (generating steam or hot water for process heat, electricity generation, or space heat), C = Commercial or institutional (used for space heating of commercial or institutional facilities) and residential (furnaces used for space heating purposes). Please be sure to select the proper boiler from the lists above.

EMISSION SOURCE INPUT DATA

MAXIMUM HEAT INPUT (MILLION BTU PER HOUR):	1.20	MMBTU/HR
ACTUAL ANNUAL FUEL USAGE (GALLONS PER YEAR):		GAL/YR
MAXIMUM ANNUAL FUEL USAGE (GALLONS PER YEAR):	75,085.7	GAL/YR
MAXIMUM FUEL SULFUR CONTENT (%):	0.00	% - (TYPE OVER IF NECESSARY - DEFAULT VALUE = 2.1 FOR RESIDUAL FUEL OIL OR 0.5 FOR DISTILLATE FUEL OIL)

FUEL HEATING VALUE

FUEL HEATING VALUE (BTU/GAL):	140,000	BTU/GAL
-------------------------------	---------	---------

DEFAULT WILL APPEAR AS FOLLOWS (not used for Greenhouse Gas calcs --See below for GHG defaults):

150,000	BTU/GAL FOR No. 6, 5, and 4 FUEL OIL
140,000	BTU/GAL ALL OTHERS

(TYPE OVER NUMBER AT RIGHT IF YOU HAVE SITE SPECIFIC DATA)

CONTROL DEVICE INPUT DATA

Note: Select the type of control devices from the pull-down menus below. Default control efficiencies will appear for each control device that is selected. The user may enter a different control efficiency to override these values if site specific data is available.

TYPE OF PARTICULATE CONTROL:	AVERAGE PARTICULATE CONTROL EFF.:
NONE/OTHER	0
TYPE OF POSTCOMBUSTION SULFUR DIOXIDE CONTROL:	AVERAGE SULFUR DIOXIDE CONTROL EFF.:
NONE/OTHER	0
TYPE OF NITROGEN OXIDE CONTROL:	AVERAGE NITROGEN OXIDE CONTROL EFF.:
NONE/OTHER	0

REQUESTED PERMIT LIMITATIONS (IF APPLICABLE)

REQUESTED MAXIMUM FUEL USAGE LIMIT (GALLONS PER YEAR)	75,085.7	GAL/YR
REQUESTED MAXIMUM FUEL SULFUR CONTENT (%)	0.00	%

(TYPE OVER IF NECESSARY - DEFAULT VALUES ARE THE CALCULATED POTENTIAL AND THE MAXIMUM SULFUR CONTENT AS SHOWN IN THE EMISSION SOURCE INPUT DATA SECTION)

ADDITIONAL INFORMATION FOR GREENHOUSE GAS EMISSIONS

ENTER CALCULATION TIER

from EPA Mandatory Reporting Rule (MRR) Subpart C - www.epa.gov/climatechange/emissions/ghgrulemaking.html

NOTE: EF is "Emission Factor"

SINCE TIER 3 IS NOT BEING USED,
FUEL CARBON CONTENT WILL NOT BE USED

SELECT FUEL TYPE

TIER 1: DEFAULT HIGH HEAT VALUE AND DEFAULT EF

2.7600 kg Carbon/gal

Distillate Fuel Oil No. 2

HIGH HEAT VALUE (HHV) FOR GHGs

FOR TIER 1 and TIER 3, the FUEL HEATING VALUE entered above is overridden with the EPA DEFAULT from Table C-1 of the EPA MRR:

Distillate Fuel Oil No. 2	0.138 mmBtu/gal	THIS VALUE WILL BE USED FOR GHG calculations- actual emissions
Distillate Fuel Oil No. 4	0.146 mmBtu/gal	
Residual Fuel Oil No. 5	0.14 mmBtu/gal	
Residual Fuel Oil No. 6	0.15 mmBtu/gal	

FOR TIER 2, the FUEL HEATING VALUE entered above is used. The value entered must be the annual average HHV of the fuel determined using procedures in the EPA MRR (see 98.33(a)(2))

Distillate Fuel Oil No. 2 DEFAULT HHV OF 0.138 mmBtu/gal THIS VALUE WILL BE USED FOR GHG calculations- actual emissions

**FUEL OIL COMBUSTION EMISSIONS CALCULATOR REVISION G 11/5/2012 - OUTPUT SCREEN**

Instructions: Enter emission source / facility data on the "INPUT" tab/screen. The air emission results and summary of input data are viewed / printed on the "OUTPUT" tab/screen. The different tabs are on the bottom of this screen.

This spreadsheet is for your use only and should be used with caution. DENR does not guarantee the accuracy of the information contained. This spreadsheet is subject to continual revision and updating. It is your responsibility to be aware of the most current information available. DENR is not responsible for errors or omissions that may be contained herein.

SOURCE / FACILITY / USER INPUT SUMMARY (FROM INPUT SCREEN)			
COMPANY:	Carolina Sunrock	MAX HEAT INPUT:	1.20 MMBTU/HR
FACILITY ID NO.:	0	FUEL HEAT VALUE:	140,000 BTU/GAL
PERMIT NUMBER:	0	HHV for GHG CALCULATIONS:	0.138 mm BTU/GAL
FACILITY CITY:	Prospect Hill Quarry & Caswell	ACTUAL ANNUAL FUEL USAGE:	0 GAL/YR
FACILITY COUNTY:	Caswell	MAXIMUM ANNUAL FUEL USAGE:	75,086 GAL/YR
USER NAME:	Aimee Andrews	MAXIMUM SULFUR CONTENT:	0.0 %
EMISSION SOURCE DESCRIPTION:	No. 2 oil-fired Boiler	REQUESTED PERMIT LIMITATIONS	
EMISSION SOURCE ID NO.:	ES-ACH1	MAX. FUEL USAGE:	75,086 GAL/YR
		MAX. SULFUR CONTENT:	0.0015 %
TYPE OF CONTROL DEVICES		POLLUTANT	CONTROL EFF.
NONE/OTHER		PM	0
NONE/OTHER		SO2	0
NONE/OTHER		NOx	0
METHOD USED TO COMPUTE ACTUAL GHG EMISSIONS: TIER 1: DEFAULT HIGH HEAT VALUE AND DEFAULT EF			
CARBON CONTENT USED FOR GHGS (kg C/gal): CARBON CONTENT NOT USED FOR CALCULATION TIER CHOSEN			

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION							
AIR POLLUTANT EMITTED	ACTUAL EMISSIONS		POTENTIAL EMISSIONS		EMISSION FACTOR		
	(AFTER CONTROLS / LIMITS)		(BEFORE CONTROLS / LIMITS)	(AFTER CONTROLS / LIMITS)	(lb/10 ³ gal)		
TOTAL PARTICULATE MATTER (PM) (FPM+CPM)	lb/hr	tons/yr	lb/hr	tons/yr	uncontrolled	controlled	
FILTERABLE PM (FPM)	0.03	0.00	0.03	0.12	0.03	0.12	3.30E+00 3.30E+00
CONDENSABLE PM (CPM)	0.02	0.00	0.02	0.08	0.02	0.08	2.00E+00 2.00E+00
FILTERABLE PM<10 MICRONS (PM ₁₀)	0.01	0.00	0.01	0.05	0.01	0.05	1.30E+00 1.30E+00
FILTERABLE PM<2.5 MICRONS (PM _{2.5})	0.01	0.00	0.01	0.04	0.01	0.04	1.00E+00 1.00E+00
SULFUR DIOXIDE (SO ₂)	0.00	0.00	0.00	0.01	0.00	0.01	2.50E-01 2.50E-01
NITROGEN OXIDES (NO _x)	0.00	0.00	0.00	0.01	0.00	0.01	2.13E-01 2.13E-01
CARBON MONOXIDE (CO)	0.17	0.00	0.17	0.75	0.17	0.75	2.00E+01 2.00E+01
VOLATILE ORGANIC COMPOUNDS (VOC)	0.04	0.00	0.04	0.19	0.04	0.19	5.00E+00 5.00E+00
LEAD	0.00	0.00	0.00	0.01	0.00	0.01	2.00E-01 2.00E-01
	0.00	0.00	0.00	0.00	0.00	0.00	1.26E-03 1.26E-03

TOXIC / HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION							
TOXIC / HAZARDOUS AIR POLLUTANT	CAS NUMBER	ACTUAL EMISSIONS		POTENTIAL EMISSIONS		EMISSION FACTOR	
		(AFTER CONTROLS / LIMITS)	(BEFORE CONTROLS / LIMITS)	(AFTER CONTROLS / LIMITS)	(BEFORE CONTROLS / LIMITS)	(lb/10 ³ gal)	
		lb/hr	lb/yr	lb/hr	lb/yr	uncontrolled	controlled
Antimony Unlisted Compounds	(H) SBC-Other	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Arsenic Unlisted Compounds	(TH) ASC-Other	4.8E-06	0.0E+00	4.8E-06	4.2E-02	5.60E-04	5.60E-04
Benzene	(TH) 71432	2.4E-05	0.0E+00	2.4E-05	2.1E-01	2.75E-03	2.75E-03
Beryllium Metal (unreacted)	(TH) 7440417	3.6E-06	0.0E+00	3.6E-06	3.2E-02	4.20E-04	4.20E-04
Cadmium Metal (elemental unreacted)	(TH) 7440439	3.6E-06	0.0E+00	3.6E-06	3.2E-02	4.20E-04	4.20E-04
Chromium Acid (VI)	(TH) 7738945	3.6E-06	0.0E+00	3.6E-06	3.2E-02	4.20E-04	4.20E-04
Cobalt Unlisted Compounds	(H) COC-Other	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Ethylbenzene	(H) 100414	7.0E-06	0.0E+00	7.0E-06	6.1E-02	8.17E-04	8.17E-04
Fluorides (sum fluoride compounds)	(T) 16984488	3.2E-04	0.0E+00	3.2E-04	2.8E+00	3.73E-02	3.73E-02
Formaldehyde	(TH) 50000	4.1E-04	0.0E+00	4.1E-04	3.6E+00	4.80E-02	4.80E-02
Lead Unlisted Compounds	(H) PBC-Other	1.1E-05	0.0E+00	1.1E-05	9.5E-02	1.26E-03	1.26E-03
Manganese Unlisted Compounds	(TH) MNC-Other	7.2E-06	0.0E+00	7.2E-06	6.3E-02	8.40E-04	8.40E-04
Mercury, vapor	(TH) 7439976	3.6E-06	0.0E+00	3.6E-06	3.2E-02	4.20E-04	4.20E-04
Methyl chloroform	(TH) 71566	2.0E-06	0.0E+00	2.0E-06	1.8E-02	2.36E-04	2.36E-04
Naphthalene	(H) 91203	2.9E-06	0.0E+00	2.9E-06	2.5E-02	3.33E-04	3.33E-04
Nickel Metal	(TH) 7440020	3.6E-06	0.0E+00	3.6E-06	3.2E-02	4.20E-04	4.20E-04
Phosphorus Metal, Yellow or White	(H) 7723140	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
POM rates uncontrolled	(H) POM	2.8E-05	0.0E+00	2.8E-05	2.5E-01	3.30E-03	3.30E-03
Selenium compounds	(H) SEC	1.8E-05	0.0E+00	1.8E-05	1.6E-01	2.10E-03	2.10E-03
Toluene	(TH) 108883	6.8E-04	0.0E+00	6.8E-04	6.0E+00	7.97E-02	7.97E-02
Xylene	(TH) 1330207	1.2E-05	0.0E+00	1.2E-05	1.1E-01	1.40E-03	1.40E-03
Total HAP	(H)	1.2E-03	0.0E+00	1.2E-03	1.1E+01	1.4E-01	1.4E-01
Largest HAP	(H)	6.83E-04	0.00E+00	6.83E-04	5.98E+00	7.97E-02	7.97E-02

TOXIC AIR POLLUTANT EMISSIONS INFORMATION (FOR PERMITTING PURPOSES)							
TOXIC AIR POLLUTANT	CAS Num.	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS		EMISSION FACTOR			
		lb/hr	lb/day	lb/yr	(lb/10 ³ gal)		
					uncontrolled	controlled	
Arsenic Unlisted Compounds	(TH) ASC-Other	4.80E-06	1.15E-04	4.20E-02	5.60E-04	5.60E-04	
Benzene	(TH) 71432	2.36E-05	5.66E-04	2.06E-01	2.75E-03	2.75E-03	
Beryllium Metal (unreacted)	(TH) 7440417	3.60E-06	8.64E-05	3.15E-02	4.20E-04	4.20E-04	
Cadmium Metal (elemental unreacted)	(TH) 7440439	3.60E-06	8.64E-05	3.15E-02	4.20E-04	4.20E-04	
Soluble chromate compounds, as chromium (VI) z	(TH) SolCR6	3.60E-06	8.64E-05	3.15E-02	4.20E-04	4.20E-04	
Fluorides (sum fluoride compounds)	(T) 16984488	3.20E-04	7.67E-03	2.80E+00	3.73E-02	3.73E-02	
Formaldehyde	(TH) 50000	4.11E-04	9.87E-03	3.60E+00	4.80E-02	4.80E-02	
Manganese Unlisted Compounds	(TH) MNC-Other	7.20E-06	1.73E-04	6.31E-02	8.40E-04	8.40E-04	
Mercury, vapor	(TH) 7439976	3.60E-06	8.64E-05	3.15E-02	4.20E-04	4.20E-04	
Methyl chloroform	(TH) 71566	2.02E-06	4.85E-05	1.77E-02	2.36E-04	2.36E-04	
Nickel Metal	(TH) 7440020	3.60E-06	8.64E-05	3.15E-02	4.20E-04	4.20E-04	
Toluene	(TH) 108883	6.83E-04	1.64E-02	5.98E+00	7.97E-02	7.97E-02	
Xylene	(TH) 1330207	1.20E-05	2.88E-04	1.05E-01	1.40E-03	1.40E-03	

GREENHOUSE GAS EMISSIONS INFORMATION (FOR EMISSIONS INVENTORY PURPOSES) - CONSISTENT WITH EPA MANDATORY REPORTING RULE (MRR) METHOD				GHG - POTENTIAL TO EMIT NOT BASED ON EPA MRR METHOD			
Distillate Fuel Oil No. 2	ACTUAL EMISSIONS			POTENTIAL EMISSIONS - utilize max heat input capacity and EPA MRR Emission Factors		POTENTIAL EMISSIONS With Requested Emission Limitation - utilize requested fuel limit and EPA MRR Emission Factors	
GREENHOUSE GAS POLLUTANT	EPA MRR CALCULATION METHOD: TIER 1						
	metric tons/yr	metric tons/yr, CO2e	short tons/yr	short tons/yr	short tons/yr, CO2e	short tons/yr	short tons/yr, CO2e
CARBON DIOXIDE (CO ₂)	0.00	0.00	0.00	857.01	857.01	857.01	857.01
METHANE (CH ₄)	0.00E+00	0.00E+00	0.00E+00	3.48E-02	7.30E-01	3.48E-02	7.30E-01
NITROUS OXIDE (N ₂ O)	0.00E+00	0.00E+00	0.00E+00	6.95E-03	2.16E+00	6.95E-03	2.16E+00
TOTAL		0.00		TOTAL	859.90	TOTAL	859.90

NOTES: 1) CO2e means CO2 equivalent

2) The DAQ Air Emissions Reporting Online (AERO) system requires short tons and the EPA MRR requires metric tons

**FUEL OIL COMBUSTION EMISSIONS CALCULATOR REVISION G 11/5/2012 - INPUT SCREEN**

Instructions: Enter emission source / facility data on the "INPUT" tab/screen. The air emission results and summary of input data are viewed / printed on the "OUTPUT" tab/screen. The different tabs are on the bottom of this screen.

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Directions: Enter and select information in the boxes that are highlighted in blue:

COMPANY NAME:	Carolina Sunrock LLC
FACILITY ID NUMBER:	04/01/12345
PERMIT NUMBER:	01234R00
FACILITY CITY:	Prospect Hill Quarry & Distribution Center
FACILITY COUNTY:	Caswell
SPREADSHEET PREPARED BY:	Amee Andrews
EMISSION SOURCE DESCRIPTION:	No. 2 oil-fired Boiler
EMISSION SOURCE ID NO.:	ES-ACH2
LATEST CONSTRUCTION/MODIFICATION DATE:	2021
SELECT THE TYPE OF BOILER FROM THE LISTS BELOW:	26

Boilers >= 100 mmBtu/hr 1 = No. 6 oil-fired, normal firing (U) 2 = No. 6 oil-fired, normal firing (I) 3 = No. 6 oil-fired, normal firing (C) 4 = No. 6 oil-fired, normal firing, low Nox burner (U) 5 = No. 6 oil-fired, normal firing, low Nox burner (I) 6 = No. 6 oil-fired, normal firing, low Nox burner (C) 7 = No. 6 oil-fired, tangential firing (U) 8 = No. 6 oil-fired, tangential firing, low Nox burner (U) 9 = No. 5 oil-fired, normal firing (U) 10 = No. 5 oil-fired, normal firing (I) 11 = No. 5 oil-fired, tangential firing (U) 12 = No. 4 oil-fired, normal firing (U) 13 = No. 4 oil-fired, normal firing (I) 14 = No. 4 oil-fired, tangential firing (U) 15 = No. 2 oil-fired (U) 16 = No. 2 oil-fired (I)	Boilers >= 100 mmBtu/hr (cont'd) 17 = No. 2 oil-fired (C) 18 = No. 2 oil-fired, LNB/FGR (U) 19 = No. 2 oil-fired, LNB/FGR (I) 20 = No. 2 oil-fired, LNB/FGR (C) 21 = Vertical fired utility boiler Small Boilers < 100 mmBtu/hr 22 = No. 6 oil-fired (I) 23 = No. 6 oil-fired (C) 24 = No. 5 oil-fired (C) 25 = No. 4 oil-fired (C) 26 = No. 2 oil-fired (I) 27 = No. 2 oil-fired (C) 28 = Residential Furnace
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Note: The emission factors for fuel oil-fired boilers depend on the boiler size and application type. In the listing of boiler types, the following notation is used: U = Utility boilers (producing steam for the generation of electricity), I = Industrial boilers (generating steam or hot water for process heat, electricity generation, or space heat), C = Commercial or institutional (used for space heating of commercial or institutional facilities) and residential (furnaces used for space heating purposes). Please be sure to select the proper boiler from the lists above.

EMISSION SOURCE INPUT DATA

MAXIMUM HEAT INPUT (MILLION BTU PER HOUR):	1.10	MMBTU/HR
ACTUAL ANNUAL FUEL USAGE (GALLONS PER YEAR):		GAL/YR
MAXIMUM ANNUAL FUEL USAGE (GALLONS PER YEAR):	68,828.6	GAL/YR
MAXIMUM FUEL SULFUR CONTENT (%):	0.00	% - (TYPEOVER IF NECESSARY - DEFAULT VALUE = 2.1 FOR RESIDUAL FUEL OIL OR 0.5 FOR DISTILLATE FUEL OIL)
FUEL HEATING VALUE FUEL HEATING VALUE (BTU/GAL):	140,000	BTU/GAL
DEFAULT WILL APPEAR AS FOLLOWS (not used for Greenhouse Gas calcs --See below for GHG defaults): 150,000 BTU/GAL FOR No. 6, 5, and 4 FUEL OIL 140,000 BTU/GAL ALL OTHERS (TYPE OVER NUMBER AT RIGHT IF YOU HAVE SITE SPECIFIC DATA)		

CONTROL DEVICE INPUT DATA

Note: Select the type of control devices from the pull-down menus below. Default control efficiencies will appear for each control device that is selected. The user may enter a different control efficiency to override these values if site specific data is available.

TYPE OF PARTICULATE CONTROL: NONE/OTHER	AVERAGE PARTICULATE CONTROL EFF.: 0
TYPE OF POSTCOMBUSTION SULFUR DIOXIDE CONTROL: NONE/OTHER	AVERAGE SULFUR DIOXIDE CONTROL EFF.: 0
TYPE OF NITROGEN OXIDE CONTROL: NONE/OTHER	AVERAGE NITROGEN OXIDE CONTROL EFF.: 0

REQUESTED PERMIT LIMITATIONS (IF APPLICABLE)

REQUESTED MAXIMUM FUEL USAGE LIMIT (GALLONS PER YEAR)	68,828.6	GAL/YR
REQUESTED MAXIMUM FUEL SULFUR CONTENT (%)	0.00	%

(TYPEOVER IF NECESSARY - DEFAULT VALUES ARE THE CALCULATED POTENTIAL AND THE MAXIMUM SULFUR CONTENT AS SHOWN IN THE EMISSION SOURCE INPUT DATA SECTION)

ADDITIONAL INFORMATION FOR GREENHOUSE GAS EMISSIONS

ENTER CALCULATION TIER from EPA Mandatory Reporting Rule (MRR) Subpart C - www.epa.gov/climatechange/emissions/ghgrulemaking.html NOTE: EF is "Emission Factor"	TIER 1: DEFAULT HIGH HEAT VALUE AND DEFAULT EF
SINCE TIER 3 IS NOT BEING USED, FUEL CARBON CONTENT WILL NOT BE USED	2.7600 kg Carbon/gal
SELECT FUEL TYPE	Distillate Fuel Oil No. 2
HIGH HEAT VALUE (HHV) FOR GHGs FOR TIER 1 and TIER 3, the FUEL HEATING VALUE entered above is overridden with the EPA DEFAULT from Table C-1 of the EPA MRR: Distillate Fuel Oil No. 2 0.138 mmBtu/gal THIS VALUE WILL BE USED FOR GHG calculations- actual emissions Distillate Fuel Oil No. 4 0.146 mmBtu/gal Residual Fuel Oil No. 5 0.14 mmBtu/gal Residual Fuel Oil No. 6 0.15 mmBtu/gal	
FOR TIER 2, the FUEL HEATING VALUE entered above is used. The value entered must be the annual average HHV of the fuel determined using procedures in the EPA MRR (see 98.33(a)(2))	
Distillate Fuel Oil No. 2 DEFAULT HHV OF 0.138 mmBtu/gal THIS VALUE WILL BE USED FOR GHG calculations- actual emissions	

FUEL OIL COMBUSTION EMISSIONS CALCULATOR REVISION G 11/5/2012 - OUTPUT SCREEN	
	Instructions: Enter emission source / facility data on the "INPUT" tab/screen. The air emission results and summary of input data are viewed / printed on the "OUTPUT" tab/screen. The different tabs are on the bottom of this screen.
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SOURCE / FACILITY / USER INPUT SUMMARY (FROM INPUT SCREEN)													
COMPANY:	Carolina Sunrock LLC			MAX HEAT INPUT:		1.10		MMBTU/HR					
FACILITY ID NO.:	04/01/12345			FUEL HEAT VALUE:		140.000		BTU/GAL					
PERMIT NUMBER:	01234R00			HHV for GHG CALCULATIONS:		0.138		mm BTU/GAL					
FACILITY CITY:	Prospect Hill Quarry &			ACTUAL ANNUAL FUEL USAGE:		0		GAL/YR					
FACILITY COUNTY:	Caswell			MAXIMUM ANNUAL FUEL USAGE:		68,829		GAL/YR					
USER NAME:	Aimee Andrews			MAXIMUM SULFUR CONTENT:		0.0		%					
EMISSION SOURCE DESCRIPTION:	No. 2 oil-fired Boiler			REQUESTED PERMIT LIMITATIONS									
EMISSION SOURCE ID NO.:	ES-ACH2			MAX. FUEL USAGE:		68,829		GAL/YR					
				MAX. SULFUR CONTENT:		0.0015		%					
TYPE OF CONTROL DEVICES				POLLUTANT		CONTROL EFF.							
NONE/OTHER				PM		0							
NONE/OTHER				SO2		0							
NONE/OTHER				NOx		0							
METHOD USED TO COMPUTE ACTUAL GHG EMISSIONS:				TIER 1: DEFAULT HIGH HEAT VALUE AND DEFAULT EF									
CARBON CONTENT USED FOR GHGS (kg C/gal):				CARBON CONTENT NOT USED FOR CALCULATION TIER CHOSEN									
CRITERIA AIR POLLUTANT EMISSIONS INFORMATION													
AIR POLLUTANT EMITTED	ACTUAL EMISSIONS		POTENTIAL EMISSIONS		POTENTIAL EMISSIONS		EMISSION FACTOR						
	(AFTER CONTROLS / LIMITS)		(BEFORE CONTROLS / LIMITS)		(AFTER CONTROLS / LIMITS)		(lb/10 ³ gal)						
	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	uncontrolled	controlled					
TOTAL PARTICULATE MATTER (PM) (FPM+CPM)	0.03	0.00	0.03	0.11	0.03	0.11	3.30E+00	3.30E+00					
FILTERABLE PM (FPM)	0.02	0.00	0.02	0.07	0.02	0.07	2.00E+00	2.00E+00					
CONDENSABLE PM (CPM)	0.01	0.00	0.01	0.04	0.01	0.04	1.30E+00	1.30E+00					
FILTERABLE PM<10 MICRONS (PM ₁₀)	0.01	0.00	0.01	0.03	0.01	0.03	1.00E+00	1.00E+00					
FILTERABLE PM<2.5 MICRONS (PM _{2.5})	0.00	0.00	0.00	0.01	0.00	0.01	2.50E-01	2.50E-01					
SULFUR DIOXIDE (SO ₂)	0.00	0.00	0.00	0.01	0.00	0.01	2.13E-01	2.13E-01					
NITROGEN OXIDES (NO _x)	0.16	0.00	0.16	0.69	0.16	0.69	2.00E+01	2.00E+01					
CARBON MONOXIDE (CO)	0.04	0.00	0.04	0.17	0.04	0.17	5.00E+00	5.00E+00					
VOLATILE ORGANIC COMPOUNDS (VOC)	0.00	0.00	0.00	0.01	0.00	0.01	2.00E-01	2.00E-01					
LEAD	0.00	0.00	0.00	0.00	0.00	0.00	1.26E-03	1.26E-03					
TOXIC / HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION													
TOXIC / HAZARDOUS AIR POLLUTANT	CAS NUMBER	ACTUAL EMISSIONS		POTENTIAL EMISSIONS		POTENTIAL EMISSIONS		EMISSION FACTOR					
		(AFTER CONTROLS / LIMITS)		(BEFORE CONTROLS / LIMITS)		(AFTER CONTROLS / LIMITS)		(lb/10 ³ gal)					
		lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	uncontrolled	controlled				
Antimony Unlisted Compounds	(H) SBC-Other	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.00E+00	0.00E+00				
Arsenic Unlisted Compounds	(TH) ASC-Other	4.4E-06	0.0E+00	4.4E-06	3.9E-02	4.4E-06	3.9E-02	5.60E-04	5.60E-04				
Benzene	(TH) 71432	2.2E-05	0.0E+00	2.2E-05	1.9E-01	2.2E-05	1.9E-01	2.75E-03	2.75E-03				
Beryllium Metal (unreacted)	(TH) 7440417	3.3E-06	0.0E+00	3.3E-06	2.9E-02	3.3E-06	2.9E-02	4.20E-04	4.20E-04				
Cadmium Metal (elemental unreacted)	(TH) 7440439	3.3E-06	0.0E+00	3.3E-06	2.9E-02	3.3E-06	2.9E-02	4.20E-04	4.20E-04				
Chromic Acid (VI)	(TH) 7738945	3.3E-06	0.0E+00	3.3E-06	2.9E-02	3.3E-06	2.9E-02	4.20E-04	4.20E-04				
Cobalt Unlisted Compounds	(H) COC-Other	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.00E+00	0.00E+00				
Ethylbenzene	(H) 100414	6.4E-06	0.0E+00	6.4E-06	5.6E-02	6.4E-06	5.6E-02	8.17E-04	8.17E-04				
Fluorides (sum fluoride compounds)	(T) 16984488	2.9E-04	0.0E+00	2.9E-04	2.6E+00	2.9E-04	2.6E+00	3.73E-02	3.73E-02				
Formaldehyde	(TH) 50000	3.8E-04	0.0E+00	3.8E-04	3.3E+00	3.8E-04	3.3E+00	4.80E-02	4.80E-02				
Lead Unlisted Compounds	(H) PBC-Other	9.9E-06	0.0E+00	9.9E-06	8.7E-02	9.9E-06	8.7E-02	1.26E-03	1.26E-03				
Manganese Unlisted Compounds	(TH) MNC-Other	6.6E-06	0.0E+00	6.6E-06	5.8E-02	6.6E-06	5.8E-02	8.40E-04	8.40E-04				
Mercury, vapor	(TH) 7439976	3.3E-06	0.0E+00	3.3E-06	2.9E-02	3.3E-06	2.9E-02	4.20E-04	4.20E-04				
Methyl chloroform	(TH) 71566	1.9E-06	0.0E+00	1.9E-06	1.6E-02	1.9E-06	1.6E-02	2.36E-04	2.36E-04				
Napthalene	(H) 91203	2.6E-06	0.0E+00	2.6E-06	2.3E-02	2.6E-06	2.3E-02	3.33E-04	3.33E-04				
Nickel Metal	(TH) 7440020	3.3E-06	0.0E+00	3.3E-06	2.9E-02	3.3E-06	2.9E-02	4.20E-04	4.20E-04				
Phosphorus Metal, Yellow or White	(H) 7723140	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.00E+00	0.00E+00				
POM rates uncontrolled	(H) POM	2.6E-05	0.0E+00	2.6E-05	2.3E-01	2.6E-05	2.3E-01	3.30E-03	3.30E-03				
Selenium compounds	(H) SEC	1.7E-05	0.0E+00	1.7E-05	1.4E-01	1.7E-05	1.4E-01	2.10E-03	2.10E-03				
Toluene	(TH) 108883	6.3E-04	0.0E+00	6.3E-04	5.5E+00	6.3E-04	5.5E+00	7.97E-02	7.97E-02				
Xylene	(TH) 1330207	1.1E-05	0.0E+00	1.1E-05	9.6E-02	1.1E-05	9.6E-02	1.40E-03	1.40E-03				
Total HAP	(H)	1.1E-03	0.0E+00	1.1E-03	9.9E+00	1.1E-03	9.9E+00	1.4E-01	1.4E-01				
Largest HAP	(H)	6.26E-04	0.00E+00	6.26E-04	5.48E+00	6.26E-04	5.48E+00	7.97E-02	7.97E-02				
TOXIC AIR POLLUTANT EMISSIONS INFORMATION (FOR PERMITTING PURPOSES)													
EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS							EMISSION FACTOR						
TOXIC AIR POLLUTANT	CAS Num.	lb/hr		lb/day		lb/yr		(lb/10 ³ gal)					
								uncontrolled	controlled				
Arsenic Unlisted Compounds	(TH) ASC-Other	4.40E-06		1.06E-04		3.85E-02		5.60E-04	5.60E-04				
Benzene	(TH) 71432	2.16E-05		5.19E-04		1.89E-01		2.75E-03	2.75E-03				
Beryllium Metal (unreacted)	(TH) 7440417	3.30E-06		7.92E-05		2.89E-02		4.20E-04	4.20E-04				
Cadmium Metal (elemental unreacted)	(TH) 7440439	3.30E-06		7.92E-05		2.89E-02		4.20E-04	4.20E-04				
Soluble chromate compounds, as chromium (VI) c	(TH) SolCR6	3.30E-06		7.92E-05		2.89E-02		4.20E-04	4.20E-04				
Fluorides (sum fluoride compounds)	(T) 16984488	2.93E-04		7.03E-03		2.57E+00		3.73E-02	3.73E-02				
Formaldehyde	(TH) 50000	3.77E-04		9.05E-03		3.30E+00		4.80E-02	4.80E-02				
Manganese Unlisted Compounds	(TH) MNC-Other	6.60E-06		1.58E-04		5.78E-02		8.40E-04	8.40E-04				
Mercury, vapor	(TH) 7439976	3.30E-06		7.92E-05		2.89E-02		4.20E-04	4.20E-04				
Methyl chloroform	(TH) 71566	1.85E-06		4.45E-05		1.62E-02		2.36E-04	2.36E-04				
Nickel Metal	(TH) 7440020	3.30E-06		7.92E-05		2.89E-02		4.20E-04	4.20E-04				
Toluene	(TH) 108883	6.26E-04		1.50E-02		5.48E+00		7.97E-02	7.97E-02				
Xylene	(TH) 1330207	1.10E-05		2.64E-04		9.64E-02		1.40E-03	1.40E-03				
GREENHOUSE GAS EMISSIONS INFORMATION (FOR EMISSIONS INVENTORY PURPOSES) - CONSISTENT WITH EPA MANDATORY REPORTING RULE (MRR) METHOD													
DISTILLATE FUEL OIL NO. 2					GHG - POTENTIAL TO EMIT NOT BASED ON EPA MRR METHOD								
GREENHOUSE GAS POLLUTANT	ACTUAL EMISSIONS				POTENTIAL EMISSIONS - utilize max heat input capacity and EPA MRR Emission Factors				POTENTIAL Requested Emission Limitation - utilize requested fuel limit and EPA MRR Emission Factors				
	EPA MRR CALCULATION METHOD: TIER 1												
	metric tons/yr	metric tons/yr, CO2e	short tons/yr		short tons/yr	short tons/yr, CO2e	short tons/yr	short tons/yr, CO2e					
CARBON DIOXIDE (CO ₂)	0.00	0.00	0.00		785.59	785.59	785.59	785.59					
METHANE (CH ₄)	0.00E+00	0.00E+00	0.00E+00		3.19E-02	6.69E-01	3.19E-02	6.69E-01					
NITROUS OXIDE (N ₂ O)	0.00E+00	0.00E+00	0.00E+00		6.37E-03	1.98E+00	6.37E-03	1.98E+00					
TOTAL		0.00			TOTAL	788.24	TOTAL	788.24					

NOTES: 1) CO2e means CO2 equivalent

2) The DAQ Air Emissions Reporting Online (AERO) system requires short tons and the EPA MRR requires metric tons

CONCRETE BATCH PLANT EMISSIONS CALCULATOR - INPUT SCREEN	
REVISION D; October 15, 2015	
	Instructions: Enter emission source / facility data on the "INPUT" tab/screen. The air emission results and summary of input data are viewed / printed on the "OUTPUT" tab/screen. The different tabs are on the bottom of this screen.
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Directions: Enter and select information in the boxes that are highlighted in blue:

General Facility Information

COMPANY NAME:	Carolina Sunrock LLC
FACILITY ID NUMBER:	TBD
PERMIT NUMBER	TBD
FACILITY CITY:	Prospect Hill
FACILITY COUNTY:	Caswell
SPREADSHEET PREPARED BY:	Scott Martino

General Facility Information

MAXIMUM HOURLY THROUGHPUT AT TRUCK LOAD OUT	120 (yd ³ /hour)
ACTUAL ANNUAL PRODUCTION	1,051,200 (yd ³ /year)
MAXIMUM ANNUAL PRODUCTION*	1,051,200 (yd ³ /year)

*Default maximum annual production is maximum hourly throughput times 8,760 hours per year. Enter another limit if applicable (i.e. for arsenic modeling).

Facility Production Information

PERCENT OF ANNUAL LOADOUT THROUGH TRUCK MIX	100 (% by volume)
PERCENT OF ANNUAL LOADOUT THROUGH CENTRAL MIX	0 (% by volume)

Facility Emissions Control Information

IS THERE A CONTROL DEVICE ON THE TRUCK MIX?	2 (1=No, 2=Yes)
IS THERE A CONTROL DEVICE ON THE CENTRAL MIX?	1 (1=No, 2=Yes)

Material Composition Information

		Typical NC Comp.*
Cement	448 lbs	410 lbs
Supplement	148 lbs	120 lbs
Coarse Aggregate	1980 lbs	1884 lbs
Sand	1440 lbs	1443 lbs
Water	140 lbs	167 lbs
Total	4156 lbs	4024 lbs

*North Carolina typical material composition is based on data from industry contacts. User may enter site-specific data.

15A NCAC 2D .0515 "Particulates from Miscellaneous Industrial Processes"

	Cement Silo	Flyash silo	Sand&Agg Weigh hopper	Truck mix ¹	Central mix ¹	
Enter the process rate if different from default, otherwise leave blank						
Process Rate ²	25	25	205.200	240.96	0.000	tons/hr
Maximum Allowable Emission Rate ³	35.4	35.4	58.8	60.5	0.0	lbs/hr
PM Emission Rate Before controls	18.250	78.500	0.985	52.210	0.000	lbs/hr
PM Emission Rate After Controls	0.025	0.223	0.001	1.001	0.000	lbs/hr
Assumed control device efficiency for weigh hopper ⁴			99.9%			
Complies with 2D .0515?	yes	yes	yes	yes	yes	
Control device required to comply?	no	yes	no	no	no	

¹ Emission factors for truck/central mix include emissions from cement & supplement weigh hoppers.

² Default process rate for silo loading is 25 tons per hour. Default process weight for sand & aggr weigh hopper includes only aggr & sand.

Default process rate for truck mix and central mix includes all components except water since assumes water is added directly to truck.

³ Allowable emission rate should be calculated to 3 significant digits.

⁴ Default efficiency is 99.9% for bagfilters. Enter 0 if weigh hopper is not controlled.

CONCRETE BATCH PLANT EMISSIONS CALCULATOR - OUTPUT SCREEN REVISION D; October 15, 2015	
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SOURCE / FACILITY / USER INPUT SUMMARY (FROM INPUT SCREEN)
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General Facility Information

COMPANY NAME:	Carolina Sunrock LLC
FACILITY ID NUMBER:	TBD
PERMIT NUMBER	TBD
FACILITY CITY:	Prospect Hill
FACILITY COUNTY:	Caswell
SPREADSHEET PREPARED BY:	Scott Martino

General Facility Information

MAXIMUM HOURLY THROUGHPUT AT TRUCK LOAD OUT	120 (yd ³ /hour)
ACTUAL ANNUAL PRODUCTION	1051200 (yd ³ /year)

Facility Production Information

PERCENT OF ANNUAL LOADOUT THROUGH TRUCK MIX	100 (% by volume)
PERCENT OF ANNUAL LOADOUT THROUGH CENTRAL MIX	0 (% by volume)

Facility Emissions Control Information

IS THERE A CONTROL DEVICE ON THE TRUCK MIX?	2 (1=No, 2=Yes)
IS THERE A CONTROL DEVICE ON THE CENTRAL MIX?	1 (1=No, 2=Yes)

Material Composition Information

		Typical NC Comp.*
Cement	448 lbs	410 lbs
Supplement	148 lbs	120 lbs
Coarse Aggregate	1980 lbs	1884 lbs
Sand	1440 lbs	1443 lbs
Water	140 lbs	167 lbs
Total	4156 lbs	4024 lbs

* North Carolina typical material composition is based on data from industry contacts. User may enter site-specific data.

PARTICULATE MATTER EMISSIONS INFORMATION							
PARTICULATE EMISSIONS		ACTUAL EMISSIONS		POTENTIAL EMISSIONS			
		(AFTER CONTROLS / LIMITS)		(BEFORE CONTROLS / LIMITS)		(AFTER CONTROLS / LIMITS)	
	Pollutant	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
truck mix*	PM	1.001	4.386	52.210	228.678	1.001	4.386
	PM10	0.375	1.645	14.912	65.314	0.375	1.645
central mix*	PM	0.000	0.000	0.000	0.000	0.000	0.000
	PM10	0.000	0.000	0.000	0.000	0.000	0.000
cement silo	PM	0.027	0.117	19.622	85.946	0.027	0.117
	PM10	0.009	0.040	12.634	55.335	0.009	0.040
suppl. Silo	PM	0.079	0.346	27.883	122.128	0.079	0.346
	PM10	0.044	0.191	9.768	42.784	0.044	0.191
weigh hopper**	PM	0.985	4.314	0.985	4.314	0.985	4.314
[sand & aggr.]	PM10	0.575	2.517	0.575	2.517	0.575	2.517
sand & aggr.	PM	3.003	13.155	3.003	13.155	3.003	13.155
	PM10	1.433	6.275	1.433	6.275	1.433	6.275
TOTAL PM	PM	5.095	22.318	103.704	454.222	5.095	22.318
TOTAL PM10	PM10	2.435	10.667	39.321	172.225	2.435	10.667
Title V Potential	PM10						0.231

*Truck/Central mix emission factors include emissions from cement & supplement weigh hopper(s).

**Actual/Potential weigh hopper (sand & aggr.) emissions assumed uncontrolled since AP-42 reports "no data" for controlled.

CONCRETE BATCH PLANT EMISSIONS CALCULATOR - OUTPUT SCREEN

REVISION D; October 15, 2015



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TOXIC / HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION

POLLUTANT	CAS NUMBER	ACTUAL EMISSIONS		POTENTIAL EMISSIONS			
		(AFTER CONTROLS / LIMITS)		(BEFORE CONTROLS / LIMITS)		(AFTER CONTROLS / LIMITS)	
		lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
Arsenic Unlisted Compounds (TH)	ASC-OTHER	6.59E-05	5.77E-01	2.49E-03	2.18E+01	6.59E-05	5.77E-01
Beryllium metal (TH)	7440-41-7	4.53E-06	3.97E-02	1.00E-05	8.77E-02	4.53E-06	3.97E-02
Cadmium Metal (TH)	7440-43-9	5.00E-07	4.38E-03	7.69E-06	6.74E-02	5.00E-07	4.38E-03
Chromic Acid (TH)	7738-94-5	1.58E-04	1.39E+00	4.25E-04	3.73E+00	1.58E-04	1.39E+00
Lead Unlisted Compounds (H)	PBC-OTHER	5.96E-05	5.22E-01	1.32E-03	1.16E+01	5.96E-05	5.22E-01
Manganese Unlisted compounds (TH)	MNC-OTHER	7.49E-04	6.56E+00	7.67E-03	6.72E+01	7.49E-04	6.56E+00
Nickel metal (TH)	7440-02-0	1.92E-04	1.68E+00	9.19E-04	8.05E+00	1.92E-04	1.68E+00
Phosphorus Metal Yellow or White (H)	7223-14-0	4.71E-04	4.13E+00	1.72E-03	1.51E+01	4.71E-04	4.13E+00
Selenium compounds (H)	SEC	4.68E-06	4.10E-02	9.43E-05	8.26E-01	4.68E-06	4.10E-02
Total HAPs		1.71E-03	1.49E+01	1.47E-02	1.28E+02	1.71E-03	1.49E+01
Highest HAP Manganese		7.49E-04	6.56E+00	7.67E-03	6.72E+01	7.49E-04	6.56E+00

TOXIC AIR POLLUTANT EMISSIONS INFORMATION (FOR PERMITTING PURPOSES)

EXPECTED EMISSIONS AFTER CONTROLS / LIMITATIONS

(Daily calculations are based on maximum hourly plant capacity operating at 24 hours per day. If over the TPER, the facility should more closely analyze the maximum daily emissions based on actual operation. Annual calculations are based on the actual annual production as entered on the INPUT worksheet.)

POLLUTANT	CAS NUMBER	lb/hr	lb/day	lb/yr	TPER
Arsenic Unlisted Compounds (TH)	ASC-OTHER			0.5769	0.053 lb/yr
Beryllium metal (TH)	7440-41-7			0.040	0.28 lb/yr
Cadmium Metal (TH)	7440-43-9			0.004	0.37 lb/yr
Chromic Acid (TH)	7738-94-5		0.0038		0.013 lb/day
Manganese Unlisted compounds (TH)	MNC-OTHER		0.018		0.63 lb/day
Nickel metal (TH)	7440-02-0		0.005		0.13 lb/day

CONCRETE BATCH PLANT EMISSIONS CALCULATOR - TAP CALCULATIONS

REVISION D; October 15, 2015



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ARSENIC (HAP/TAP) EMISSIONS INFORMATION

ARSENIC EMISSIONS		ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMISSIONS			
Source	Pollutant	lb/hr	lb/yr	(BEFORE CONTROLS / LIMITS)		(AFTER CONTROLS / LIMITS)	
				lb/hr	lb/yr	lb/hr	lb/yr
truck mix	Arsenic	5.69E-05	4.98E-01	2.43E-03	2.13E+01	5.69E-05	4.98E-01
central mix	Arsenic	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
cement silo	Arsenic	1.14E-07	9.98E-04	4.52E-05	3.96E-01	1.14E-07	9.98E-04
supplement silo*	Arsenic	8.88E-06	7.78E-02	8.88E-06	7.78E-02	8.88E-06	7.78E-02
TOTAL	Arsenic	6.59E-05	5.77E-01	2.49E-03	2.18E+01	6.59E-05	5.77E-01

(Arsenic TPER: 0.053 lb/yr)

BERYLLIUM (HAP/TAP) EMISSIONS INFORMATION

BERYLLIUM EMISSIONS		ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMISSIONS			
Source	Pollutant	lb/hr	lb/yr	(BEFORE CONTROLS / LIMITS)		(AFTER CONTROLS / LIMITS)	
				lb/hr	lb/yr	lb/hr	lb/yr
truck mix	Beryllium	3.72E-06	3.26E-02	8.73E-06	7.64E-02	3.72E-06	3.26E-02
central mix	Beryllium	-	-	-	-	-	-
cement silo	Beryllium	1.31E-08	1.14E-04	4.81E-07	4.21E-03	1.31E-08	1.14E-04
supplement silo*	Beryllium	8.03E-07	7.03E-03	8.03E-07	7.03E-03	8.03E-07	7.03E-03
TOTAL	Beryllium	4.53E-06	3.97E-02	1.00E-05	8.77E-02	4.53E-06	3.97E-02

(Beryllium TPER: 0.28 lb/yr)

CADMIUM (HAP/TAP) EMISSIONS INFORMATION

CADMIUM EMISSIONS		ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMISSIONS			
Source	Pollutant	lb/hr	lb/yr	(BEFORE CONTROLS / LIMITS)		(AFTER CONTROLS / LIMITS)	
				lb/hr	lb/yr	lb/hr	lb/yr
truck mix	Cadmium	3.24E-07	2.84E-03	1.22E-06	1.07E-02	3.24E-07	2.84E-03
central mix	Cadmium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
cement silo	Cadmium	-	-	6.29E-06	5.51E-02	-	-
supplement silo*	Cadmium	1.76E-07	1.54E-03	1.76E-07	1.54E-03	1.76E-07	1.54E-03
TOTAL	Cadmium	5.00E-07	4.38E-03	7.69E-06	6.74E-02	5.00E-07	4.38E-03

(Cadmium TPER: 0.37 lb/yr)

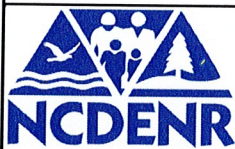
CHROMIUM (HAP/TAP) EMISSIONS INFORMATION

CHROMIUM EMISSIONS		ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMISSIONS			
Source	Pollutant	lb/hr	lb/yr	(BEFORE CONTROLS / LIMITS)		(AFTER CONTROLS / LIMITS)	
				lb/hr	lb/yr	lb/hr	lb/yr
truck mix	Chromium	1.47E-04	1.28E+00	4.08E-04	3.57E+00	1.47E-04	1.28E+00
central mix	Chromium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
cement silo	Chromium	7.80E-07	6.83E-03	6.77E-06	5.93E-02	7.80E-07	6.83E-03
supplement silo*	Chromium	1.08E-05	9.49E-02	1.08E-05	9.49E-02	1.08E-05	9.49E-02
TOTAL	Chromium	1.58E-04	1.39E+00	4.25E-04	3.73E+00	1.58E-04	1.39E+00

(Chromium TPER: 0.013 lb/day)

CONCRETE BATCH PLANT EMISSIONS CALCULATOR - TAP CALCULATIONS

REVISION D; October 15, 2015



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LEAD (HAP) EMISSIONS INFORMATION

LEAD EMISSIONS		ACTUAL EMISSIONS		POTENTIAL EMISSIONS			
		(AFTER CONTROLS / LIMITS)		(BEFORE CONTROLS / LIMITS)		(AFTER CONTROLS / LIMITS)	
Source	Pollutant	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
truck mix	Lead	5.47E-05	4.79E-01	1.29E-03	1.13E+01	5.47E-05	4.79E-01
central mix	Lead	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
cement silo	Lead	2.93E-07	2.57E-03	1.98E-05	1.73E-01	2.93E-07	2.57E-03
supplement silo*	Lead	4.62E-06	4.05E-02	4.62E-06	4.05E-02	4.62E-06	4.05E-02
TOTAL	Lead	5.96E-05	5.22E-01	1.32E-03	1.16E+01	5.96E-05	5.22E-01

MANGANESE (HAP/TAP) EMISSIONS INFORMATION

MANGANESE EMISSIONS		ACTUAL EMISSIONS		POTENTIAL EMISSIONS			
		(AFTER CONTROLS / LIMITS)		(BEFORE CONTROLS / LIMITS)		(AFTER CONTROLS / LIMITS)	
Source	Pollutant	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
truck mix	Manganese	7.44E-04	6.52E+00	2.19E-03	1.92E+01	7.44E-04	6.52E+00
central mix	Manganese	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
cement silo	Manganese	3.14E-06	2.75E-02	5.48E-03	4.80E+01	3.14E-06	2.75E-02
supplement silo*	Manganese	2.27E-06	1.99E-02	2.27E-06	1.99E-02	2.27E-06	1.99E-02
TOTAL	Manganese	7.49E-04	6.56E+00	7.67E-03	6.72E+01	7.49E-04	6.56E+00

(Manganese TPER: 0.63 lb/day)

NICKEL (HAP/TAP) EMISSIONS INFORMATION

NICKEL EMISSIONS		ACTUAL EMISSIONS		POTENTIAL EMISSIONS			
		(AFTER CONTROLS / LIMITS)		(BEFORE CONTROLS / LIMITS)		(AFTER CONTROLS / LIMITS)	
Source	Pollutant	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
truck mix	Nickel	1.71E-04	1.50E+00	4.26E-04	3.73E+00	1.71E-04	1.50E+00
central mix	Nickel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
cement silo	Nickel	1.12E-06	9.84E-03	4.73E-04	4.14E+00	1.12E-06	9.84E-03
supplement silo*	Nickel	2.02E-05	1.77E-01	2.02E-05	1.77E-01	2.02E-05	1.77E-01
TOTAL	Nickel	1.92E-04	1.68E+00	9.19E-04	8.05E+00	1.92E-04	1.68E+00

(Nickel TPER: 0.13 lb/day)

PHOSPHORUS (HAP) EMISSIONS INFORMATION

PHOSPHORUS EMISSIONS		ACTUAL EMISSIONS		POTENTIAL EMISSIONS			
		(AFTER CONTROLS / LIMITS)		(BEFORE CONTROLS / LIMITS)		(AFTER CONTROLS / LIMITS)	
Source	Pollutant	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
truck mix	Phosphorus	4.40E-04	3.85E+00	1.37E-03	1.20E+01	4.40E-04	3.85E+00
central mix	Phosphorus	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
cement silo	Phosphorus	-	-	3.17E-04	2.78E+00	-	-
supplement silo*	Phosphorus	3.14E-05	2.75E-01	3.14E-05	2.75E-01	3.14E-05	2.75E-01
TOTAL	Phosphorus	4.71E-04	4.13E+00	1.72E-03	1.51E+01	4.71E-04	4.13E+00

SELENIUM (HAP) EMISSIONS INFORMATION

SELENIUM EMISSIONS		ACTUAL EMISSIONS		POTENTIAL EMISSIONS			
		(AFTER CONTROLS / LIMITS)		(BEFORE CONTROLS / LIMITS)		(AFTER CONTROLS / LIMITS)	
Source	Pollutant	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
truck mix	Selenium	4.04E-06	3.54E-02	9.37E-05	8.21E-01	4.04E-06	3.54E-02
central mix	Selenium	-	-	-	-	-	-
cement silo	Selenium	-	-	-	-	-	-
supplement silo*	Selenium	6.43E-07	5.63E-03	6.43E-07	5.63E-03	6.43E-07	5.63E-03
TOTAL	Selenium	4.68E-06	4.10E-02	9.43E-05	8.26E-01	4.68E-06	4.10E-02

STONE CRUSHING EMISSIONS CALCULATOR REVISION C 05/23/2011 PERMITTING AND MODELING INPUT SCREEN																									
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Instructions: 1. Enter emission source / facility data on this sheet <i>for permitting and/or modeling</i>. The air emission results and summary for each type of equipment will be on its own sheet (e.g., crushers output, screens output). The facility-wide totals are summarized on the "OUTPUT" sheet. The different tabs are on the bottom of this screen. 2. For each type of equipment fill in all <i>BLUE</i> fields.																									
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 35%;">Company Name:</td> <td style="border: 1px solid black; padding: 2px;">Carolina Sunrock LLC</td> </tr> <tr> <td>Facility ID No.:</td> <td style="border: 1px solid black; padding: 2px;">N/A</td> </tr> <tr> <td>Permit No.:</td> <td style="border: 1px solid black; padding: 2px;">N/A</td> </tr> <tr> <td>Facility City:</td> <td style="border: 1px solid black; padding: 2px;">Prospect Hill Quarry & Distribution</td> </tr> <tr> <td>Facility County:</td> <td style="border: 1px solid black; padding: 2px;">Caswell</td> </tr> <tr> <td>Spreadsheet Prepared by:</td> <td style="border: 1px solid black; padding: 2px;">Aimee Andrews, Trinity Consultants</td> </tr> </table> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 35%;">Actual hours of operation:</td> <td style="border: 1px solid black; padding: 2px;">4745</td> <td style="width: 10%;">hours</td> </tr> <tr> <td>Total Plant Maximum Rated Capacity:</td> <td style="border: 1px solid black; padding: 2px;">1200</td> <td style="width: 10%;">tons per hour</td> </tr> <tr> <td>Actual Annual Total Plant Production:</td> <td style="border: 1px solid black; padding: 2px;">5694000</td> <td style="width: 10%;">tons</td> </tr> <tr> <td>Potential Annual Total Plant Production:</td> <td style="border: 1px solid black; padding: 2px;">7117500</td> <td style="width: 10%;">tons</td> </tr> </table>		Company Name:	Carolina Sunrock LLC	Facility ID No.:	N/A	Permit No.:	N/A	Facility City:	Prospect Hill Quarry & Distribution	Facility County:	Caswell	Spreadsheet Prepared by:	Aimee Andrews, Trinity Consultants	Actual hours of operation:	4745	hours	Total Plant Maximum Rated Capacity:	1200	tons per hour	Actual Annual Total Plant Production:	5694000	tons	Potential Annual Total Plant Production:	7117500	tons
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Total Plant Maximum Rated Capacity:	1200	tons per hour																							
Actual Annual Total Plant Production:	5694000	tons																							
Potential Annual Total Plant Production:	7117500	tons																							

Crusher Input

How many crushers total ?

4

***Note:** If wet suppression is not applied on an automatic and continuous basis during the operation of the crusher, answer "no" for "wet suppression (Y/N)?".

Crusher ID No.	Type of crusher	Maximum Rated Capacity (tons/hr)	*wet suppression (Y/N) ?	actual yearly throughput (tons)
4860	Primary ▼	1200	wet ▼	5,694,000
GEN3	Secondary or Tertiary ▼	400	wet ▼	1,898,000
Gen5	Secondary or Tertiary ▼	400	wet ▼	1,898,000
Gen7	Fines ▼	200	wet ▼	949,000
	Secondary or Tertiary ▼		wet ▼	
	Secondary or Tertiary ▼		wet ▼	
	Secondary or Tertiary ▼		wet ▼	
	Secondary or Tertiary ▼		wet ▼	
	Fines ▼		wet ▼	
	Fines ▼		wet ▼	
	Primary ▼		wet ▼	
	Primary ▼		wet ▼	
	Primary ▼		wet ▼	
	Primary ▼		dry ▼	
	Primary ▼		dry ▼	

Screens Input

How many screens total ?

4

Screen ID No.	Type of screen	Maximum Rated Capacity (tons/hr)	wet suppression (Y/N) ?	actual yearly throughput (tons)
SC-1	Normal ▼	1200	wet ▼	5694000
SC-2	Normal ▼	900	wet ▼	4270500
SC-3	Normal ▼	455	wet ▼	2158975
AggreSand	Normal ▼	400	wet ▼	1898000
	Normal ▼		wet ▼	
	Normal ▼		wet ▼	
	Fines ▼		wet ▼	
	Fines ▼		wet ▼	
	Normal ▼		wet ▼	
	Normal ▼		wet ▼	
	Normal ▼		wet ▼	
	Normal ▼		wet ▼	
	Normal ▼		wet ▼	
	Normal ▼		wet ▼	
	Normal ▼		wet ▼	

Conveyor Input (1/3)

How many conveyors total ?

54

***NOTE:** Each conveyor will have one transfer point, the point where it **drops** product, not receives product. Answer "no" if the conveyor drops to a screen or a crusher. The transfer points to the crushers and screens are already accounted for in the emission factors for these units.

Conveyor ID No.	*Conveyor transfer point ?	Maximum Rated Capacity (tons/hr)	wet suppression (Y/N) ?	actual yearly throughput (tons)
CR1 to C1	yes ▼	1200	wet ▼	5,694,000
C1 to C2	yes ▼	1200	wet ▼	5,694,000
C2 to C3	yes ▼	1200	wet ▼	5,694,000
C3 to pile	yes ▼	1200	wet ▼	5,694,000
Pile to C4	yes ▼	1000	wet ▼	4,745,000
C15 & C4 to C5	yes ▼	1000	wet ▼	4,745,000
screen to C5a	yes ▼	200	wet ▼	949,000
C-5a to c6	yes ▼	200	wet ▼	949,000
C6 to C7	yes ▼	200	wet ▼	949,000
C7 to Pile	yes ▼	200	wet ▼	949,000
screen to C8	yes ▼	400	wet ▼	1,898,000
screen to C10	yes ▼	400	wet ▼	1,898,000
C8 to C9	yes ▼	400	wet ▼	1,898,000
C10 to C11	yes ▼	400	wet ▼	1,898,000
C11 to C12	yes ▼	400	wet ▼	1,898,000
CR2 to C13	yes ▼	400	wet ▼	1,898,000
CR3 to C13	yes ▼	400	wet ▼	1,898,000
C13 to C14	yes ▼	955	wet ▼	4,531,475
C14 & C38 to C1	yes ▼	1030	wet ▼	4,887,350
SC2 to C17	yes ▼	300	wet ▼	1,423,500
SC2 to C21	yes ▼	510	wet ▼	2,419,950
SC2 to C19	yes ▼	155	wet ▼	735,475
CR4 to C20	yes ▼	155	wet ▼	735,475
C20 to C13	yes ▼	155	wet ▼	735,475
SC4 to C22	yes ▼	169	wet ▼	801,905

Conveyor Input (2/3)

Conveyor ID No.	*Conveyor transfer point ?	Maximum Rated Capacity (tons/hr)	wet suppression (Y/N) ?	actual yearly throughput (tons)
SC4 to C24	yes ▼	200	wet ▼	949,000
SC4 to C27	yes ▼	141	wet ▼	669,045
C22 to C23	yes ▼	169	wet ▼	801,905
C23 to pile	yes ▼	169	wet ▼	801,905
C24 to C25	yes ▼	200	wet ▼	949,000
C25 to C26	yes ▼	200	wet ▼	949,000
C26 to pile	yes ▼	200	wet ▼	949,000
C27 to C28	yes ▼	141	wet ▼	669,045
C28 to C29	yes ▼	141	wet ▼	669,045
C29 to pile	yes ▼	141	wet ▼	669,045
C17 to C18	yes ▼	300	wet ▼	1,423,500
C18 to pile	yes ▼	300	wet ▼	1,423,500
finemaster to C3	yes ▼	300	wet ▼	1,423,500
C32 to C33	yes ▼	400	wet ▼	1,898,000
C33 to pile	yes ▼	400	wet ▼	1,898,000
pile to C30	yes ▼	400	wet ▼	1,898,000
SC5 to C36	yes ▼	50	wet ▼	237,250
C36 to C37	yes ▼	50	wet ▼	237,250
C37 to pile	yes ▼	50	wet ▼	237,250
SC5 to C34	yes ▼	100	wet ▼	474,500
C34 to C35	yes ▼	100	wet ▼	474,500
C35 to pile	yes ▼	100	wet ▼	474,500
SC5 to C31	yes ▼	100	wet ▼	474,500
C31 to C32	yes ▼	100	wet ▼	474,500
SC5 to C31	yes ▼	25	wet ▼	118,625

Conveyor Input (3/3)

[illegible]

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[illegible]

STONE CRUSHING EMISSIONS CALCULATOR REVISION C 05/23/2011

EMISSIONS

INVENTORY INPUT SCREEN

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Instructions:

1. Use this sheet for EMISSION INVENTORY PURPOSES ONLY.
2. For each product fill in all **BLUE** cells.

Company Name:	Stoney Curtis Crushing
Facility ID No.:	123456789
Permit No.:	99999R09
Facility City:	Bedrock
Facility County:	HollyRock
Spreadsheet Prepared by:	Barney Rubble

Actual plant hours of operation:	2000	hours
How many products did you produce ?	1	

Facility-wide Emissions Summary

yearly actual TSP emissions (tpy)	yearly actual PM ₁₀ emissions (tpy)	yearly actual PM _{2.5} emissions (tpy)	yearly potential TSP emissions (tpy)	yearly potential PM ₁₀ emissions (tpy)	yearly potential PM _{2.5} emissions (tpy)
0.0	0.0	0.0	0.0	0.0	0.0

Product	A
Product A Process Information	
Actual annual production of A: 0 tons	
CRUSHERS Information	
No. of primary crushers with <u>no</u> suppression:	0
No. of primary crushers with <u>wet</u> suppression:	0
No. of secondary / tertiary crushers with <u>no</u> suppression:	0
No. of secondary / tertiary crushers with <u>wet</u> suppression:	0
No. of fines crushers with <u>no</u> suppression:	0
No. of fines crushers with <u>wet</u> suppression:	0
SCREENS Information	
No. of normal screens with <u>no</u> suppression:	0
No. of normal screens with <u>wet</u> suppression:	0
No. of fines screens with <u>no</u> suppression:	0
No. of fines screens with <u>wet</u> suppression:	0
CONVEYOR TRANSFER POINTS Information	
* No. of conveyor transport points with <u>no</u> suppression:	0
* No. of conveyor transport points with <u>wet</u> suppression:	0
*NOTE: Each conveyor will have only one transfer point, the point where a conveyor drops product, not receives product. Do not include conveyors that drop to screens or crushers. The transfer points to the crushers and screens are already accounted for in the emission factors for these units.	
Product A Emissions Summary	
A product crushers TSP emissions:	0.0 tons
A product screens TSP emissions:	0.0 tons
A product conveyor transfer points TSP emissions:	0.0 tons
A product total TSP emissions:	0.0 tons
A product crushers PM10 emissions:	0.0 tons
A product screens PM10 emissions:	0.0 tons
A product conveyor transfer points PM10 emissions:	0.0 tons
A product total PM10 emissions:	0.0 tons
A product crushers PM2.5 emissions:	0.0 tons
A product screens PM2.5 emissions:	0.0 tons
A product conveyor transfer points PM2.5 emissions:	0.0 tons
A product total PM2.5 emissions:	0.0 tons

Product	B
Product B Process Information	
Actual annual production of B: 0 tons	
CRUSHERS Information	
No. of primary crushers with <u>no</u> suppression:	0
No. of primary crushers with <u>wet</u> suppression:	0
No. of secondary / tertiary crushers with <u>no</u> suppression:	0
No. of secondary / tertiary crushers with <u>wet</u> suppression:	0
No. of fines crushers with <u>no</u> suppression:	0
No. of fines crushers with <u>wet</u> suppression:	0
SCREENS Information	
No. of normal screens with <u>no</u> suppression:	0
No. of normal screens with <u>wet</u> suppression:	0
No. of fines screens with <u>no</u> suppression:	0
No. of fines screens with <u>wet</u> suppression:	0
CONVEYOR TRANSFER POINTS Information	
* No. of conveyor transport points with <u>no</u> suppression:	0
* No. of conveyor transport points with <u>wet</u> suppression:	0
*NOTE: Each conveyor will have only one transfer point, the point where a conveyor drops product, not receives product. Do not include conveyors that drop to screens or crushers. The transfer points to the crushers and screens are already accounted for in the emission factors for these units.	
Product B Emissions Summary	
B product crushers TSP emissions:	0.0 tons
B product screens TSP emissions:	0.0 tons
B product conveyor transfer points TSP emissions:	0.0 tons
B product total TSP emissions:	0.0 tons
B product crushers PM10 emissions:	0.0 tons
B product screens PM10 emissions:	0.0 tons
B product conveyor transfer points PM10 emissions:	0.0 tons
B product total PM10 emissions:	0.0 tons
B product crushers PM2.5 emissions:	0.0 tons
B product screens PM2.5 emissions:	0.0 tons
B product conveyor transfer points PM2.5 emissions:	0.0 tons
B product total PM2.5 emissions:	0.0 tons

Product	C
Product C Process Information	
Actual annual production of C: 0 tons	
CRUSHERS Information	
No. of primary crushers with <u>no</u> suppression:	0
No. of primary crushers with <u>wet</u> suppression:	0
No. of secondary / tertiary crushers with <u>no</u> suppression:	0
No. of secondary / tertiary crushers with <u>wet</u> suppression:	0
No. of fines crushers with <u>no</u> suppression:	0
No. of fines crushers with <u>wet</u> suppression:	0
SCREENS Information	
No. of normal screens with <u>no</u> suppression:	0
No. of normal screens with <u>wet</u> suppression:	0
No. of fines screens with <u>no</u> suppression:	0
No. of fines screens with <u>wet</u> suppression:	0
CONVEYOR TRANSFER POINTS Information	
* No. of conveyor transport points with <u>no</u> suppression:	0
* No. of conveyor transport points with <u>wet</u> suppression:	0
*NOTE: Each conveyor will have only one transfer point, the point where a conveyor drops product, not receives product. Do not include conveyors that drop to screens or crushers. The transfer points to the crushers and screens are already accounted for in the emission factors for these units.	
Product C Emissions Summary	
C product crushers TSP emissions:	0.0 tons
C product screens TSP emissions:	0.0 tons
C product conveyor transfer points TSP emissions:	0.0 tons
C product total TSP emissions:	0.0 tons
C product crushers PM10 emissions:	0.0 tons
C product screens PM10 emissions:	0.0 tons
C product conveyor transfer points PM10 emissions:	0.0 tons
C product total PM10 emissions:	0.0 tons
C product crushers PM2.5 emissions:	0.0 tons
C product screens PM2.5 emissions:	0.0 tons
C product conveyor transfer points PM2.5 emissions:	0.0 tons
C product total PM2.5 emissions:	0.0 tons

Product	D
Product D Process Information	
Actual annual production of D: 0 tons	
CRUSHERS Information	
No. of primary crushers with <u>no</u> suppression:	0
No. of primary crushers with <u>wet</u> suppression:	0
No. of secondary / tertiary crushers with <u>no</u> suppression:	0
No. of secondary / tertiary crushers with <u>wet</u> suppression:	0
No. of fines crushers with <u>no</u> suppression:	0
No. of fines crushers with <u>wet</u> suppression:	0
SCREENS Information	
No. of normal screens with <u>no</u> suppression:	0
No. of normal screens with <u>wet</u> suppression:	0
No. of fines screens with <u>no</u> suppression:	0
No. of fines screens with <u>wet</u> suppression:	0
CONVEYOR TRANSFER POINTS Information	
*No. of conveyor transport points with <u>no</u> suppression:	0
*No. of conveyor transport points with <u>wet</u> suppression:	0
*NOTE: Each conveyor will have only one transfer point, the point where a conveyor drops product, not receives product. Do not include conveyors that drop to screens or crushers. The transfer points to the crushers and screens are already accounted for in the emission factors for these units.	
Product D Emissions Summary	
D product crushers TSP emissions:	0.0 tons
D product screens TSP emissions:	0.0 tons
D product conveyor transfer points TSP emissions:	0.0 tons
D product total TSP emissions:	0.0 tons
D product crushers PM10 emissions:	0.0 tons
D product screens PM10 emissions:	0.0 tons
D product conveyor transfer points PM10 emissions:	0.0 tons
D product total PM10 emissions:	0.0 tons
D product crushers PM2.5 emissions:	0.0 tons
D product screens PM2.5 emissions:	0.0 tons
D product conveyor transfer points PM2.5 emissions:	0.0 tons
D product total PM2.5 emissions:	0.0 tons

Product	E
Product E Process Information	
Actual annual production of E: 0 tons	
CRUSHERS Information	
No. of primary crushers with <u>no</u> suppression:	1
No. of primary crushers with <u>wet</u> suppression:	0
No. of secondary / tertiary crushers with <u>no</u> suppression:	0
No. of secondary / tertiary crushers with <u>wet</u> suppression:	0
No. of fines crushers with <u>no</u> suppression:	0
No. of fines crushers with <u>wet</u> suppression:	0
SCREENS Information	
No. of normal screens with <u>no</u> suppression:	0
No. of normal screens with <u>wet</u> suppression:	0
No. of fines screens with <u>no</u> suppression:	0
No. of fines screens with <u>wet</u> suppression:	0
CONVEYOR TRANSFER POINTS Information	
* No. of conveyor transport points with <u>no</u> suppression:	0
* No. of conveyor transport points with <u>wet</u> suppression:	0
*NOTE: Each conveyor will have only one transfer point, the point where a conveyor drops product, not receives product. Do not include conveyors that drop to screens or crushers. The transfer points to the crushers and screens are already accounted for in the emission factors for these units.	
Product E Emissions Summary	
E product crushers TSP emissions:	0.0 tons
E product screens TSP emissions:	0.0 tons
E product conveyor transfer points TSP emissions:	0.0 tons
E product total TSP emissions:	0.0 tons
E product crushers PM10 emissions:	0.0 tons
E product screens PM10 emissions:	0.0 tons
E product conveyor transfer points PM10 emissions:	0.0 tons
E product total PM10 emissions:	0.0 tons
E product crushers PM2.5 emissions:	0.0 tons
E product screens PM2.5 emissions:	0.0 tons
E product conveyor transfer points PM2.5 emissions:	0.0 tons
E product total PM2.5 emissions:	0.0 tons

Product	F
Product F Process Information	
Actual annual production of F: 0 tons	
CRUSHERS Information	
No. of primary crushers with <u>no</u> suppression:	0
No. of primary crushers with <u>wet</u> suppression:	0
No. of secondary / tertiary crushers with <u>no</u> suppression:	0
No. of secondary / tertiary crushers with <u>wet</u> suppression:	0
No. of fines crushers with <u>no</u> suppression:	0
No. of fines crushers with <u>wet</u> suppression:	0
SCREENS Information	
No. of normal screens with <u>no</u> suppression:	0
No. of normal screens with <u>wet</u> suppression:	0
No. of fines screens with <u>no</u> suppression:	0
No. of fines screens with <u>wet</u> suppression:	0
CONVEYOR TRANSFER POINTS Information	
* No. of conveyor transport points with <u>no</u> suppression:	0
* No. of conveyor transport points with <u>wet</u> suppression:	0
*NOTE: Each conveyor will have only one transfer point, the point where a conveyor drops product, not receives product. Do not include conveyors that drop to screens or crushers. The transfer points to the crushers and screens are already accounted for in the emission factors for these units.	
Product F Emissions Summary	
F product crushers TSP emissions:	0.0 tons
F product screens TSP emissions:	0.0 tons
F product conveyor transfer points TSP emissions:	0.0 tons
F product total TSP emissions:	0.0 tons
F product crushers PM10 emissions:	0.0 tons
F product screens PM10 emissions:	0.0 tons
F product conveyor transfer points PM10 emissions:	0.0 tons
F product total PM10 emissions:	0.0 tons
F product crushers PM2.5 emissions:	0.0 tons
F product screens PM2.5 emissions:	0.0 tons
F product conveyor transfer points PM2.5 emissions:	0.0 tons
F product total PM2.5 emissions:	0.0 tons

Product	G
Product G Process Information	
Actual annual production of G: 0 tons	
CRUSHERS Information	
No. of primary crushers with <u>no</u> suppression:	1
No. of primary crushers with <u>wet</u> suppression:	0
No. of secondary / tertiary crushers with <u>no</u> suppression:	0
No. of secondary / tertiary crushers with <u>wet</u> suppression:	0
No. of fines crushers with <u>no</u> suppression:	0
No. of fines crushers with <u>wet</u> suppression:	0
SCREENS Information	
No. of normal screens with <u>no</u> suppression:	0
No. of normal screens with <u>wet</u> suppression:	0
No. of fines screens with <u>no</u> suppression:	0
No. of fines screens with <u>wet</u> suppression:	0
CONVEYOR TRANSFER POINTS Information	
* No. of conveyor transport points with <u>no</u> suppression:	0
* No. of conveyor transport points with <u>wet</u> suppression:	0
*NOTE: Each conveyor will have only one transfer point, the point where a conveyor drops product, not receives product. Do not include conveyors that drop to screens or crushers. The transfer points to the crushers and screens are already accounted for in the emission factors for these units.	
Product G Emissions Summary	
G product crushers TSP emissions:	0.0 tons
G product screens TSP emissions:	0.0 tons
G product conveyor transfer points TSP emissions:	0.0 tons
G product total TSP emissions:	0.0 tons
G product crushers PM10 emissions:	0.0 tons
G product screens PM10 emissions:	0.0 tons
G product conveyor transfer points PM10 emissions:	0.0 tons
G product total PM10 emissions:	0.0 tons
G product crushers PM2.5 emissions:	0.0 tons
G product screens PM2.5 emissions:	0.0 tons
G product conveyor transfer points PM2.5 emissions:	0.0 tons
G product total PM2.5 emissions:	0.0 tons

Product	H	
Product H Process Information		
CRUSHERS Information	Actual annual production of H: 0 tons	
	No. of primary crushers with <u>no</u> suppression:	0
	No. of primary crushers with <u>wet</u> suppression:	0
	No. of secondary / tertiary crushers with <u>no</u> suppression:	0
	No. of secondary / tertiary crushers with <u>wet</u> suppression:	0
	No. of fines crushers with <u>no</u> suppression:	0
	No. of fines crushers with <u>wet</u> suppression:	0
SCREENS Information	No. of normal screens with <u>no</u> suppression:	0
	No. of normal screens with <u>wet</u> suppression:	0
	No. of fines screens with <u>no</u> suppression:	0
	No. of fines screens with <u>wet</u> suppression:	0
CONVEYOR TRANSFER POINTS Information	* No. of conveyor transport points with <u>no</u> suppression:	0
	* No. of conveyor transport points with <u>wet</u> suppression:	0
*NOTE: Each conveyor will have only one transfer point, the point where a conveyor drops product, not receives product. Do not include conveyors that drop to screens or crushers. The transfer points to the crushers and screens are already accounted for in the emission factors for these units.		
Product H Emissions Summary		
H product crushers TSP emissions:	0.0	tons
H product screens TSP emissions:	0.0	tons
H product conveyor transfer points TSP emissions:	0.0	tons
H product total TSP emissions:	0.0	tons
H product crushers PM10 emissions:	0.0	tons
H product screens PM10 emissions:	0.0	tons
H product conveyor transfer points PM10 emissions:	0.0	tons
H product total PM10 emissions:	0.0	tons
H product crushers PM2.5 emissions:	0.0	tons
H product screens PM2.5 emissions:	0.0	tons
H product conveyor transfer points PM2.5 emissions:	0.0	tons
H product total PM2.5 emissions:	0.0	tons

Product		I
Product I Process Information		
Actual annual production of I:		0 tons
CRUSHERS Information		
No. of primary crushers with <u>no</u> suppression:		1
No. of primary crushers with <u>wet</u> suppression:		0
No. of secondary / tertiary crushers with <u>no</u> suppression:		0
No. of secondary / tertiary crushers with <u>wet</u> suppression:		0
No. of fines crushers with <u>no</u> suppression:		0
No. of fines crushers with <u>wet</u> suppression:		0
SCREENS Information		
No. of normal screens with <u>no</u> suppression:		0
No. of normal screens with <u>wet</u> suppression:		0
No. of fines screens with <u>no</u> suppression:		0
No. of fines screens with <u>wet</u> suppression:		0
CONVEYOR TRANSFER POINTS Information		
* No. of conveyor transport points with <u>no</u> suppression:		0
* No. of conveyor transport points with <u>wet</u> suppression:		0
*NOTE: Each conveyor will have only one transfer point, the point where a conveyor drops product, not receives product. Do not include conveyors that drop to screens or crushers. The transfer points to the crushers and screens are already accounted for in the emission factors for these units.		
Product I Emissions Summary		
I product crushers TSP emissions:	0.0	tons
I product screens TSP emissions:	0.0	tons
I product conveyor transfer points TSP emissions:	0.0	tons
I product total TSP emissions:	0.0	tons
I product crushers PM10 emissions:	0.0	tons
I product screens PM10 emissions:	0.0	tons
I product conveyor transfer points PM10 emissions:	0.0	tons
I product total PM10 emissions:	0.0	tons
I product crushers PM2.5 emissions:	0.0	tons
I product screens PM2.5 emissions:	0.0	tons
I product conveyor transfer points PM2.5 emissions:	0.0	tons
I product total PM2.5 emissions:	0.0	tons

Product	J
Product J Process Information	
Actual annual production of J: 0 tons	
CRUSHERS Information	
No. of primary crushers with <u>no</u> suppression:	1
No. of primary crushers with <u>wet</u> suppression:	0
No. of secondary / tertiary crushers with <u>no</u> suppression:	0
No. of secondary / tertiary crushers with <u>wet</u> suppression:	0
No. of fines crushers with <u>no</u> suppression:	0
No. of fines crushers with <u>wet</u> suppression:	0
SCREENS Information	
No. of normal screens with <u>no</u> suppression:	0
No. of normal screens with <u>wet</u> suppression:	0
No. of fines screens with <u>no</u> suppression:	0
No. of fines screens with <u>wet</u> suppression:	0
CONVEYOR TRANSFER POINTS Information	
* No. of conveyor transport points with <u>no</u> suppression:	0
* No. of conveyor transport points with <u>wet</u> suppression:	0
*NOTE: Each conveyor will have only one transfer point, the point where a conveyor drops product, not receives product. Do not include conveyors that drop to screens or crushers. The transfer points to the crushers and screens are already accounted for in the emission factors for these units.	
Product J Emissions Summary	
J product crushers TSP emissions:	0.0 tons
J product screens TSP emissions:	0.0 tons
J product conveyor transfer points TSP emissions:	0.0 tons
J product total TSP emissions:	0.0 tons
J product crushers PM10 emissions:	0.0 tons
J product screens PM10 emissions:	0.0 tons
J product conveyor transfer points PM10 emissions:	0.0 tons
J product total PM10 emissions:	0.0 tons
J product crushers PM2.5 emissions:	0.0 tons
J product screens PM2.5 emissions:	0.0 tons
J product conveyor transfer points PM2.5 emissions:	0.0 tons
J product total PM2.5 emissions:	0.0 tons

crusher output

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Crusher Calculations and Output

Company Name: Carolina Sunrock LLC																																		
Facility ID No.: N/A																																		
Permit No.: N/A																																		
Facility City: Prospect Hill Quarry & Distribution																																		
Facility County: Caswell																																		
Primary Crusher ID No. 4860 with wet suppression																																		
Maximum Rated Capacity	1200	tons																																
Actual annual throughput	5,694,000	tons																																
Secondary or Tertiary Crusher ID No. GEN3 with wet suppression																																		
Maximum Rated Capacity	400	tons																																
Actual annual throughput	1,898,000	tons																																
Secondary or Tertiary Crusher ID No. GEN5 with wet suppression																																		
Maximum Rated Capacity	400	tons																																
Actual annual throughput	1,898,000	tons																																
Fines Crusher ID No. GEN7 with wet suppression																																		
Maximum Rated Capacity	200	tons																																
Actual annual throughput	949,000	tons																																
hourly potential TSP emissions (lb/hr)			3.00	hourly potential PM ₁₀ emissions (lb/hr)			1.32	hourly potential PM _{2.5} emissions (lb/hr)			0.21	yearly potential TSP emissions (tpy)		13.14	yearly potential PM ₁₀ emissions (tpy)		5.78	yearly potential PM _{2.5} emissions (tpy)		0.94	yearly actual TSP emissions (tpy)		7.12	yearly actual PM ₁₀ emissions (tpy)		3.13	yearly actual PM _{2.5} emissions (tpy)		0.51	TSP emission factor (lb/ton)		PM ₁₀ emission factor (lb/ton)	PM _{2.5} emission factor (lb/ton)	
			1.44				0.648				0.12	6.3072		6.3072	2.83824		2.83824	0.5256		0.5256	3.4164		3.4164	1.53728		1.53728	0.2847		0.2847	0.0012		0.00054	0.0001	
			0.48				0.216				0.04	2.1024		2.1024	0.94608		0.94608	0.1752		0.1752	1.1388		1.1388	0.51246		0.51246	0.0949		0.0949	0.0012		0.00054	0.0001	
			0.48				0.216				0.04	2.1024		2.1024	0.94608		0.94608	0.1752		0.1752	1.1388		1.1388	0.51246		0.51246	0.0949		0.0949	0.0012		0.00054	0.0001	
			0.6				0.24				0.014	2.628		2.628	1.0512		1.0512	0.06132		0.06132	1.4235		1.4235	0.5694		0.5694	0.033215		0.033215	0.003		0.0012	0.0007	

crusher output

screens output

Conveyors Calculations and Output

Company Name:	Carolina Sureco LLC	2.72	0.89	0.25	11.90	3.91	1.11	6.45	2.12	0.60	TSP emission factor (lb/ton)	PM ₁₀ emission factor (lb/ton)	PM _{2.5} emission factor (lb/ton)
Facility ID No.:	NA	hourly potential TSP emissions (lb/hr)	hourly potential PM ₁₀ emissions (lb/hr)	hourly potential PM _{2.5} emissions (lb/hr)	yearly potential TSP emissions (tpy)	yearly potential PM ₁₀ emissions (tpy)	yearly potential PM _{2.5} emissions (tpy)	yearly actual TSP emissions (tpy)	yearly actual PM ₁₀ emissions (tpy)	yearly actual PM _{2.5} emissions (tpy)	TSP emission factor (lb/ton)	PM ₁₀ emission factor (lb/ton)	PM _{2.5} emission factor (lb/ton)
Facility City:	Prospect Hill Quarry & Distribution												
Facility County:	Crawell												
Conveyor ID No. CR1 to C1 with wet suppression	1200 ton/hour	0.168	0.0552	0.0156	0.73584	0.241776	0.066328	0.39858	0.130862	0.037011	0.0001400	0.00004600	0.00001300
Maximum Rated Capacity	1200 ton/hour												
Actual annual throughput	5,894,000 tons												
Conveyor ID No. C1 to C2 with wet suppression	1200 ton/hour	0.168	0.0552	0.0156	0.73584	0.241776	0.066328	0.39858	0.130862	0.037011	0.00014	0.000046	0.000013
Maximum Rated Capacity	1200 ton/hour												
Actual annual throughput	5,894,000 tons												
Conveyor ID No. C2 to C3 with wet suppression	1200 ton/hour	0.168	0.0552	0.0156	0.73584	0.241776	0.066328	0.39858	0.130862	0.037011	0.00014	0.000046	0.000013
Maximum Rated Capacity	1200 ton/hour												
Actual annual throughput	5,894,000 tons												
Conveyor ID No. C3 to pile with wet suppression	1200 ton/hour	0.168	0.0552	0.0156	0.73584	0.241776	0.066328	0.39858	0.130862	0.037011	0.00014	0.000046	0.000013
Maximum Rated Capacity	1200 ton/hour												
Actual annual throughput	5,894,000 tons												
Conveyor ID No. Pile to C4 with wet suppression	1000 ton/hour	0.14	0.046	0.013	0.6132	0.20148	0.05684	0.33215	0.109135	0.0308425	0.00014	0.000046	0.000013
Maximum Rated Capacity	1000 ton/hour												
Actual annual throughput	4,745,000 tons												
Conveyor ID No. C4 to C5 with wet suppression	1000 ton/hour	0.14	0.046	0.013	0.6132	0.20148	0.05684	0.33215	0.109135	0.0308425	0.00014	0.000046	0.000013
Maximum Rated Capacity	1000 ton/hour												
Actual annual throughput	4,745,000 tons												
Conveyor ID No. screen to C5a with wet suppression	200 ton/hour	0.028	0.0092	0.0026	0.12264	0.040296	0.011388	0.06643	0.021827	0.0061685	0.00014	0.000046	0.000013
Maximum Rated Capacity	200 ton/hour												
Actual annual throughput	945,000 tons												
Conveyor ID No. C-5a to C6 with wet suppression	200 ton/hour	0.028	0.0092	0.0026	0.12264	0.040296	0.011388	0.06643	0.021827	0.0061685	0.00014	0.000046	0.000013
Maximum Rated Capacity	200 ton/hour												
Actual annual throughput	945,000 tons												
Conveyor ID No. C6 to C7 with wet suppression	200 ton/hour	0.028	0.0092	0.0026	0.12264	0.040296	0.011388	0.06643	0.021827	0.0061685	0.00014	0.000046	0.000013
Maximum Rated Capacity	200 ton/hour												
Actual annual throughput	945,000 tons												
Conveyor ID No. C7 to Pile with wet suppression	200 ton/hour	0.028	0.0092	0.0026	0.12264	0.040296	0.011388	0.06643	0.021827	0.0061685	0.00014	0.000046	0.000013
Maximum Rated Capacity	200 ton/hour												
Actual annual throughput	945,000 tons												
Conveyor ID No. screen to C8 with wet suppression	400 ton/hour	0.056	0.0184	0.0052	0.24528	0.086592	0.022776	0.13286	0.043654	0.012337	0.00014	0.000046	0.000013
Maximum Rated Capacity	400 ton/hour												
Actual annual throughput	1,895,000 tons												
Conveyor ID No. C8 to C9 with wet suppression	400 ton/hour	0.056	0.0184	0.0052	0.24528	0.086592	0.022776	0.13286	0.043654	0.012337	0.00014	0.000046	0.000013
Maximum Rated Capacity	400 ton/hour												
Actual annual throughput	1,895,000 tons												
Conveyor ID No. C9 to C10 with wet suppression	400 ton/hour	0.056	0.0184	0.0052	0.24528	0.086592	0.022776	0.13286	0.043654	0.012337	0.00014	0.000046	0.000013
Maximum Rated Capacity	400 ton/hour												
Actual annual throughput	1,895,000 tons												
Conveyor ID No. C10 to C11 with wet suppression	400 ton/hour	0.056	0.0184	0.0052	0.24528	0.086592	0.022776	0.13286	0.043654	0.012337	0.00014	0.000046	0.000013
Maximum Rated Capacity	400 ton/hour												
Actual annual throughput	1,895,000 tons												
Conveyor ID No. C11 to C12 with wet suppression	400 ton/hour	0.056	0.0184	0.0052	0.24528	0.086592	0.022776	0.13286	0.043654	0.012337	0.00014	0.000046	0.000013
Maximum Rated Capacity	400 ton/hour												
Actual annual throughput	1,895,000 tons												
Conveyor ID No. CR2 to C13 with wet suppression	400 ton/hour	0.056	0.0184	0.0052	0.24528	0.086592	0.022776	0.13286	0.043654	0.012337	0.00014	0.000046	0.000013
Maximum Rated Capacity	400 ton/hour												
Actual annual throughput	1,895,000 tons												
Conveyor ID No. CR3 to C13 with wet suppression	400 ton/hour	0.056	0.0184	0.0052	0.24528	0.086592	0.022776	0.13286	0.043654	0.012337	0.00014	0.000046	0.000013
Maximum Rated Capacity	400 ton/hour												
Actual annual throughput	1,895,000 tons												
Conveyor ID No. C13 to C14 with wet suppression	955 ton/hour	0.1337	0.04393	0.012415	0.585606	0.1924134	0.0543777	0.31720325	0.104223925	0.029454588	0.00014	0.000046	0.000013
Maximum Rated Capacity	955 ton/hour												
Actual annual throughput	4,531,475 tons												
Conveyor ID No. C14 to C16 with wet suppression	1030 ton/hour	0.1442	0.04738	0.01339	0.631596	0.2075244	0.0586482	0.3421145	0.11240905	0.031767775	0.00014	0.000046	0.000013
Maximum Rated Capacity	1030 ton/hour												
Actual annual throughput	4,887,350 tons												

Conveyors Calculations and Output

Company Name: Carolina Suncoast LLC		2.72	0.89	0.25	11.90	3.91	1.11	6.45	2.12	0.60	TSP emission factor (lb/ton)	PM ₁₀ emission factor (lb/ton)	PM _{2.5} emission factor (lb/ton)
Facility ID No.:	N/A	hourly potential TSP emissions (lb/hr)	hourly potential PM ₁₀ emissions (lb/hr)	hourly potential PM _{2.5} emissions (lb/hr)	yearly potential TSP emissions (tpy)	yearly potential PM ₁₀ emissions (tpy)	yearly potential PM _{2.5} emissions (tpy)	yearly actual TSP emissions (tpy)	yearly actual PM ₁₀ emissions (tpy)	yearly actual PM _{2.5} emissions (tpy)			
Facility City:	Prospect Hill Quarry & Distribution												
Facility County:	Casswell												
Conveyor ID No. SC2 to C17 with wet suppression	141 tons/hour	0.042	0.0138	0.0039	0.18396	0.060444	0.017082	0.098645	0.0327405	0.00925275	0.00014	0.000046	0.000013
Maximum Rated Capacity	300 tons												
Actual annual throughput	1,423,500 tons												
Conveyor ID No. SC2 to C21 with wet suppression	141 tons/hour	0.0714	0.02346	0.00663	0.312732	0.1027548	0.0290394	0.1693965	0.05565885	0.015739675	0.00014	0.000046	0.000013
Maximum Rated Capacity	300 tons												
Actual annual throughput	2,419,950 tons												
Conveyor ID No. SC2 to C19 with wet suppression	141 tons/hour	0.0217	0.00713	0.002015	0.095046	0.0312254	0.0088257	0.05148325	0.016915925	0.004780588	0.00014	0.000046	0.000013
Maximum Rated Capacity	155 tons												
Actual annual throughput	735,475 tons												
Conveyor ID No. SC4 to C28 with wet suppression	141 tons/hour	0.0217	0.00713	0.002015	0.095046	0.0312254	0.0088257	0.05148325	0.016915925	0.004780588	0.00014	0.000046	0.000013
Maximum Rated Capacity	155 tons												
Actual annual throughput	735,475 tons												
Conveyor ID No. SC4 to C25 with wet suppression	141 tons/hour	0.0217	0.00713	0.002015	0.095046	0.0312254	0.0088257	0.05148325	0.016915925	0.004780588	0.00014	0.000046	0.000013
Maximum Rated Capacity	155 tons												
Actual annual throughput	735,475 tons												
Conveyor ID No. SC4 to C24 with wet suppression	141 tons/hour	0.02366	0.00774	0.002197	0.1036308	0.03405012	0.00962286	0.05613335	0.016443815	0.005212383	0.00014	0.000046	0.000013
Maximum Rated Capacity	169 tons												
Actual annual throughput	801,905 tons												
Conveyor ID No. SC4 to C24 with wet suppression	141 tons/hour	0.028	0.0092	0.0026	0.12264	0.040296	0.011388	0.0643	0.021827	0.0061685	0.00014	0.000046	0.000013
Maximum Rated Capacity	200 tons												
Actual annual throughput	949,000 tons												
Conveyor ID No. C25 to C26 with wet suppression	141 tons/hour	0.02366	0.00774	0.002197	0.1036308	0.03405012	0.00962286	0.05613335	0.016443815	0.005212383	0.00014	0.000046	0.000013
Maximum Rated Capacity	169 tons												
Actual annual throughput	801,905 tons												
Conveyor ID No. C23 to pile with wet suppression	141 tons/hour	0.02366	0.00774	0.002197	0.1036308	0.03405012	0.00962286	0.05613335	0.016443815	0.005212383	0.00014	0.000046	0.000013
Maximum Rated Capacity	169 tons												
Actual annual throughput	801,905 tons												
Conveyor ID No. C24 to C25 with wet suppression	141 tons/hour	0.028	0.0092	0.0026	0.12264	0.040296	0.011388	0.0643	0.021827	0.0061685	0.00014	0.000046	0.000013
Maximum Rated Capacity	200 tons												
Actual annual throughput	949,000 tons												
Conveyor ID No. C25 to C26 with wet suppression	141 tons/hour	0.028	0.0092	0.0026	0.12264	0.040296	0.011388	0.0643	0.021827	0.0061685	0.00014	0.000046	0.000013
Maximum Rated Capacity	200 tons												
Actual annual throughput	949,000 tons												
Conveyor ID No. C26 to pile with wet suppression	141 tons/hour	0.028	0.0092	0.0026	0.12264	0.040296	0.011388	0.0643	0.021827	0.0061685	0.00014	0.000046	0.000013
Maximum Rated Capacity	200 tons												
Actual annual throughput	949,000 tons												
Conveyor ID No. C27 to C28 with wet suppression	141 tons/hour	0.01974	0.006486	0.001833	0.0864612	0.02840888	0.00802854	0.04683315	0.015388035	0.004348793	0.00014	0.000046	0.000013
Maximum Rated Capacity	141 tons												
Actual annual throughput	689,045 tons												
Conveyor ID No. C28 to C29 with wet suppression	141 tons/hour	0.01974	0.006486	0.001833	0.0864612	0.02840888	0.00802854	0.04683315	0.015388035	0.004348793	0.00014	0.000046	0.000013
Maximum Rated Capacity	141 tons												
Actual annual throughput	689,045 tons												
Conveyor ID No. C29 to pile with wet suppression	141 tons/hour	0.01974	0.006486	0.001833	0.0864612	0.02840888	0.00802854	0.04683315	0.015388035	0.004348793	0.00014	0.000046	0.000013
Maximum Rated Capacity	141 tons												
Actual annual throughput	689,045 tons												
Conveyor ID No. C17 to C18 with wet suppression	300 tons/hour	0.042	0.0138	0.0039	0.18396	0.060444	0.017082	0.098645	0.0327405	0.00925275	0.00014	0.000046	0.000013
Maximum Rated Capacity	300 tons												
Actual annual throughput	1,423,500 tons												
Conveyor ID No. C18 to pile with wet suppression	300 tons/hour	0.042	0.0138	0.0039	0.18396	0.060444	0.017082	0.098645	0.0327405	0.00925275	0.00014	0.000046	0.000013
Maximum Rated Capacity	300 tons												
Actual annual throughput	1,423,500 tons												
Conveyor ID No. Finemaster to C32 with wet suppression	300 tons/hour	0.042	0.0138	0.0039	0.18396	0.060444	0.017082	0.098645	0.0327405	0.00925275	0.00014	0.000046	0.000013
Maximum Rated Capacity	300 tons												
Actual annual throughput	1,423,500 tons												

Conveyors Calculations and Output

Company Name:	Cavallina Surecork LLC	2.72	0.89	0.25	11.90	3.91	1.11	6.45	2.12	0.60	TSP emission factor (lb/ton)	PM ₁₀ emission factor (lb/ton)	PM _{2.5} emission factor (lb/ton)
Facility ID No.:	NA												
Permit No.:	NA												
Facility City:	Prospect Hill Quarry & Distribution												
Facility County:	Casswell												
Conveyor ID No. C32 to C33 with wet suppression													
Maximum Rated Capacity	400 tons/hour	0.056	0.0184	0.0052	0.24528	0.086592	0.022776	0.13286	0.043554	0.012337	0.00014	0.000046	0.000013
Actual annual throughput	1,898,000 tons												
Conveyor ID No. C33 to pile with wet suppression													
Maximum Rated Capacity	400 tons/hour	0.056	0.0184	0.0052	0.24528	0.086592	0.022776	0.13286	0.043554	0.012337	0.00014	0.000046	0.000013
Actual annual throughput	1,898,000 tons												
Conveyor ID No. pile to C39 with wet suppression													
Maximum Rated Capacity	400 tons/hour	0.056	0.0184	0.0052	0.24528	0.086592	0.022776	0.13286	0.043554	0.012337	0.00014	0.000046	0.000013
Actual annual throughput	1,898,000 tons												
Conveyor ID No. SC5 to C38 with wet suppression													
Maximum Rated Capacity	50 tons/hour	0.007	0.0023	0.00065	0.03066	0.010074	0.002847	0.0168075	0.00545675	0.001542125	0.00014	0.000046	0.000013
Actual annual throughput	237,250 tons												
Conveyor ID No. C38 to C37 with wet suppression													
Maximum Rated Capacity	50 tons/hour	0.007	0.0023	0.00065	0.03066	0.010074	0.002847	0.0168075	0.00545675	0.001542125	0.00014	0.000046	0.000013
Actual annual throughput	237,250 tons												
Conveyor ID No. C37 to pile with wet suppression													
Maximum Rated Capacity	50 tons/hour	0.007	0.0023	0.00065	0.03066	0.010074	0.002847	0.0168075	0.00545675	0.001542125	0.00014	0.000046	0.000013
Actual annual throughput	237,250 tons												
Conveyor ID No. SC5 to C34 with wet suppression													
Maximum Rated Capacity	100 tons/hour	0.014	0.0046	0.0013	0.06132	0.020148	0.005694	0.033215	0.0109135	0.00308425	0.00014	0.000046	0.000013
Actual annual throughput	474,500 tons												
Conveyor ID No. C34 to C35 with wet suppression													
Maximum Rated Capacity	100 tons/hour	0.014	0.0046	0.0013	0.06132	0.020148	0.005694	0.033215	0.0109135	0.00308425	0.00014	0.000046	0.000013
Actual annual throughput	474,500 tons												
Conveyor ID No. C35 to pile with wet suppression													
Maximum Rated Capacity	100 tons/hour	0.014	0.0046	0.0013	0.06132	0.020148	0.005694	0.033215	0.0109135	0.00308425	0.00014	0.000046	0.000013
Actual annual throughput	474,500 tons												
Conveyor ID No. SC5 to C31 with wet suppression													
Maximum Rated Capacity	100 tons/hour	0.014	0.0046	0.0013	0.06132	0.020148	0.005694	0.033215	0.0109135	0.00308425	0.00014	0.000046	0.000013
Actual annual throughput	474,500 tons												
Conveyor ID No. C31 to C32 with wet suppression													
Maximum Rated Capacity	100 tons/hour	0.014	0.0046	0.0013	0.06132	0.020148	0.005694	0.033215	0.0109135	0.00308425	0.00014	0.000046	0.000013
Actual annual throughput	474,500 tons												
Conveyor ID No. SC5 to C31 with wet suppression													
Maximum Rated Capacity	25 tons/hour	0.0035	0.00115	0.000325	0.01533	0.005037	0.0014235	0.00830375	0.002728375	0.000771063	0.00014	0.000046	0.000013
Actual annual throughput	118,625 tons												
Conveyor ID No. C39 & C14 to C15 with wet suppression													
Maximum Rated Capacity	1030 tons/hour	0.1442	0.04738	0.01339	0.831596	0.2075244	0.0586482	0.3421145	0.11240905	0.031767775	0.00014	0.000046	0.000013
Actual annual throughput	4,887,350 tons												
Conveyor ID No. SC5 to C38 with wet suppression													
Maximum Rated Capacity	75 tons/hour	0.0105	0.00345	0.000975	0.04599	0.015111	0.0042705	0.02491125	0.008185125	0.002313188	0.00014	0.000046	0.000013
Actual annual throughput	355,875 tons												

APPENDIX B. NAAQS MODELING ANALYSIS

Note: To avoid redundancy, the forms and emission calculations that were transmitted as part of this report are not included in this appendix since they are included in Section 5 (DEQ source forms) and Appendix A (emission calculations) above.

AIR DISPERSION MODELING REPORT

Carolina Sunrock, LLC
Prospect Hill, NC

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1. INTRODUCTION

Carolina Sunrock submitted a complete construction permit application for its proposed hot mix asphalt (HMA), batch concrete plant, and quarry to be located in Prospect Hill, NC. The submitted application included a facility-wide air toxics modeling demonstration. Since the time of that submittal, the North Carolina Division of Air Quality (NCDAQ) has requested that the facility complete additional air dispersion modeling analyses in order to demonstrate that the proposed facility will not violate any National/State Ambient Air Quality Standard (NAAQS/SAAQS). In response to that request, Carolina Sunrock has completed air dispersion modeling for Total Suspended Particulate (TSP), Particulate Matter with an aerodynamic diameter of 10 microns or less (PM₁₀), PM with an aerodynamic diameter of 2.5 microns or less (PM_{2.5}), nitrogen dioxide (NO₂), and sulfur dioxide (SO₂).

This report presents the input data, modeling methodology and results for the NAAQS modeling compliance demonstration that was completed for Carolina Sunrock's Prospect Hill, NC facility (Prospect Hill). The modeling methodology generally conforms to U.S. EPA's *Guideline on Air Quality Models* 40 CFR 51, Appendix W (Revised, January 17, 2017), herein referred to as the *Guideline*, and more specifically to North Carolina Division of Air Quality (NCDAQ) Guidance documents.¹²³

¹ https://files.nc.gov/ncdeq/Air%20Quality/permits/mets/NC_PSD_Modeling_Guidance_20200701.pdf

² https://files.nc.gov/ncdeq/Air%20Quality/permits/mets/NC_Toxics_Guidance_rev_24May2018.pdf

³ https://files.nc.gov/ncdeq/Air%20Quality/permits/mets/NC_DAQ_Quarry_Modeling_Guidance_31May2018.pdf

2. FACILITY LOCATION

This section provides a description of the location for the proposed facility.

Figure 2-1 provides an aerial photograph of the area surrounding the Carolina Sunrock Prospect Hill property. The approximate central Universal Transverse Mercator (UTM) coordinates of the facility are 664.4 kilometers (km) east and 4,018.7 km north in Zone 17 (NAD 83).

For modeling purposes, the appropriate urban/rural land use classification for the area was determined using the Auer technique, which is recommended in the *Guideline on Air Quality Models*. In accordance with this technique, the area within a 3-km radius of the facility was identified on US Geological Survey (USGS) topographic maps (and was delineated by land use type). More than 50 percent of the surrounding land use can be classified as undeveloped rural (i.e., Auer's A4 classification), therefore the area is classified as rural.

Figure 2-1. Map of Area Surrounding Carolina Sunrock Prospect Hill



3. DISPERSION MODEL METHODOLOGY

This section discusses the data resources and methodology that were utilized in the NAAQS/SAAQS modeling demonstration.

3.1 Model Selection

The AERMOD dispersion model (version 19091) was used to calculate off-property concentrations in the modeling analysis. AERMOD was promulgated as the preferred model in 40 CFR 51, Appendix W on November 9, 2005 and is recommended by the NCDAQ for evaluating criteria and toxic air pollutant concentrations from industrial facilities such as Carolina Sunrock's Prospect Hill facility.⁴ AERMOD was run using the regulatory default option, which automatically implements NCDAQ and U.S. EPA recommended model options.

3.2 Source Description

Tables 3-1, 3-2, and Table 3-3 presents a table of the modeled point, area, and volume sources, respectively, including their locations at the facility. All locations are expressed in UTM Zone 17 (NAD83) coordinates.

⁴ 40 CFR 51, Appendix W–*Guideline on Air Quality Models*, Appendix A.1– AMS/EPA Regulatory Model (AERMOD).

Table 3-1. Modeled Point Source Locations

Model ID	Description	UTM-E (m)	UTM-N (m)	Elevation (m)
Generators				
PGEN1	Power Engine 1	664,513.4	4,018,866.7	200.1
PGEN2	Power Engine 2	664,513.4	4,018,864.9	200.0
PGEN3	Power Engine 3	664,513.4	4,018,863.1	200.0
HMA and Concrete Plants				
CD1	Asphalt Plant Baghouse	664,069.6	4,018,718.7	204.6
IES4	Asphalt Heater	664,066.8	4,018,732.0	204.7
IES5	Liquid Asphalt Heater	664,071.1	4,018,735.0	204.8
HMASILO1	Asphalt Silo 1 Vent	664,109.1	4,018,719.0	205.1
HMASILO2	Asphalt Silo 2 Vent	664,112.0	4,018,721.4	205.1
HMASILO3	Asphalt Silo 3 Vent	664,115.0	4,018,723.7	205.0
HMASILO4	Asphalt Silo 4 Vent	664,117.9	4,018,726.2	204.9
HMASILO5	Asphalt Silo 5 Vent	664,106.1	4,018,716.5	205.2
CD2	Concrete Plant Baghouse	664,155.2	4,018,786.6	202.2
Quarry				
GEN1	Quarry Generator Pit A	664,799.0	4,018,997.2	177
GEN1A	Quarry Generator Pit A	665,011.6	4,019,023.4	177
GEN2	Quarry Generator Pit A	664,851.9	4,019,087.3	177
CRGEN3	Quarry Generator	664,603.3	4,018,928.6	200.0
CRGEN5	Quarry Generator	664,608.9	4,018,937.9	199.6
CRGEN7	Quarry Generator	664,585.2	4,018,949.2	200.9
GEN4	Quarry Generator Pit A	665,031.3	4,019,118.9	188.2
BGEN1	Quarry Generator Pit B	665230.3	4018636.4	163
BGEN1A	Quarry Generator Pit B	665366.2	4018573.6	163
BGEN2	Quarry Generator Pit B	665267.6	4018494.4	163
BGEN4	Quarry Generator Pit B	665322.9	4018727.5	163

Table 3-2. Modeled Area Source Locations

Model ID	Description	UTM-E (m)	UTM-N (m)	Elevation (m)
HMA and Concrete Plants				
SYP1	Asphalt Stock	664,033.9	4,018,807.7	203.8
SYP2	Concrete Stock	664,070.8	4,018,815.5	203.6
ROADP1	Asphalt/Concrete Paved	664,149	4,018,609	206.06
ROADU1	Asphalt Unpaved	664037.8	4,018687.7	204.56
Quarry				
ROADP2	Quarry Paved	664,378.2	4,018790	201.49
QSP1	Quarry Stockpile 1	664,625.3	4,018,871.0	197.8
QSP2	Quarry Stockpile 2	664,540.1	4,018,873.2	200.1
QSP3	Quarry Stockpile 3	664,485.8	4,018,873.2	200.2
QSP4	Quarry Stockpile 4	664,446.9	4,018,903.7	199.2
QSP5	Quarry Stockpile 5	664,518.9	4,018,997.3	199.2
QSP6	Quarry Stockpile 6	664,530.8	4,019,051.6	197.5
QSP7	Quarry Stockpile 7	664,590.9	4,019,052.9	199.6
ROADU2	To Ponds B and C	664,039.5	4,018,641.3	205.39
ROADU3	Quarry/Stockpile Yard	664,749.5	4,019,097	193.7
1UPRD7	Pit A Road	664,751.2	4,019,001.7	192.75
2UPRD7	Pit A Road	664,763.7	4,019,121.4	184.5
3UPRD7	Pit A Road	665,222	4,019,110.5	177
4UPRD7	Pit A Road	665,220.8	4,018,959.4	177
5UPRD7	Pit A Road	665,075.7	4,018,961	177
1UPRD8	Pit B Road	665,215.4	4,017,737.2	178
2UPRD8	Pit B Road	665,133.7	4,017,917.6	170.5
3UPRD8	Pit B Road	665,197.1	4,018,419.4	163
4UPRD8	Pit B Road	665,401.5	4,018,805.7	163
5UPRD8	Pit B Road	665,483.3	4,018,739.4	163
ROADU9	Pit B Access Road	665,172.9	4,018,582.8	181.81

Table 3-3. Modeled Volume Source Locations

Model ID	Description	UTM-E (m)	UTM-N (m)	Elevation (m)
HMA Plant				
HMALO1	Asphalt Loadout 1	664,109.1	4,018,719.0	205.1
HMALO2	Asphalt Loadout 2	664,112.0	4,018,721.4	205.1
HMALO3	Asphalt Loadout 3	664,115.0	4,018,723.7	205.0
HMALO4	Asphalt Loadout 4	664,117.9	4,018,726.2	204.9
HMALO5	Asphalt Loadout 5	664,106.1	4,018,716.5	205.2
RAPSCN	Screen	664,085.7	4,018,740.7	205.0
DP61	Screen to Drum Conveyor	664,085.7	4,018,740.6	205.0
RAPCR1	Crusher	664,072.0	4,018,747.5	204.9
DP62	Drop to Drum	664,086.9	4,018,726.9	205.0
DP63	Transfer to Screen Conveyor	664,072.7	4,018,739.7	204.9
DP64	Asphalt Drop 2	664,060.5	4,018,719.8	204.4
DP65	Drop from Crusher	664,072.4	4,018,743.0	204.9
DP66	Asphalt Plant Drop 1	664,085.3	4,018,744.6	205.0
DP67	HMA Conveyors to Stockpiles	664,126.0	4,018,798.8	203.7
Quarry				
GEN3	Crusher GEN3	664,603.0	4,018,930.4	200.0
GEN5	Crusher GEN5	664,609.3	4,018,939.8	199.6
GEN7	Crusher GEN7	664,587.7	4,018,947.2	200.8
DP4	C3 to Pile	664,654.4	4,018,963.9	196.8
DP5	Pile to C4	664,655.2	4,018,944.7	196.3
DP6	C15 and C4 to C5	664,655.5	4,018,923.6	196.2
DP7	Screen to C5a	664,625.9	4,018,923.8	198.5
DP8	C5a to C6	664,626.0	4,018,921.1	198.5
DP9	C6 to C7	664,625.7	4,018,891.8	198.3
DP10	C7 to Pile	664,625.5	4,018,872.0	197.9
DP11	Screen to C8	664,623.3	4,018,931.2	198.7
DP12	Screen to C10	664,623.3	4,018,933.1	198.6
DP13	C8 to C9	664,610.9	4,018,930.3	199.5
DP14	C10 to C11	664,614.2	4,018,932.6	199.3
DP15	C11 to C12	664,612.7	4,018,934.9	199.4
DP16	CR2 to C13	664,593.7	4,018,930.7	200.5
DP17	CR3 to C13	664,600.2	4,018,939.7	200.1
DP18	C13 to C14	664,605.6	4,018,947.3	199.8
DP19	C14 and C38 to C16	664,604.0	4,018,964.9	200.0
DP20	SC2 to C17	664,575.4	4,018,964.7	201.2
DP21	SC2 to C21	664,573.4	4,018,954.1	201.2
DP22	SC2 to C19	664,578.9	4,018,953.5	201.1
DP23	CR4 to C20	664,588.8	4,018,940.5	200.7
DP24	C20 to C13	664,601.8	4,018,942.5	200.0
DP25	SC4 to C22	664,541.2	4,018,917.1	200.8
DP28	C22 to C23	664,540.7	4,018,882.0	200.3
DP29	C23 to Pile	664,540.3	4,018,864.7	199.9
DP30	C24 to C25	664,539.2	4,018,911.3	200.8
DP31	C25 to C26	664,489.8	4,018,881.8	200.0
DP32	C26 to Pile	664,483.1	4,018,866.4	200.6
DP33	C27 to C28	664,537.8	4,018,912.3	200.7
DP34	C28 to C29	664,451.2	4,018,912.6	198.6
DP35	C29 to Pile	664,444.6	4,018,896.3	199.8
DP36	C17 to C18	664,576.5	4,018,969.0	201.2
DP37	C18 to Pile	664,567.0	4,018,969.3	201.3
DP38	Finemaster to C32	664,576.5	4,018,996.0	201.7
DP39	C32 to C33	664,528.5	4,018,996.6	199.7
DP40	C33 to Pile	664,529.0	4,019,013.8	199.0
DP41	Pile to C30	664,637.7	4,019,037.1	200.0
DP42	SC5 to C36	664,602.5	4,019,025.6	201.7

Table 3-3. Modeled Volume Source Locations (Continued)

Model ID	Description	UTM-E (m)	UTM-N (m)	Elevation (m)
DP43	C36 to C37	664,593.0	4,019,043.2	200.4
DP44	C37 to Pile	664,590.2	4,019,060.0	199.0
DP45	SC5 to C34	664,583.9	4,019,018.3	201.7
DP46	C34 to C35	664,539.7	4,019,045.8	198.0
DP47	C35 to Pile	664,525.5	4,019,055.5	197.4
DP48	SC5 to C31	664,584.3	4,019,011.4	201.8
DP49	C31 to C32	664,569.3	4,018,996.9	201.4
DP50	SC5 to C39	664,609.8	4,019,009.7	201.7
DP51	C39 and C14 to C15	664,615.4	4,018,961.5	199.3
DP52	SC5 to C38	664,601.9	4,019,009.0	201.8
SC1	SC-1	664,626.1	4,018,931.7	198.4
SC2	SC-2	664,576.6	4,018,959.4	201.1
SC3	SC3	664,539.8	4,018,922.5	200.8
AGGRE	AggreSand Screen	664,600.6	4,019,017.8	201.7
DP1	CR4860 to C1	664,738.0	4,018,973.8	177
DP2	C1 to C2	664,738.5	4,018,944.7	177
DP3	C2 to C3	664,770.7	4,018,964.6	177
CR4860	Crusher 4860	664,737.8	4,018,979.1	177
CRPITB	Crusher Pit B	665197.4	4018559.5	163
DP1B	DP1B	665207.3	4018553.6	163
DP2B	DP2B	665235.4	4018503.7	163
DP3B	DP3B	665117.5	4018555.6	177.1

As discussed previously, the modeling was conducted generally in accordance following DAQ procedures. The quarry modeling was specifically conducted in accordance with the "DAQ's Quarry Guidance for Refined Modeling"⁵, including the use of dry depletion for TSP and PM₁₀. The only exception is with regards to roadway emissions. Since the truck traffic could occur over large areas, in multiple directions, in and around process areas, and across different elevations, it was deemed more appropriate to characterize roadway emissions as area sources in the model. The use of area sources for roadway emissions is generally more conservative than the default volume source approach as it assumes that emissions occur across the entire area, rather than emanating from the volume source center.

For those specific roadway segments in and around the quarry pits the source parameters were determined based on truck height and width, as recommended in U.S. EPA's Haul Road Workgroup Guidance for two-lane traffic.⁶ Individual trucks were estimated at approximately 2.6 meters (m) wide (equates to a road width 11.2 m) and 3.6 meters high. In order better represent the roadways descending into Pit A and Pit B, respective roadways were broken into segments of varying elevations; the initial road segment at grade, the intermediate segment at grade minus 7.5 meters less in elevation, and the Pit floor segments another 7.5 m less in elevation (as the pit will have an initial depth of 15-meter).

Note, for modeling purposes, some roadway emissions from the PTE calculations were combined into one source. For example, ROADU3 contains emissions from the Quarry/Stockpile yard, as well as emissions from traveling to ODA 1 and ODA2. Additionally, ROADU8 contains emissions from Pit B, as well as traveling to ODA 3.

⁵ https://files.nc.gov/ncdeq/Air%20Quality/permits/mets/NC_DAQ_Quarry_Modeling_Guidance_31May2018.pdf

⁶ U.S. EPA, "Haul Road Workgroup Final Report Submission to EPA-OAQPS", March 2012.

All drop points onto conveyors were characterized as volume sources based on the receiving throughput. Emissions from stockpiles were modeled as area sources. Emissions from screens and crushers were modeled as volume sources. The Prospect Hill quarry will have an initial depth of 15 meters once the plant is operational. As such, the sources within the quarry were set to the AERMAP elevation minus 15 meters.

Additionally, the stacks for sources IES4 and IES5 are vertical stacks but will have raincaps and were modeled with an exit velocity of 0.01 m/s. The HMASILO vents are characterized as point sources with ambient release characteristics, so per NCDAQ guidance, were modeled with an exit velocity of 0.01 m/s and exit temperature of 25 deg. C. The volume source parameters were calculated based on NCDAQ *Guidance* for surface-based volume sources.

Table 3-4 shows how the release heights, initial vertical dimensions, and initial lateral dimensions for different emission units were calculated.

Table 3-4. Area and Volume Source Parameters Calculations

Emission Unit	Release Height	Initial Vertical Dimension	Initial Lateral Dimension
Conveyor Belt Drops	Drop Distance/2	Drop Distance/4.3	Conveyor Belt Width/4.3
Screens/Crushers	Structure Height/2	Structure Height/2.15	Structure Side Length/4.3
Stockpiles	Pile Height/2	Pile Height/2.15	N/A*
Roads	Volume Height/2	Volume Height/2.15	N/A*

*These sources were modeled as areas which do not require initial lateral dimensions.

Tables 3-5, 3-6, and 3-7 present the parameters input to the model for each of the point, area, and volume sources, respectively.

Table 3-5. Modeled Point Source Parameters

Model ID	Stack Height (m)	Exit Temp. (K)	Exit Velocity (m/s)	Stack Diameter (m)
Generators				
PGEN1	5.18	788.71	22.02	0.15
PGEN2	5.18	788.71	22.02	0.15
PGEN3	5.18	788.71	22.02	0.15
HMA Plant and Concrete Plants				
CD1	9.22	388.71	29.41	0.96
IES4	2.74	435.93	0.01	0.30
IES5	4.57	435.93	0.01	0.05
HMASILO1	19.81	298.15	0.01	0.30
HMASILO2	19.81	298.15	0.01	0.30
HMASILO3	18.29	298.15	0.01	0.30
HMASILO4	18.29	298.15	0.01	0.30
HMASILO5	18.29	298.15	0.01	0.30
CD2	10.67	298.15	24.38	0.46
Quarry				
GEN1	3.66	797.04	29.11	0.15
GEN1A	3.66	797.04	29.11	0.15
GEN2	3.66	797.04	29.11	0.15
CRGEN3	3.66	797.04	29.11	0.15
CRGEN5	3.66	797.04	29.11	0.15
CRGEN7	3.66	797.04	29.11	0.15
GEN4	1.83	778.71	15.07	0.15
BGEN1	3.66	797.04	29.11	0.15
BGEN1A	3.66	797.04	29.11	0.15
BGEN2	3.66	797.04	29.11	0.15
BGEN4	3.66	797.04	29.11	0.15

Table 3-6. Modeled Area Source Parameters

Model ID	Release Height (m)	Init. Vert. Dimension (m)
HMA and Concrete Plants		
SYP1	2.10	1.98
SYP2	2.10	1.98
ROADP1	3.60	3.40
ROADU1	3.60	3.40
Quarry		
ROADP2	3.60	3.40
QSP1	6.50	6.03
QSP2	4.80	4.47
QSP3	4.80	4.47
QSP4	4.80	4.47
QSP5	4.80	4.47
QSP6	4.80	4.47
QSP7	4.80	4.47
ROADU2	3.60	3.40
ROADU3	3.60	3.40
UPRD7 (Each segment)	3.60	3.40
UPRD8 (Each segment)	3.60	3.40
ROADU9	3.60	3.40

Table 3-7. Modeled Volume Source Parameters

Model ID	Release Height (m)	Init. Lat. Dimension (K)	Init. Vert. Dimension (m)
HMA Plant			
HMALO1	3.66	0.15	1.70
HMALO2	3.66	0.15	1.70
HMALO3	3.66	0.15	1.70
HMALO4	3.66	0.15	1.70
HMALO5	3.66	0.15	1.70
RAPSCN	2.90	0.72	2.69
DP61	4.04	0.18	0.43
RAPCR1	2.14	0.43	1.98
DP62	7.92	0.18	0.07
DP63	2.44	0.18	0.07
DP64	2.44	0.18	0.28
DP65	2.44	0.18	0.28
DP66	2.44	0.18	0.28
DP67	2.44	0.18	0.28
Quarry			
GEN3	1.98	0.63	1.84
GEN5	1.98	0.63	1.84
GEN7	1.98	0.68	1.84
DP4	23.62	0.25	0.36
DP5	0.30	0.25	0.14
DP6	0.30	0.25	0.14
DP7	1.37	0.25	0.64
DP8	0.30	0.25	0.14
DP9	0.30	0.25	0.14
DP10	6.93	0.25	0.36

Table 3-7. Modeled Volume Source Parameters (Continued)

Model ID	Release Height (m)	Init. Lat. Dimension (K)	Init. Vert. Dimension (m)
DP11	1.37	0.25	0.64
DP12	1.37	0.25	0.64
DP13	0.30	0.25	0.14
DP14	0.30	0.25	0.14
DP15	0.30	0.25	0.14
DP16	0.53	0.25	0.25
DP17	0.53	0.25	0.25
DP18	0.30	0.25	0.14
DP19	0.30	0.25	0.14
DP20	1.68	0.25	0.78
DP21	0.30	0.25	0.14
DP22	0.30	0.25	0.14
DP23	0.30	0.25	0.14
DP24	0.30	0.25	0.14
DP25	0.30	0.14	0.14
DP26	0.30	0.14	0.14
DP27	0.30	0.14	0.14
DP28	0.30	0.14	0.14
DP29	4.80	0.14	0.36
DP30	0.30	0.14	0.14
DP31	0.30	0.14	0.14
DP32	4.80	0.14	0.36
DP33	0.30	0.14	0.14
DP34	0.30	0.14	0.14
DP35	4.80	0.14	0.36
DP36	1.52	0.25	0.71
DP37	3.20	0.21	0.36
DP38	0.30	0.21	0.14
DP39	0.30	0.21	0.14
DP40	6.48	0.21	0.36
DP41	0.30	0.21	0.14
DP42	0.30	0.14	0.14
DP43	0.30	0.14	0.14
DP44	4.80	0.14	0.36
DP45	0.30	0.14	0.14
DP46	0.30	0.14	0.14
DP47	6.48	0.14	0.36
DP48	0.30	0.14	0.14
DP49	0.30	0.14	0.14
DP50	0.30	0.14	0.14
SC1	5.79	0.84	5.39
SC2	4.57	1.21	4.25
SC3	7.01	1.44	6.52
AGGRE	4.11	0.84	3.83
DP1	2.59	0.25	1.21
DP2	0.30	0.25	0.14
DP3	0.30	0.25	0.14
CR4860	6.56	2.51	6.10
CRPITB	6.56	2.51	6.1
DP1B	2.59	0.25	1.21
DP2B	0.3	0.25	0.14
DP3B	0.3	0.25	0.14

Tables 3-8, 3-9, and 3-10 present the emission rates that were modeled. Detailed emission calculations for each of the modeled sources are included in Appendix A of this report. Note that Carolina Sunrock now plans to use ultra-low sulfur diesel (ULSD) in the insignificant heaters (IES4 and IES5). The SO₂ emission rates shown in Appendix A reflect the use of that fuel and Carolina Sunrock is requesting that the permit be modified to reflect that change to ULSD for IES4 and IES5. Since the heaters are insignificant, there are technically no permit forms required in order to make the update, however, in order to be complete forms for the two heaters are included in Appendix B.

Table 3-8. Point Source Modeled Emission Rates

Modeled Emission Rates (g/s)						
Model ID	PM	PM ₁₀	PM _{2.5} Hourly	PM _{2.5} Annual	NO _x	SO ₂
Generators						
PGEN1	1.44E-01	1.44E-01	1.44E-01	1.44E-01	3.44E-01	1.07E-03
PGEN2	1.44E-01	1.44E-01	1.44E-01	1.44E-01	3.44E-01	1.07E-03
PGEN3	1.20E-01	1.20E-01	1.20E-01	1.20E-01	3.34E-01	3.03E-03
HMA Plant and Concrete Plants						
CD1	8.25E+00	5.75E+00	5.43E+00	1.24E+00	1.75E+00	2.71E+00
IES4	2.80E-02	2.80E-02	9.00E-03	8.57E-03	2.16E-02	2.300E-04
IES5	2.60E-02	2.60E-02	8.00E-03	7.86E-03	1.98E-02	2.109E-04
HMASILO1	2.90E-02	2.90E-02	2.10E-02	5.75E-03	0.00E+00	0.00E+00
HMASILO2	2.90E-02	2.90E-02	2.10E-02	5.75E-03	0.00E+00	0.00E+00
HMASILO3	2.90E-02	2.90E-02	2.10E-02	5.75E-03	0.00E+00	0.00E+00
HMASILO4	2.90E-02	2.90E-02	2.10E-02	5.75E-03	0.00E+00	0.00E+00
HMASILO5	2.90E-02	2.90E-02	2.10E-02	5.75E-03	0.00E+00	0.00E+00
CD2	1.11E+00	4.28E-01	4.28E-01	4.28E-01	0.00E+00	0.00E+00
Quarry						
GEN1	1.10E-02	1.10E-02	1.10E-02	1.15E-02	2.90E-02	5.35E-04
GEN1A	1.10E-02	1.10E-02	1.10E-02	1.15E-02	2.90E-02	5.35E-04
GEN2	4.00E-03	4.00E-03	4.00E-03	4.11E-03	1.04E-02	1.91E-04
CRGEN3	1.45E-02	1.40E-02	1.40E-02	1.45E-02	3.64E-02	6.73E-04
CRGEN5	1.48E-02	1.50E-02	1.50E-02	1.48E-02	3.73E-02	6.88E-04
CRGEN7	1.15E-02	1.10E-02	1.10E-02	1.15E-02	2.90E-02	5.35E-04
GEN4	4.10E-03	4.10E-03	4.10E-03	4.10E-03	1.04E-02	1.91E-04
BGEN1	1.10E-02	1.10E-02	1.10E-02	1.15E-02	2.90E-02	5.35E-04
BGEN1A	1.10E-02	1.10E-02	1.10E-02	1.15E-02	2.90E-02	5.35E-04
BGEN2	4.00E-03	4.00E-03	4.00E-03	4.11E-03	1.04E-02	1.91E-04
BGEN4	4.10E-03	4.10E-03	4.10E-03	4.10E-03	1.04E-02	1.91E-04

Table 3-9. Area Source Modeled Emission Rates

Model ID	Modeled Emission Rates (g/s m2)			
	PM	PM ₁₀	PM _{2.5} Hourly	PM _{2.5} Annual
HMA and Concrete Plants				
SYP1	1.22E-05	5.77E-06	8.74E-07	2.79E-07
SYP2	8.91E-06	4.23E-06	6.40E-07	6.40E-07
ROADP1	4.65E-06	9.31E-07	2.28E-07	1.49E-07
ROADU1	7.90E-06	2.01E-06	2.01E-07	9.62E-08
Quarry				
ROADP2	3.76E-05	7.51E-06	1.84E-06	1.21E-06
QSP1	5.99E-06	2.85E-06	4.31E-07	4.31E-07
QSP2	5.90E-06	2.81E-06	4.28E-07	3.75E-07
QSP3	5.18E-05	2.45E-06	3.71E-07	3.71E-07
QSP4	5.18E-05	2.45E-06	3.71E-07	3.71E-07
QSP5	5.18E-05	2.45E-06	3.71E-07	3.71E-07
QSP6	5.18E-05	2.45E-06	3.71E-07	3.71E-07
QSP7	5.18E-05	2.45E-06	3.71E-07	3.71E-07
ROADU2	1.45E-07	3.70E-08	3.70E-09	1.77E-09
ROADU3	4.67E-05	1.19E-05	1.19E-06	5.69E-07
1UPRD7	7.48E-05	1.91E-05	1.91E-06	9.11E-07
2UPRD7	7.48E-05	1.91E-05	1.91E-06	9.11E-07
3UPRD7	7.48E-05	1.91E-05	1.91E-06	9.11E-07
4UPRD7	7.48E-05	1.91E-05	1.91E-06	9.11E-07
5UPRD7	7.48E-05	1.91E-05	1.91E-06	9.11E-07
1UPRD8	6.54E-05	1.67E-05	1.67E-06	7.97E-07
2UPRD8	6.54E-05	1.67E-05	1.67E-06	7.97E-07
3UPRD8	6.54E-05	1.67E-05	1.67E-06	7.97E-07
4UPRD8	6.54E-05	1.67E-05	1.67E-06	7.97E-07
5UPRD8	6.54E-05	1.67E-05	1.67E-06	7.97E-07
ROADU9	2.38E-06	6.06E-07	6.06E-08	2.73E-08

Table 3-10. Volume Source Modeled Emission Rates

Model ID	PM	Modeled Emission Rates (g/s)		
		PM ₁₀	PM _{2.5} Hourly	PM _{2.5} Annual
HMA Plant				
HMALO1	2.60E-02	2.60E-02	2.20E-02	6.00E-03
HMALO2	2.60E-02	2.60E-02	2.20E-02	6.00E-03
HMALO3	2.60E-02	2.60E-02	2.20E-02	6.00E-03
HMALO4	2.60E-02	2.60E-02	2.20E-02	6.00E-03
HMALO5	2.60E-02	2.60E-02	2.20E-02	6.00E-03
RAPSCN	1.63E+00	5.66E-01	8.60E-02	3.60E-02
DP61	1.95E-01	7.20E-02	5.00E-03	5.00E-03
RAPCR1	3.51E-01	1.56E-01	2.40E-02	1.00E-02
DP62	1.95E-01	7.20E-02	5.00E-03	5.00E-03
DP63	1.95E-01	7.20E-02	5.00E-03	5.00E-03
DP64	1.95E-01	7.20E-02	5.00E-03	5.00E-03
DP65	1.95E-01	7.20E-02	5.00E-03	5.00E-03
DP66	1.95E-01	7.20E-02	5.00E-03	5.00E-03
DP67	1.95E-01	7.20E-02	5.00E-03	5.00E-03
Quarry				
GEN3	1.45E-02	1.45E-02	1.45E-02	1.45E-02
GEN5	1.48E-02	1.48E-02	1.48E-02	1.48E-02
GEN7	1.15E-02	1.15E-02	1.15E-02	1.15E-02
DP4	1.68E-01	5.50E-02	1.60E-02	8.00E-03
DP5	1.40E-01	4.60E-02	1.30E-02	7.00E-03
DP6	1.40E-01	4.60E-02	1.30E-02	7.00E-03
DP7	2.80E-02	9.00E-03	3.00E-03	1.00E-03
DP8	2.80E-02	9.00E-03	3.00E-03	1.00E-03
DP9	2.80E-02	9.00E-03	3.00E-03	1.00E-03
DP10	2.80E-02	9.00E-03	3.00E-03	1.00E-03
DP11	5.60E-02	1.80E-02	5.00E-03	3.00E-03
DP12	5.60E-02	1.80E-02	5.00E-03	3.00E-03
DP13	5.60E-02	1.80E-02	5.00E-03	3.00E-03
DP14	5.60E-02	1.80E-02	5.00E-03	3.00E-03
DP15	5.60E-02	1.80E-02	5.00E-03	3.00E-03
DP16	5.60E-02	1.80E-02	5.00E-03	3.00E-03
DP17	5.60E-02	1.80E-02	5.00E-03	3.00E-03
DP18	1.34E-01	4.40E-02	1.20E-02	7.00E-03
DP19	1.44E-01	4.70E-02	1.30E-02	7.00E-03
DP20	4.20E-02	1.40E-02	4.00E-03	2.00E-03
DP21	7.10E-02	2.30E-02	7.00E-03	4.00E-03
DP22	2.20E-02	7.00E-03	2.00E-03	1.00E-03
DP23	2.20E-02	7.00E-03	2.00E-03	1.00E-03
DP24	2.20E-02	7.00E-03	2.00E-03	1.00E-03
DP25	2.40E-02	8.00E-03	2.00E-03	1.00E-03
DP26	2.80E-02	9.00E-03	3.00E-03	1.00E-03
DP27	2.00E-02	6.00E-03	2.00E-03	1.00E-03
DP28	2.40E-02	8.00E-03	2.00E-03	1.00E-03
DP29	2.40E-02	8.00E-03	2.00E-03	1.00E-03
DP30	2.80E-02	9.00E-03	3.00E-03	1.00E-03
DP31	2.80E-02	9.00E-03	3.00E-03	1.00E-03
DP32	2.80E-02	9.00E-03	3.00E-03	1.00E-03
DP33	2.00E-02	6.00E-03	2.00E-03	1.00E-03
DP34	2.00E-02	6.00E-03	2.00E-03	1.00E-03
DP35	2.00E-02	6.00E-03	2.00E-03	1.00E-03
DP36	4.20E-02	1.40E-02	4.00E-03	2.00E-03
DP37	4.20E-02	1.40E-02	4.00E-03	2.00E-03

Table 3-10. Volume Source Modeled Emission Rates (Continued)

Model ID	Modeled Emission Rates (g/s)			
	PM	PM ₁₀	PM _{2.5} Hourly	PM _{2.5} Annual
DP38	4.20E-02	1.40E-02	4.00E-03	2.00E-03
DP39	5.60E-02	1.80E-02	5.00E-03	3.00E-03
DP40	5.60E-02	1.80E-02	5.00E-03	3.00E-03
DP41	5.60E-02	1.80E-02	5.00E-03	3.00E-03
DP42	7.00E-03	2.00E-03	1.00E-03	3.50E-04
DP43	7.00E-03	2.00E-03	1.00E-03	3.50E-04
DP44	7.00E-03	2.00E-03	1.00E-03	3.50E-04
DP45	1.40E-02	5.00E-03	1.00E-03	1.00E-03
DP46	1.40E-02	5.00E-03	1.00E-03	1.00E-03
DP47	1.40E-02	5.00E-03	1.00E-03	1.00E-03
DP48	1.40E-02	5.00E-03	1.00E-03	1.00E-03
DP49	1.40E-02	5.00E-03	1.00E-03	1.00E-03
DP50	4.00E-03	1.00E-03	3.00E-04	2.00E-04
DP51	1.44E-01	4.70E-02	1.30E-02	7.00E-03
DP52	1.10E-02	3.00E-03	1.00E-03	1.00E-03
SC1	2.64E+00	8.88E-01	6.00E-02	2.60E-02
SC2	1.98E+00	6.66E-01	4.50E-02	1.90E-02
SC3	1.00E+00	3.37E-01	2.30E-02	1.00E-02
AGGRE	8.80E-01	2.96E-01	2.00E-02	9.00E-03
DP1	1.68E-01	5.50E-02	1.60E-02	8.00E-03
DP2	1.68E-01	5.50E-02	1.60E-02	8.00E-03
DP3	1.68E-01	5.50E-02	1.60E-02	8.00E-03
CR4860	1.44E+00	6.48E-01	1.20E-01	5.10E-02
CRPITB	1.44E+00	6.48E-01	1.20E-01	5.10E-02
DP1B	1.68E-01	5.50E-02	1.60E-02	8.00E-03
DP2B	1.68E-01	5.50E-02	1.60E-02	8.00E-03
DP3B	1.68E-01	5.50E-02	1.60E-02	8.00E-03

3.3 Meteorological Data

The AERMOD modeling results were based on sequential hourly surface observations from Danville, NC (DAN) and upper air data also from Greensboro, NC (GSO). These stations are recommended by NCDAQ for modeling facilities located in Caswell County.⁷ The base elevation for the surface station is 174 m.⁸ The 5, most recent years of meteorological data (2014-2018) were downloaded from NCDAQ's website and input to AERMOD. The ADJ_U* option has been approved by U.S. EPA to reduce AERMOD overpredictions during hours of very stable atmospheres and/or low wind speeds and was used in the modeling analyses.

3.4 Modeled Operating Scenarios

The Prospect Hill facility will evolve over time as construction of complete facility evolves. Carolina Sunrock has conservatively modeled all of the sources at these varying stages of development. The following sections describe how the sources were included in the various pollutant modeling scenarios.

⁷ <https://deq.nc.gov/about/divisions/air-quality/air-quality-permits/modeling-meteorology/meteorological-data>

⁸ https://files.nc.gov/ncdeq/Air%20Quality/permits/mets/ProfileBaseElevations_2018.pdf

3.4.1 PM Modeling Scenarios

The facility includes four generators (4) at the site that will be located in the pit area (GEN1, GEN1a, GEN2, GEN4). These generators will only be used to support mobile crushing during the first phase of the proposed project, during the construction of permanent Crusher 4860. Once Crusher 4860 is in operation, these generators will cease operation. Additionally, only GEN1 or GEN1a will operate at one time, never concurrently. As such, there are several different operating source combinations along with the other proposed emission sources (e.g., GEN1/GEN2/GEN4, GEN1a/GEN2/GEN4, CR4860).

Once operations have ceased in Pit A, operations in Pit B will commence. Sources in Pit A and in Pit B will never operate at the same time. Therefore, there are also several different operating source combinations that can occur at Pit B, similar to the Pit A sources described above (e.g., BGEN1A, BGEN2, BGEN4, CRPITB).

The PM results presented in Section 4 of this report include the impacts from source group yielding the highest impact from either Pit, where the source groups had only CR4860 operating.

3.4.2 SO₂ and NO₂ Modeling Scenarios

The facility includes three (3) power generators at the site (PGEN1, PGEN2 and PGEN3). One of generators is kept as a backup should one of the other two (2) generators have any maintenance or other operational issues requiring shutdown. As such, there are several different operating source combinations (PGEN1/2, PGEN1/3, PGEN2/3).

The SO₂ and NO₂ results presented in Section 4 of this report include the impacts from source group yielding the highest impact, where each source group had 2 of the 3 generators.

3.5 NO₂ Modeling Approach

EPA's *Guideline on Air Quality Models (Guideline)*, in 40 CFR Part 51, Appendix W, recommends a tiered approach for modeling annual average NO₂ from point sources. The *Guideline* provides that:

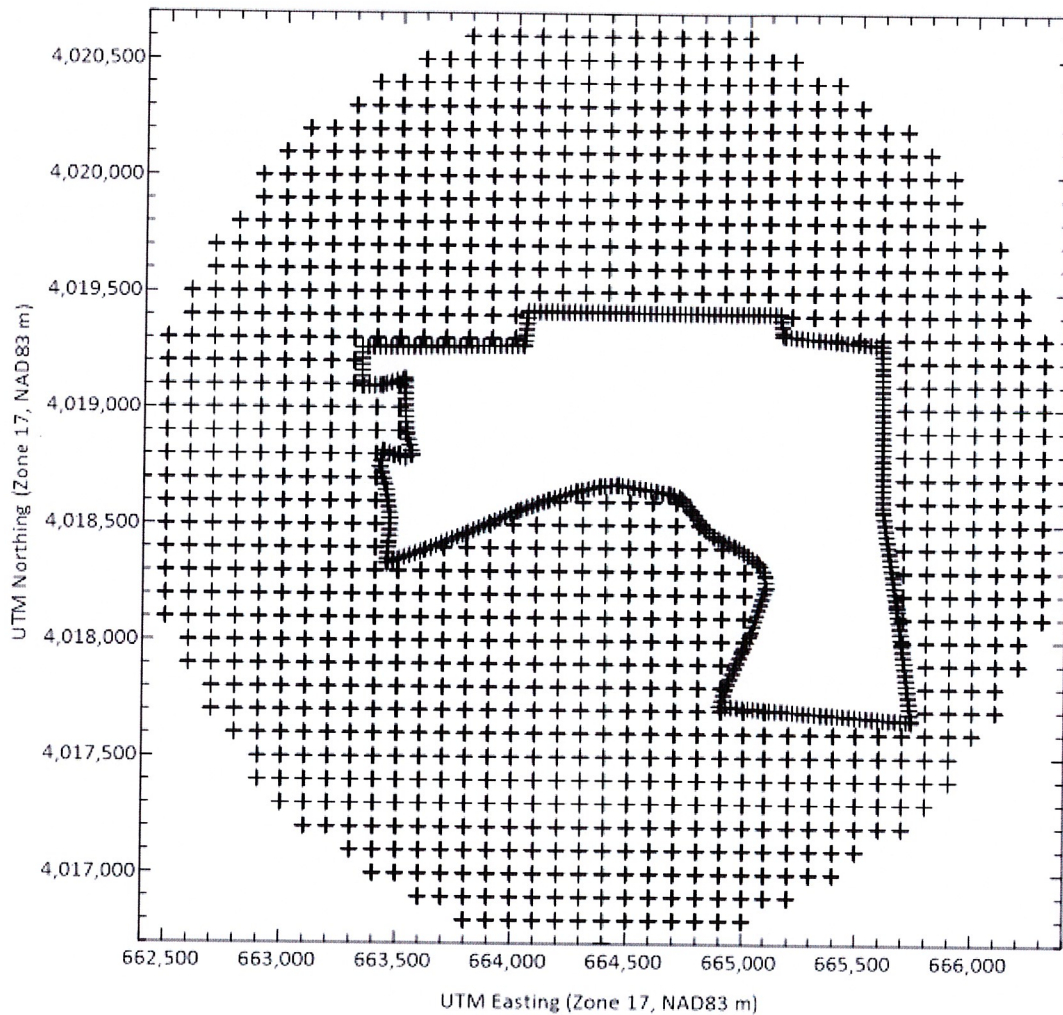
- ▶ A tiered screening approach is recommended to obtain annual average estimates of NO₂ from point sources for New Source Review analysis, including PSD... For Tier 1 ... use an appropriate Gaussian model to estimate the maximum annual average concentration and assume a total conversion of NO to NO₂. If the concentration exceeds the NAAQS and/or PSD Increments for NO₂, proceed to the 2nd level screen.
- ▶ For Tier 2 (2nd level) screening analysis, enable the ARM2 algorithm in the AERMOD model. ARM2 utilizes nationally-established relationships between NO and NO₂ concentrations in ambient monitoring data to determine appropriate conversion ratios in the modeled concentrations.
- ▶ For Tier 3 (3rd level) analyses, a detailed screening method may be selected on a case-by-case basis. For point source modeling, detailed screening techniques such as the Ozone Limiting Method may also be considered.

The 1-hour NO₂ NAAQS analyses utilized U.S. EPA regulatory default Tier 2 (ARM2) approach for NO₂-to-NO_x conversion in the model.

3.6 Modeled Receptors

The receptors included in the modeling analysis consisted of property line receptors, spaced 25 meters (m) apart, and Cartesian receptor points spaced every 100 m, extending out 2 km from the center of the facility. There are no public rights-of-way (e.g., roads) traversing the property line, so only a single property line was included in the modeling. The impacts were reviewed to ensure that the maximum impacts were captured within the 100 m spaced grid. Figure 3-2 shows the receptors included in the modeling analysis.

Figure 3-2. Modeled Receptor Grid



The AERMOD model is capable of handling both simple and complex terrain. Through the use of the AERMOD terrain preprocessor (AERMAP), AERMOD incorporates not only the receptor heights, but also an effective height (hill height scale) that represents the significant terrain

features surrounding a given receptor that could lead to plume recirculation and other terrain interaction.⁹

Receptor terrain elevations input to the model were interpolated from National Elevation Database (NED) data obtained from the USGS. NED data consist of arrays of regularly spaced elevations. The array elevations are at a resolution of 1 arcsecond (approximately 30 m intervals) and were interpolated using the latest version of AERMAP (version 18081) to determine elevations at the defined receptor intervals. The data obtained from the NED files were checked for completeness and spot-checked for accuracy against elevations on corresponding USGS 1:24,000 scale topographical quadrangle maps. AERMAP was also used to establish the base elevation of all Carolina Sunrock structures and emission sources, with exception to sources within the proposed pit.

3.7 Building Downwash

AERMOD incorporates the Plume Rise Model Enhancements (PRIME) downwash algorithms. Direction specific building parameters required by AERMOD are calculated using the BPIP-PRIME preprocessor (version 04274).

EPA has promulgated stack height regulations that restrict the use of stack heights in excess of "Good Engineering Practice" (GEP) in air dispersion modeling analyses. Under these regulations, that portion of a stack in excess of the GEP height is generally not creditable when modeling to determine source impacts. This essentially prevents the use of excessively tall stacks to reduce ground-level pollutant concentrations. The minimum stack height not subject to the effects of downwash, called the GEP stack height, is defined by the following formula:

$H_{GEP} = H + 1.5L$, where:

H_{GEP} = minimum GEP stack height,

H = structure height, and

L = lesser dimension of the structure (height or projected width).

This equation is limited to stacks located within 5L of a structure. Stacks located at a distance greater than 5L are not subject to the wake effects of the structure. The wind direction-specific downwash dimensions and the dominant downwash structures used in this analysis are determined using BPIP. In general, the lowest GEP stack height for any source is 65 meters by default.¹⁰ None of the proposed emission units at the Prospect Hill facility will exceed GEP height.

The BPIP input and output files will be included with the electronic modeling file transfer.

3.8 Background Concentrations

In the NAAQS analysis, modeled impacts from the facility will be combined with background concentrations, which represent the air quality concentrations due to sources that are not

⁹ US EPA, *Users Guide for the AERMOD Terrain Preprocessor (AERMAP)*, EPA-454/B-03-003, Research Triangle Park, NC.

¹⁰ 40 CFR §51.100(ii)

explicitly modeled (e.g., mobile sources, small but local stationary sources, non-regulated fugitive sources, and large but distant sources). Selection of the existing monitoring station data that is "representative" of the ambient air quality in the area surrounding the facility is determined based on the following three criteria: 1) monitor location, 2) data quality, and 3) data currentness. Key considerations based on the monitor location criteria include proximity to the significant impact area of the facility, similarity of emission sources impacting the monitor to the emission sources impacting the airshed surrounding the facility, and the similarity of the land use and land cover (LULC) surrounding the monitor and facility.

The data quality criteria refers to the monitor being an approved (DEFINE) SLAM or similar monitor type subject to the quality assurance requirements in 40 CFR Part 58 Appendix A. Data currentness refers to the fact that the most recent three complete years of quality assured data are generally preferred.

PM₁₀ and PM_{2.5} results include background based on the most recent, 3-year design value from the Guilford County monitor, which is the closest, most representative (while conservative) monitor to the Caswell County facilities. SO₂ results included background from the Person County DRR monitor, which is very conservative as a source-oriented rather than general background monitor. NO₂ results included background from the Lee County monitor, which is the nearest monitor with traffic patterns similar to the very rural facility site.¹¹

¹¹ <https://deq.nc.gov/about/divisions/air-quality/air-quality-data/nata-epa-national-air-toxics-assessment-for-north-carolina/data-archives-statistical-summaries/design-value-summaries>. Lee County data provided in email from Matthew Porter (NCDAQ) on November 26, 2018.

4. NAAQS/SAAQS MODELING RESULTS

This section presents the modeling results for the NAAQS/SAAQS analyses described previously in this report.

4.1 NAAQS/SAAQS Results

Table 4-1 presents the model results for all forms particulate matter, SO₂, and NO₂. As shown, all impacts (including background concentrations where applicable) are below their respective NAAQS/SAAQS. As such, Carolina Sunrock's proposed Prospect Hill facility will be in compliance with all relevant ambient air quality standards.

Table 4-1. NAAQS and SAAQS Modeling Results

Pollutant	Averaging Period	Modeled Concentration (ug/m³)	Background Concentration (ug/m³)	Total Impact (ug/m³)	NAAQS/SAAQS (ug/m³)
TSP	24-hr	54.1	-	54.1	150
	Annual	12.2	-	12.2	75
PM ₁₀	24-hr	124.2	17	141.2	150
PM _{2.5}	24-hr	16.7	15	31.7	35
	Annual	2.8	7.3	10.1	12
SO ₂	1-hr	98.36	83.8	182.16	196
NO ₂	1-hr	71.39	15.3	86.69	188

The AERMOD input and output files used in these analyses will be provided upon request via electronic file transfer.

APPENDIX C. LOCAL ZONING CONSISTENCY DETERMINATION

SUNROCK®
CAROLINA SUNROCK LLC

Scott Martino
Environmental Compliance Manager
200 Horizon Drive, Suite 100
Raleigh, NC 27615

By Email and Certified Mail

March 23, 2021

Mr. Bryan Miller
County Manager
Caswell County
144 Main Street
Yanceyville, NC 27379

RE: Zoning Consistency Determinations for Carolina Sunrock Projects in Caswell County

Dear Mr. Miller:

On behalf of Carolina Sunrock LLC ("Sunrock"), we are writing to inform you that Sunrock is applying for new air quality permits for its projects which will be located in Caswell County in accordance with 15A North Carolina Administrative Code Section 2Q.0304(b)(1). As you know, Sunrock plans to operate a hot-mix asphalt plant and concrete plant on property located at 12971 North Carolina 62, Burlington, NC and a drum mix asphalt plant, truck mix ready concrete plant and a quarry on property located at 1238 Wrenn Road, Prospect Hill, NC.

The applications for the air quality permits are enclosed with this letter, and outline Sunrock's proposed activities in detail. These applications are in all respects the same as those the County reviewed in 2019, with some additional air dispersion modeling, which was added at the request of the North Carolina Division of Air Quality ("NCDAQ").

In accordance with N.C. G. S. § 143-215.108(f), we hereby request that the County issue Zoning Consistency Determinations for these projects which can be submitted to NCDAQ along with the new air quality permit applications. Forms for responding to this request are enclosed, along with proposed responses that we have prepared based upon the County's response dated September 5, 2019 and the subsequent legal opinions obtained by the County relating to these projects. In order to demonstrate proof of transmittal, please sign, title, stamp and date the enclosed forms and mail them to my attention at the above-referenced address at your earliest convenience.

Thank you very much for your prompt attention to this matter. If you have any questions, or if there is any other information that you would like for us to provide to you, please let us know.

Sincerely,
Carolina Sunrock LLC



Scott Martino,
Environmental Compliance Manager

Enclosures

cc: Bryan Ferrell, Esq., County Attorney (w/enclosures)

smartino@thesunrockgroup.com
Phone: 919.747.6336
Fax: 919.747.6305

Zoning Consistency Determination

Facility Name Carolina Sunrock LLC – Prospect Hill Quarry and Distribution Center

Facility Street Address 1238 Wrenn Road

Facility City Prospect Hill, Caswell County, 27314

Description of Process Drum mix hot asphalt plant & truck mix ready concrete plant & quarry operations

SIC Code/NAICS 2951, 3273, 1423, 1429

Facility Contact Scott Martino

Phone Number 984-202-4761

Mailing Address 200 Horizon Drive

Mailing City, State Zip Raleigh, NC 27615

Based on the information given above:

☒ I have received a copy of the air permit application (draft or final) AND...

There are no applicable zoning and subdivision ordinances for this facility at this time

☒ The proposed operation IS consistent with applicable zoning and subdivision ordinances

☐ The proposed operation IS NOT consistent with applicable zoning and subdivision ordinances
(please include a copy of the rules in the package sent to the air quality office)

☐ The determination is pending further information and can not be made at this time

☒ Other: For the reasons set forth in the memorandum dated July 27, 2020, from Thomas Terrell, Esq. to the Caswell County Board of Commissioners (copy attached) the projects in question have been determined to have common law vested rights to proceed in Caswell County.

Agency

Caswell County Local Government

Name of Designated Official

Bryan S. Miller

Title of Designated Official

County Manager

Signature

Bryan S. Miller

Date

3/30/2021



CAROLINA SUNROCK LLC

Scott Martino
Environmental Compliance Manager
200 Horizon Drive, Suite 100
Raleigh, NC 27615

April 20, 2021

Mr. Ray Stewart, P.E.
Air Quality Regional Supervisor
Winston-Salem Regional Office
450 West Hanes Mill Road, Suite 300
Winston-Salem, North Carolina 27105

Re: Fulfillment of 15A NCAC 02Q.0113 (Notification in Areas without Zoning)
Carolina Sunrock LLC – Prospect Hill Quarry and Distribution Center
Prospect Hill, Caswell County, North Carolina

Dear Mr. Stewart:

This letter is intended to notify your office of Carolina Sunrock, LLC completion of the proper public notifications as governed by 15A NCAC 02Q.0113 (Notifications in Areas without Zoning) for the above referenced facility. On April 7, 2021 a public notice was published in The Caswell Messenger, which services the area of the facility. In addition, a sign was posted as set forth by the governing regulations on April 1, 2021.

Attached to this document are the Affidavit of Publication and Photo Graph Log depicting sign placement, and applicable scales per the guidance document. It is our understanding that this documentation fulfills all applicable guidelines and the processing of our air permit application shall commence. Please contact me if additional information is required or if this does not meet your requirements.

Sincerely
Carolina Sunrock LLC

Scott Martino,
Manager Environmental Compliance

A handwritten signature in blue ink, appearing to read "Scott Martino", written over a horizontal line.

Enclosures

Affidavit of Publication
Photograph Log

smartino@thesunrockgroup.com

Phone: 919.747.6336

Fax: 919.747.6305

Carolina Sunrock LLC

200 Horizon Drive | Raleigh NC, 27615

NCDEQ Air Permit Application for the construction and operation of a Quarry, Hot Mix Asphalt, and Ready Mix Concrete facility located at:

Prospect Hill Quarry and Distribution Center

1238 Wrenn Road, Prospect Hill
Caswell County, NC, 27314

PUBLIC NOTICE

Carolina Sunrock LLC

200 Horizon Drive | Raleigh NC, 27615

NCDEQ Air Permit Application for the construction and operation of a Hot Mix Asphalt, and Ready Mix Concrete facility located at:

Burlington North and Distribution Center

12971 North Carolina 62, Burlington
Caswell County, NC, 27217

**TH CAROLINA
WELL COUNTY**

AFFIDAVIT OF PUBLICATION

Before the undersigned, a Notary Public of said County and State, duly commissioned, qualified, and authorized by law to administer oaths, personally appeared **Debra Ferrell** who being first duly sworn, deposes and says: that she is an authorized employee of The Caswell Messenger, engaged in the publication of a newspaper known as The Caswell Messenger published, issued, and entered as second class mail in the City of Yanceyville, in said County and State; that she is authorized to make this affidavit and sworn statement; that the notice or other legal advertisement, a true copy of which is attached hereto, was published in The Caswell Messenger on the following date, **April 7, 2021**, that the said newspaper in which such notice, paper, document, or legal advertisement was published was, at the time of each and every such publication, a newspaper meeting all of the requirements and qualifications of Section 8-597 of the General Statutes of North Carolina and was qualified newspaper within the meaning of Section 1-597 of the General Statutes of North Carolina.

This is the 15th day of April, 2021

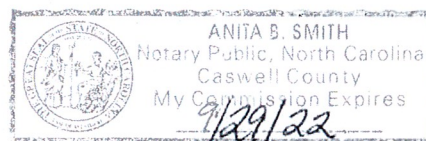
Debra Ferrell, editor

(Signature of person making affidavit)

Sworn to and subscribed before me, this 15th day of April 2021

Anita B. Smith

Notary Public



Prospect Quarry and Distribution Center

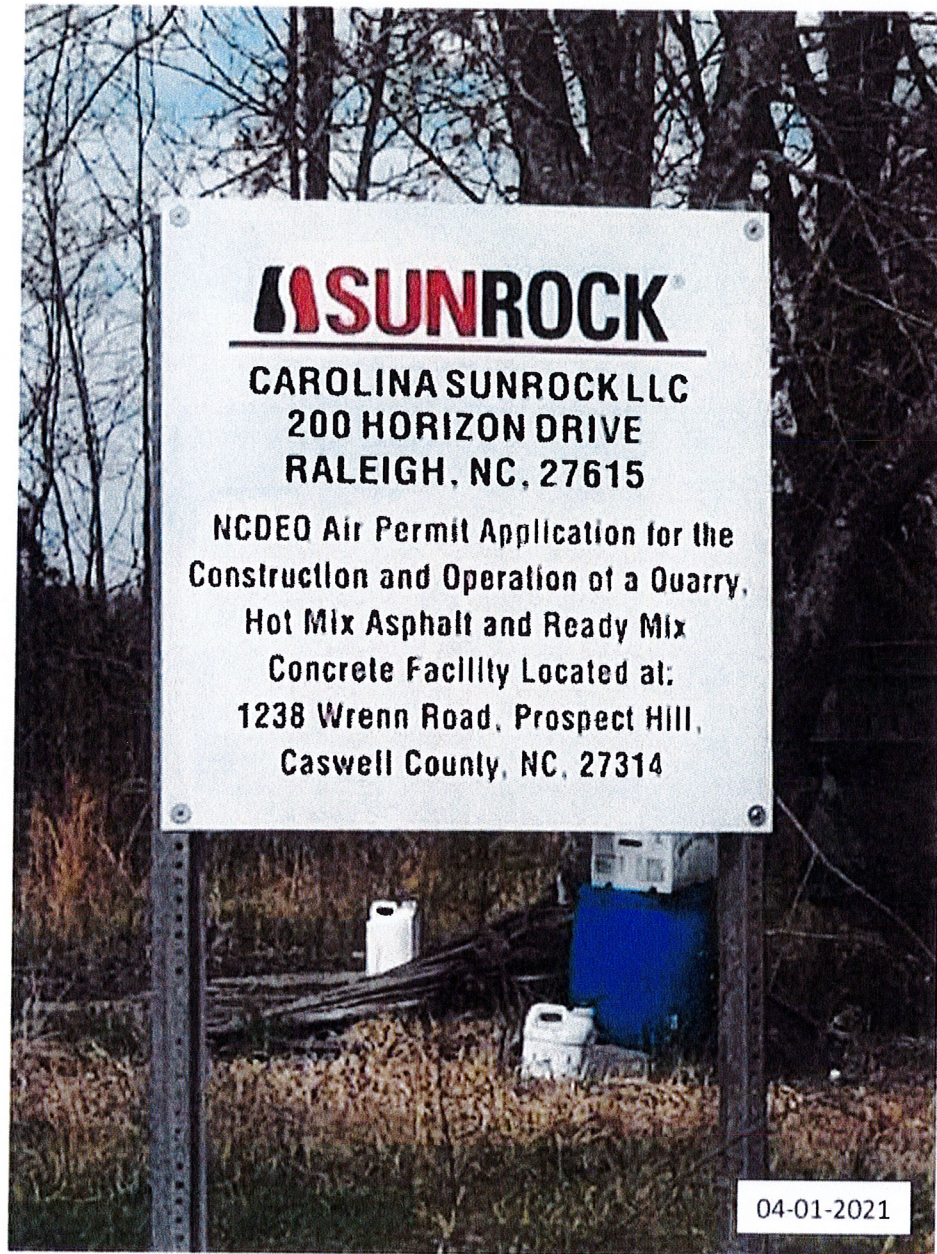


View of approximate sign location, located less than 10' off of Road Right-of-Way View of Posted sign looking from center line of Wrenn Road.

Prospect Quarry and Distribution Center



View of Posted sign looking from center line of Wrenn Road.



View of Posted sign looking from center line of Wrenn Road.

Prospect Quarry and Distribution Center



View looking west along centerline of Wrenn Road.



View looking east along centerline of Wrenn Road.