Statement of Basis
Hot Mix Asphalt Plant General Permit

No. P-2016.0053
Project ID 62318

Sunroc Corporation 00255
City, Idaho

Facility ID 777-00255

Final

April 27 2020
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Permit Writer

CD

The purpose of this Statement of Basis is to satisfy the requirements of IDAPA 58.01.01.et seq, Rules for the Control of Air Pollution in Idaho, for issuing air permits.

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ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC	acceptable ambient concentrations
AACC	acceptable ambient concentrations for carcinogens
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalent emissions
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
gr	grains (1 lb = 7,000 grains)
HAP	hazardous air pollutants
HMA	hot mix asphalt
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pounds per hour
MACT	Maximum Achievable Control Technology
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_X	nitrogen oxides
NSPS	New Source Performance Standards
PC	permit condition
PM	particulate matter
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
PW	process weight rate
RAP	recycled asphalt pavement
RFO	reprocessed fuel oil
Rules	*Rules for the Control of Air Pollution in Idaho*
SM	synthetic minor
SM80	synthetic minor facility with emissions greater than or equal to 80% of a major source threshold
SO_2	sulfur dioxide
T/hr	tons per hour
T/yr	tons per consecutive 12 calendar month period
TAP	toxic air pollutants
VOC	volatile organic compounds

FACILITY INFORMATION

Description

Sunroc Corporation 00255 is an existing portable drum-mix asphalt plant. The asphalt plant consists of a parallel-flow asphalt drum mixer equipped with a with a bag house to control particulate matter, an asphaltic oil storage tank with a heater, and materials transfer equipment. Materials transfer equipment at the facility will include front end loaders, feed bins, scalping screens, storage silos, conveyors, stock piles, and haul trucks.

Asphalt is made at the facility as follows. First, stockpiled aggregate and recycled asphalt pavement (RAP) are transferred to feed bins. The applicant has requested that up to 50% RAP be allowed in the aggregate. The aggregate and RAP are independently dispensed from the feed bins onto feeder conveyors. The aggregate travels through a scalping screen onto a separate conveyor and is delivered to the aggregate drum dryer. The aggregate drum dryer is fired using used oil (RFO). The applicant has proposed that the dried aggregate then be transferred to a separate mixer drum where it will be mixed with RAP and hot liquid asphaltic oil. Note that this mixer drum will not have a combustion source. The asphaltic oil is stored in a tank and circulated through an electrically heated loop to allow it to flow and be mixed with the hot, dry aggregate. The resulting asphalt is conveyed to silos for temporary storage prior to transport off-site.

Line power will be used exclusively at the facility. Therefore, no IC engines powering electrical generators were included in the application.

Permitting History

The following information was derived from a review of the permit files available to DEQ. Permit status is noted as active and in effect (A) or superseded (S).

June 2, 2000	777-00255, initial PTC for a new hot mix asphalt plant, (S)
June 27, 2017	P-2016.0053, revision to incorporate a facility name change and to incorporate source test requirements, (S)
August 28, 2018	P-2016.0053, DEQ initiated revision for typographical correction, (A, but will become S upon issuance of this permit)

Application Scope

This PTC is for a minor modification at an existing minor facility. The applicant has proposed to:

- Authorize the use of Recycled Asphalt Product (RAP) up to 50%,
- Increase the maximum hourly asphalt production from 160 T/hr to 250 T/hr, and
- Add one mixer drum for the mixing of RAP with asphalt oil and other aggregate.

Application Chronology

October 15, 2019	DEQ received an application and an application fee and permit processing fee.
October 21 – November 5, 2019	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action.
November 8, 2019	DEQ determined that the application was complete.
December 12, 2019	DEQ made available the draft permit and statement of basis for peer and regional office review.
January 2, 2020	DEQ made available the draft permit and statement of basis for applicant review.
April 27, 2020	DEQ issued the final permit and statement of basis.

TECHNICAL ANALYSIS

The asphalt production facility utilizes a baghouse for control of particulate matter emissions from the asphalt drum mixer. In addition, the Applicant will maintain the moisture content in ¼" or smaller aggregate material at 1.5% by weight, using water sprays, using shrouds, or will use other emissions controls to minimize PM_{10} emissions from aggregate handling.

Emissions Units and Control Equipment

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION

Source ID No.	Sources	Control Equipment	Emission Point ID No.
Materials Handling	Material Transfer Points: Materials handling Asphalt aggregate transfers Truck unloading of aggregate Aggregate conveyor transfers Aggregate handling	Maintaining the moisture content in ¼" or smaller aggregate material at 1.5% by weight, using water sprays, using shrouds, or other emissions controls	N/A
Aggregate Drum Dryer	Asphalt Drum Dryer: Manufacturer: ADM Model: Road Builder 160 Type: Parallel Flow Manufacture Date: 1998 Max. production: 250 T/hr and 1,401,600 T/yr Fuel: used oil (RFO) Liquid fuel sulfur content: 0.0015% by weight	Asphalt Drum Mixer Baghouse Manufacturer: Gencor Model: MB445 Type: Reverse pulse-jet Flow rate: 54,000	Asphalt Drum Mixer Baghouse Stack
Hot Mix Asphalt Drum Mixer	Asphalt Drum Mixer Manufacturer: Dillman Model: Unidrum Maximum Capacity: 300 T/hr Date of Construction: 3/1/2016		
Asphaltic Oil Tank Heater	Asphaltic Oil Tank Heater: The asphaltic oil tank heater uses line power.	N/A	N/A

Emissions Inventories

Potential to Emit

IDAPA 58.01.01 defines Potential to Emit as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is state or federally enforceable. Secondary emissions do not count in determining the potential to emit of a facility or stationary source.

Using this definition of Potential to Emit an emission inventory was developed for the asphalt production operations at Sunroc Corporation 00255 using the DEQ developed HMA EI spreadsheet (see Appendix A). Emissions estimates of criteria pollutant PTE were based on the following assumptions:

- Maximum asphalt throughput does not exceed 250 ton HMA/hour, 3,500 ton HMA/day, and 1,401,600 ton HMA/year (per the Applicant).
- Emissions from the asphalt drum dryer were based on the maximum emissions from using any of the proposed fuels for combustion in the drum dryer.
- Any emissions unit outside a 1,000 ft radius from the asphalt plant was not included in the emissions modeling analysis for this project.

Uncontrolled Potential to Emit

Using the definition of Potential to Emit, uncontrolled Potential to Emit is then defined as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall **not** be treated as part of its design **since** the limitation or the effect it would have on emissions **is not** state or federally enforceable.

The uncontrolled Potential to Emit is used to determine if a facility is a "Synthetic Minor" source of emissions. Synthetic Minor sources are facilities that have an uncontrolled Potential to Emit for regulated air pollutants or HAP above the applicable Major Source threshold without permit limits.

The following table presents the post project uncontrolled emissions for regulated air pollutants as submitted by the Applicant and verified by DEQ staff. Uncontrolled emissions were determined as follows:

- For the asphalt drum mixer uncontrolled emissions were assumed to be based upon four times the proposed annual throughput (4 x 1,401,600 T/yr = 5,606,400 T/yr).
- For the asphaltic oil tank heater controlled emissions were scaled up from 5,606 hours per year of permitted operation (as proposed by the Applicant) to 8,760 hours per year for full-time operation. However, since the asphaltic oil tank heater is powered by line electricity, the uncontrolled emissions and the controlled emissions are both equal to zero.
- For the materials handling operations, silo filling, and loadout controlled and uncontrolled emissions were assumed to be equal.

The following table presents the uncontrolled Potential to Emit for criteria pollutants as calculated per the DEQ HMA EI spreadsheet. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 2 UNCONTROLLED POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Emissions Unit	$PM_{10}/PM_{2.5}$	SO_2	NO_X	CO	VOC	CO_2e
	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr
Asphalt drum mixer	92.51	49.90	154.18	364.42	89.70	93,874.81
Asphaltic oil tank heater	0.00	0.00	0.00	0.00	0.00	
Load-out and silo filling	0.78	0.00	0.00	1.78	2.83	
Total, Point Sources	**93.29**	**49.90**	**154.18**	**366.20**	**92.53**	**93,874.8**

The following table presents the uncontrolled Potential to Emit for HAP pollutants as calculated per the DEQ HMA EI spreadsheet. See Appendix A for a detailed presentation of the calculations emissions for each emissions unit. Worst-case HAPs emissions were based upon the same assumptions as for criteria pollutants.

Table 3 UNCONTROLLED POTENTIAL TO EMIT FOR HAZARDOUS AIR POLLUTANTS

IDAPA Listing	Hazardous Air Pollutants	Uncontrolled PTE (T/yr)
585	Dioxins	2.21E-07
	Furans	3.36E-07
	Acrolein	7.29E-02
	Antimony	5.05E-04
	Barium	1.63E-02
	Chromium	1.15E-03
	Cobalt	7.29E-05
	Copper	8.69E-03
	Ethyl benzene	6.84E-01
	Hexane	2.59E+00
	Manganese	2.61E-02
	Methyl chloroform	1.35E-01
	Methyl ethyl ketone (MEK)	6.08E-02
	Molybdenum	0.00E+00
	Naphthalene	1.83E+00
	Pentane	0.00E+00
	Phosphorus	7.85E-02
	Propionaldehyde	3.64E-01
	Quinone	4.49E-01
	Selenium	9.81E-04
	Silver	1.35E-03
	Thallium	1.15E-05
	Toluene	8.14E+00
	Vanadium	0.00E+00
	Xylene	6.18E-01
	Zinc	1.17E-01
586	Acetaldehyde	3.64E+00
	Arsenic	1.57E-03
	Benzene	1.10E+00
	Benzo(a)anthracene	7.34E-04
	Benzo(a)pyrene	3.30E-05
	Benzo(b)fluoranthene	2.98E-04
	Benzo(k)fluoranthene	1.20E-04
	Beryllium	0.00E+00
	1,3-Butadiene	0.00E+00
	Cadmium	1.15E-03
	Chrysene	1.12E-03
	Dibenzo(a,h)anthracene	8.84E-07
	Formaldehyde	8.75E+00
	Hexavalent Chromium	1.26E-03
	Indeno(1,2,3-cd)pyrene	2.07E-05
	3-Methylchloranthrene	0.00E+00
	Nickel	1.77E-01
Not listed	Acenaphthene	5.38E-03
	Acenaphthylene	6.18E-02
	Anthracene	9.09E-03
	Benzo(e)pyrene	3.44E-04
	Benzo(g,h,l)perylene	1.17E-04
	Dichlorobenzene	0.00E+00
	Fluoranthene	2.10E-03
	Fluorene	3.45E-02
	Isooctane	1.12E-01
	Mercury	7.29E-03
	2-Methylnaphthalene	4.29E-01
	Perylene	1.31E-04
	Phenanthrene	6.96E-02
	Pyrene	9.55E-03
	Total	**29.61**

Pre-Project Potential to Emit

Pre-project Potential to Emit is used to establish the change in emissions at a facility as a result of this project.

The following table presents the pre-project potential to emit for all criteria pollutants from all emissions units at the facility as submitted by the Applicant and verified by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 4 PRE-PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Emissions Unit	$PM_{10}/PM_{2.5}$		SO_2		NO_X		CO		VOC		CO_2e
	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	T/yr[b]
Asphalt drum mixer	5.28	23.13	2.85	12.47	8.80	38.54	20.80	91.10	5.12	22.43	23,561.9
Asphaltic oil tank heater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Load-out and silo filling	0.18	0.78	0.00	0.00	0.00	0.00	0.41	1.78	0.65	2.83	
Pre-Project Totals	**5.46**	**23.91**	**2.85**	**12.47**	**8.80**	**38.54**	**21.21**	**92.88**	**5.77**	**25.26**	**23561.90**

a) Controlled average emission rate in pounds per hour is a daily average, based on the proposed daily operating schedule and daily limits.
b) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.

Post Project Potential to Emit

The following table presents the post project Potential to Emit for criteria pollutants from all emissions units at the facility as determined by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 5 POST PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Emissions Unit	$PM_{10}/PM_{2.5}$		SO_2		NO_X		CO		VOC		CO_2e
	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	T/yr[b]
Asphalt drum mixer	8.25	23.13	4.45	12.47	13.75	38.54	32.50	91.10	8.00	22.43	23,468.7
Asphaltic oil tank heater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Load-out and silo filling	0.28	0.78	0.00	0.00	0.00	0.00	0.63	1.78	1.01	2.83	
Post Project Totals	**8.53**	**23.91**	**4.45**	**12.47**	**13.75**	**38.54**	**33.13**	**92.88**	**9.01**	**25.26**	**23,468.7**

a) Controlled average emission rate in pounds per hour is a daily average, based on the proposed daily operating schedule and daily limits.
b) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.

As demonstrated in Tables 2 and 5, this facility has uncontrolled potential to emit for NO_X and CO emissions greater than the Major Source threshold of 100 T/yr and controlled potential to emit for PM_{10}, SO_2, NO_X, CO, and VOC, and CO_2e less than the Major Source threshold of 100 T/yr and 100,000 T/yr respectively. In addition, as demonstrated in Table 3, this facility has an uncontrolled potential to emit for HAP emissions greater than the Major Source threshold of 25 T/yr for all HAPs combined. Therefore, this facility is designated a synthetic minor (SM) facility for NO_X, a synthetic minor 80 (SM80) facility for CO, and a SM facility for HAPs.

Change in Potential to Emit

The change in facility-wide potential to emit is used to determine if a public comment period may be required and to determine the processing fee per IDAPA 58.01.01.225. The following table presents the facility-wide change in the potential to emit for criteria pollutants.

Table 6 CHANGES IN POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Emissions	$PM_{10}/PM_{2.5}$		SO_2		NO_X		CO		VOC		CO_2e
	lb/hr	T/yr[a]	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	T/yr
Pre-Project Potential to Emit	5.46	23.91	2.85	12.47	8.80	38.54	21.21	92.88	5.77	25.26	23,561.9
Post Project Potential to Emit	8.53	23.91	4.45	12.47	13.75	38.54	33.13	92.88	9.01	25.26	23,468.7
Changes in Potential to Emit	**3.07**	**0.00**	**1.60**	**0.00**	**4.95**	**0.00**	**11.92**	**0.00**	**3.24**	**0.00**	**- 93.2**

a) Only hourly limits are being increased, therefore annual emissions are unchanged.

Non-Carcinogenic TAP Emissions

TAP compliance for the proposed modification was demonstrated using the change in emissions associated with the allowable change in production. TAP modelling thresholds for non-carcinogenic TAPs are based on the change in average 24-hour emissions. Since an hourly production increase is proposed, with daily and annual allowable production remaining unchanged from the existing permitted amounts, there is no TAP increase for the applicable averaging period.

Carcinogenic TAP Emissions

TAP compliance for the proposed modification was demonstrated using the change in emissions associated with the allowable change in production. TAP modelling thresholds for carcinogenic TAPs are based on the change in average annual emissions. Since an hourly production increase is proposed, with daily and annual allowable production remaining unchanged from the existing permitted amounts, there is no TAP increase for the applicable averaging period.

Post Project HAP Emissions

The following table presents the post project potential to emit for hazardous air pollutants (HAPs) pollutants from all emissions units at the facility as submitted by the Applicant and verified by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 7 POTENTIAL TO EMIT FOR HAZARDOUS AIR POLLUTANTS EMISSIONS

IDAPA Listing	Hazardous Air Pollutants	PTE (T/yr)
585	Dioxins	5.54E-08
	Furans	8.41E-08
	Acrolein	1.82E-02
	Antimony	1.26E-04
	Barium	4.06E-03
	Chromium	3.85E-03
	Cobalt	1.82E-05
	Copper	2.17E-03
	Ethyl benzene	1.68E-01
	Hexane	6.45E-01
	Manganese	5.40E-03
	Methyl chloroform	3.36E-02
	Methyl ethyl ketone (MEK)	1.40E-02
	Molybdenum	0.00E+00
	Naphthalene	4.56E-01
	Pentane	0.00E+00
	Phosphorus	1.96E-02
	Propionaldehyde	9.11E-02
	Quinone	1.12E-01
	Selenium	2.45E-04
	Silver	3.36E-04
	Thallium	2.87E-06
	Toluene	2.03E+00
	Vanadium	0.00E+00
	Xylene	1.40E-01
	Zinc	4.27E-02
586	Acetaldehyde	9.11E-01
	Arsenic	3.92E-04
	Benzene	2.73E-01
	Benzo(a)anthracene	1.47E-04
	Benzo(a)pyrene	6.87E-06
	Benzo(b)fluoranthene	7.01E-05
	Benzo(k)fluoranthene	2.87E-05
	Beryllium	0.00E+00
	1,3-Butadiene	0.00E+00
	Cadmium	2.87E-04
	Chrysene	1.26E-04
	Dibenzo(a,h)anthracene	0.00E+00
	Formaldehyde	2.17E+00
	Hexavalent Chromium	3.15E-04
	Indeno(1,2,3-cd)pyrene	4.91E-06
	3-Methylchloranthrene	0.00E+00
	Nickel	4.42E-02
Not listed	Acenaphthene	9.81E-04
	Acenaphthylene	1.54E-02
	Anthracene	2.17E-03
	Benzo(e)pyrene	7.71E-05
	Benzo(g,h,l)perylene	2.80E-05
	Dichlorobenzene	0.00E+00
	Fluoranthene	4.27E-04
	Fluorene	7.71E-03
	Isooctane	2.80E-02
	Mercury	1.82E-03
	2-Methylnaphthalene	1.19E-01
	Perylene	6.17E-06
	Phenanthrene	1.61E-02
	Pyrene	2.10E-03
	Total	**7.38**

The estimated PTE for all federally listed HAPs combined is below 25 T/yr and no PTE for a single federally listed HAP exceeds 10 T/yr. Therefore, this facility is not a Major Source for HAPs.

Ambient Air Quality Impact Analyses

As presented in the Modeling Memo in Appendix B, the estimated emission rates of SO_2, NO_X, CO from this project exceeded applicable screening emission levels (EL) and published DEQ modeling thresholds established in IDAPA 58.01.01.585-586 and in the State of Idaho Air Quality Modeling Guideline[1]. Refer to the Emissions Inventories section for additional information concerning the emission inventories.

The applicant has demonstrated pre-construction compliance to DEQ's satisfaction that emissions from this facility will not cause or significantly contribute to a violation of any ambient air quality standard. The applicant has also demonstrated pre-construction compliance to DEQ's satisfaction that the emissions increase due to this permitting action will not exceed any acceptable ambient concentration (AAC) or acceptable ambient concentration for carcinogens (AACC) for toxic air pollutants (TAP). A summary of the Ambient Air Impact Analysis for TAP is provided in Appendix B.

An ambient air quality impact analysis document has been crafted by DEQ based on a review of the modeling analysis submitted in the application. That document is part of the final permit package for this permitting action (see Appendix B).

As a result of the ambient air quality impact analysis, as well as information submitted by the Applicant for specific operating scenarios, the following conditions (along with corresponding monitoring and record keeping requirements) were placed in the permit:

- The Asphalt Production Limits permit condition,
- The Reduced Asphalt Production Limits permit condition,
- The Asphalt Operation Setback Distance Requirements permit condition
- The Allowable Raw Materials permit condition,
- The Asphalt Drum Mixer Baghouse Exhaust Stack Height Requirement

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

This modeling analysis for this facility demonstrates compliance with applicable standards in attainment areas. However, because a separate modeling analysis was not provided to demonstrate compliance with applicable standards in non-attainment areas, this portable facility is not permitted for operation in non-attainment areas. This requirement is assured by Permit Condition 2.6.

Facility Classification

The AIRS/AFS facility classification codes are as follows:

For HAPs (Hazardous Air Pollutants) Only:

A = Use when any one HAP has permitted emissions > 10 T/yr or if the aggregate of all HAPS (Total HAPs) has permitted emissions > 25 T/yr.

SM80 = Use if a synthetic minor (uncontrolled HAPs emissions are > 10 T/yr or if the aggregate of all uncontrolled HAPs (Total HAPs) emissions are > 25 T/yr and permitted emissions fall below applicable major source thresholds) and the permit sets limits > 8 T/yr of a single HAP or ≥ 20 T/yr

[1] Criteria pollutant thresholds in Table 1, State of Idaho Air Quality Modeling Guideline, Doc ID AQ-011, rev. 1, December 31, 2002.

of Total HAPs.

SM = Use if a synthetic minor (uncontrolled HAPs emissions are > 10 T/yr or if the aggregate of all uncontrolled HAPs (Total HAPs) emissions are > 25 T/yr and permitted emissions fall below applicable major source thresholds) and the permit sets limits < 8 T/yr of a single HAP and/or < 20 T/yr of Total HAPs.

B = Use when the potential to emit (i.e. uncontrolled emissions and permitted emissions) are below the 10 and 25 T/yr HAP major source thresholds.

UNK = Class is unknown.

For All Other Pollutants:

A = Use when permitted emissions of a pollutant are > 100 T/yr.

SM80 = Use if a synthetic minor for the applicable pollutant (uncontrolled emissions are > 100 T/yr and permitted emissions fall below 100 T/yr) and permitted emissions of the pollutant are ≥ 80 T/yr.

SM = Use if a synthetic minor for the applicable pollutant (uncontrolled emissions are > 100 T/yr and permitted emissions fall below 100 T/yr) and permitted emissions of the pollutant are < 80 T/yr.

B = Use when the potential to emit (i.e. uncontrolled emissions and permitted emissions) are below the 100 T/yr major source threshold.

UNK = Class is unknown.

Table 8 Regulated Air Pollutant Facility Classification

Pollutant	Uncontrolled PTE (T/yr)	Permitted PTE (T/yr)	Major Source Thresholds (T/yr)	AIRS/AFS Classification
PM	93.29	23.13	**100**	B
SO_2	49.90	12.47	**100**	B
NO_X	154.18	38.54	**100**	SM
CO	366.20	91.10	**100**	SM80
VOC	92.53	22.43	**100**	B
HAP (single)	8.75	2.17	**10**	B
Total HAPs	29.61	7.38	**25**	SM

Permit to Construct (IDAPA 58.01.01.201)

IDAPA 58.01.01.201……Permit to Construct Required

The permittee has requested that a PTC be issued to the facility for the addition of a designated drum mixer, increase in allowable hourly production, and authorization to use up to 50% RAP. Therefore, a permit to construct is required to be issued in accordance with IDAPA 58.01.01.220. This permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200-228.

Tier II Operating Permit (IDAPA 58.01.01.401)

IDAPA 58.01.01.401……Tier II Operating Permit

The application was submitted for a permit to construct (refer to the Permit to Construct section), and an optional Tier II operating permit has not been requested. Therefore, the procedures of IDAPA 58.01.01.400–410 were not applicable to this permitting action.

Visible Emissions (IDAPA 58.01.01.625)

IDAPA 58.01.01.625……Visible Emissions

The sources of PM_{10} emissions at this facility are subject to the State of Idaho visible emissions standard of 20% opacity. This requirement is assured by Permit Conditions 3.5.

Fugitive Emissions (IDAPA 58.01.01.650)

IDAPA 58.01.01.650……Rules for the Control of Fugitive Emissions

The sources of fugitive emissions at this facility are subject to the State of Idaho fugitive emissions standards. These requirements are assured by Permit Conditions 2.2.

Particulate Matter – New Equipment Process Weight Limitations (IDAPA 58.01.01.701)

IDAPA 58.01.01.701……Particulate Matter – New Equipment Process Weight Limitations

IDAPA 58.01.01.700 through 703 set PM emission limits for process equipment based on when the piece of equipment commenced operation and the piece of equipment's process weight (PW) in pounds per hour (lb/hr). IDAPA 58.01.01.701 and IDAPA 58.01.01.702 establish PM emission limits for equipment that commenced operation on or after October 1, 1979 and for equipment operating prior to October 1, 1979, respectively.

For equipment that commenced operation on or after October 1, 1979, the PM allowable emission rate (E) is based on one of the following four equations:

- IDAPA 58.01.01.701.01.a: If PW is < 9,250 lb/hr; $E = 0.045\ (PW)^{0.60}$
- IDAPA 58.01.01.701.01.b: If PW is ≥ 9,250 lb/hr; $E = 1.10\ (PW)^{0.25}$

For equipment that commenced prior to October 1, 1979, the PM allowable emission rate is based on one of the following equations:

- IDAPA 58.01.01.702.01.a: If PW is < 17,000 lb/hr; $E = 0.045\ (PW)^{0.60}$
- IDAPA 58.01.01.702.01.b: If PW is ≥ 17,000 lb/hr; $E = 1.12\ (PW)^{0.27}$

For the new asphalt drum mixer emissions unit proposed to be installed as a result of this project with a proposed throughput of 250 T/hr, E is calculated as follows:

- Proposed throughput = 250 T/hr x 2,000 lb/1 T = 500,000 lb/hr

Therefore, E is calculated as:

- $E = 1.10 \times PW^{0.25} = 1.10 \times (500{,}000)^{0.25} = 29.25$ lb-PM/hr

As presented previously in the Emissions Inventories Section of this evaluation the post project PTE for this emissions unit is 8.53 lb-PM_{10}/$PM_{2.5}$ per hour. Assuming PM is 50% PM_{10}/$PM_{2.5}$ means that PM emissions will be 17.1 lb-PM/hr (8.53 lb- PM_{10}/$PM_{2.5}$ per hour ÷ 0.5 lb-PM_{10}/$PM_{2.5}$ per lb-PM). This is less than the calculated Rule requirement PM emissions rate of 29.25 lb-PM/hr. Therefore, compliance with this requirement has been demonstrated.

Rules for Control of Odors (IDAPA 58.01.01.775)

IDAPA 58.01.01.750……Rules for Control of Odors

Section 776.01 states that no person shall allow, suffer, cause, or permit the emission of odorous gases, liquids, or solids into the atmosphere in such quantities as to cause air pollution. These requirements are assured by Permit Conditions 2.9 and 2.10.

Rules for Control of Hot-Mix Asphalt Plants (IDAPA 58.01.01.805)

IDAPA 58.01.01.805……Rules for Control of Hot-Mix Asphalt Plants

The purpose of Sections 805 through 808 is to establish for hot-mix asphalt plants restrictions on the emission of particulate matter.

Section 806 states that no person shall cause, allow or permit a hot-mix asphalt plant to have particulate emissions which exceed the limits specified in Sections 700 through 703. As demonstrated previously, these requirements have been met by the proposed PM_{10} emissions rate (see Section on Particulate Matter – New Equipment Process Weight Limitations).

Section 807 states that in the case of more than one stack to a hot-mix asphalt plant, the emission limitation will be based on the total emission from all stacks. The proposed facility only has one stack which controls the emissions from the asphalt drum dryer and asphalt drum mixer so there is no need to combine emissions limits from multiple stacks into one stack as required.

Section 808.01 requires fugitive emission controls as follows: No person shall cause, allow or permit a plant to operate that is not equipped with an efficient fugitive dust control system. The system shall be operated and maintained in such a manner as to satisfactorily control the emission of particulate material from any point other than the stack outlet.

Section 808.02 requires plant property dust controls as follows: The owner or operator of the plant shall maintain fugitive dust control of the plant premises and plant owned, leased or controlled access roads by paving, oil treatment or other suitable measures. Good operating practices, including water spraying or other suitable measures, shall be employed to prevent dust generation and atmospheric entrainment during operations such as stockpiling, screen changing and general maintenance.

These requirements are assured by Permit Conditions 2.1 and 2.2.

Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70)

IDAPA 58.01.01.301……Requirement to Obtain Tier I Operating Permit

Post project facility-wide emissions from this facility do not have a potential to emit greater than 100 tons per year for PM_{10}, SO_2, NO_X, CO, VOC or 10 tons per year for any one HAP or 25 tons per year for all HAP combined as demonstrated previously in the Emissions Inventories Section of this analysis. Therefore, the facility is not a Tier I source in accordance with IDAPA 58.01.01.006 and the requirements of IDAPA 58.01.01.301 do not apply.

PSD Classification (40 CFR 52.21)

40 CFR 52.21…….. Prevention of Significant Deterioration of Air Quality

The facility is not a major stationary source as defined in 40 CFR 52.21(b)(1), nor is it undergoing any physical change at a stationary source not otherwise qualifying under paragraph 40 CFR 52.21(b)(1) as a major stationary source, that would constitute a major stationary source by itself as defined in 40 CFR 52. Therefore in accordance with 40 CFR 52.21(a)(2), PSD requirements are not applicable to this permitting action. The facility is/is not a designated facility as defined in 40 CFR 52.21(b)(1)(i)(a), and does not have facility-wide emissions of any criteria pollutant that exceed 250 T/yr.

NSPS Applicability (40 CFR 60)

Because the facility produces asphalt the following NSPS Subparts are applicable:

- 40 CFR 60, Subpart I - National Standards of Performance for Hot Mix Asphalt Plants

DEQ has been delegated authority to this subpart.

40 CFR 60, Subpart I **National Standards of Performance for Hot Mix Asphalt Plants**

This permitting action is for a new asphalt plant. Therefore, the requirements of this subpart may apply.

§ 60.90……Applicability and designation of affected facility

In accordance with §60.90(a), each hot mix asphalt facility is an affected facility. In accordance with §60.90(b), any hot mix asphalt facility that commences construction or modification after June 11, 1973 is subject to the requirements of Subpart I.

The affected facility includes: the dryer; systems for screening, handling, storing, and weighing hot aggregate; systems for loading, transferring, and storing mineral filler; systems for mixing hot mix asphalt; and the loading, transfer, and storage systems associated with emission control systems.

§ 60.91……Definitions

This section contains the definitions of this subpart.

§ 60.92……Standard for particulate matter

In accordance with §60.92, no owner or operator shall discharge or cause the discharge into the atmosphere from any affected facility any gases which contain particulate matter in excess of 0.04 gr/dscf or exhibit 20% opacity or greater. Permit Condition 3.4 includes the requirements of this section.

§ 60.93……Test methods and procedures

In accordance with §60.93(a), performance tests shall use as reference methods and procedures the test methods in Appendix A of 40 CFR 60.

In accordance with §60.93(b), compliance with the particulate matter standards shall be determined by EPA Reference Method 5, and opacity shall be determined by EPA Reference Method 9. Permit Conditions 3.15, 3.16, and 3.17 include the requirements of this section.

NESHAP Applicability (40 CFR 61)

The facility is not subject to any NESHAP requirements in 40 CFR 61.

MACT Applicability (40 CFR 63)

The facility is not subject to any MACT requirements in 40 CFR 63.

Permit Conditions Review

This section describes only those permit conditions that have been added, revised, modified or deleted as a result of this permitting action.

Section 1 (Purpose)

The Permit Scope was modified to reflect the current permitting action.

Table 1.1 (Regulated Sources)

The table of regulated sources was modified to list the asphalt drum mixer as a new emission source and to update the production limit and RAP percentage limit for the aggregate drum mixer.

Permit Condition 2.2 (Fugitive Emissions Controls)

"Good operating practices …" was included as a fugitive emission control.

Permit Conditions 2.3, 2.5, and 3.15

These permit conditions were added in place of former conditions 2.4, 2.5, and 2.6 as a simplifying measure.

Permit Condition 2.6 (Odors)

New Permit Condition 2.9 was added to comply with IDAPA 58.01.01.750, Rules for Control of Odors.

Permit Condition 2.8 (Collocation Demonstration Recordkeeping)

This new Permit Condition was added to align the document with the HMA Plant General Permit Template.

Permit Condition 3.1 (Process Description)

Permit Condition 3.1 was modified to acknowledge the existence of the asphalt drum mixer and to describe its role in the production of asphalt at the facility.

Permit Condition 3.2 (Control Device Descriptions)

Table 3.1 was modified to include the asphalt drum mixer as a controlled emissions source.

Permit Condition 3.3 (Emission Limits)

Permit Condition 3.3 was modified to account for the existence of the asphalt drum mixer.

Permit Condition 3.5 (Opacity Limit)

This Permit Condition was revised to align its language with that contained in the HMA Plant General Permit Template.

Permit Condition 3.6 (Asphalt Production Limits)

Permit Condition 3.6 was added to include the new hourly production limit.

Permit Condition 3.7 (Reduced Asphalt Production Limits)

This permit condition was added to specify the reduced asphalt production limits in effect on days when a collocated portable rock crusher is operated.

Permit Condition 3.8 (Asphalt Operation Setback Distance Requirements)

This permit condition was added to include the required setback distance, as determined in the Ambient Air Quality Impact Analysis.

Permit Condition 3.9 (Allowable Raw Materials)

This permit condition was added to allow the use of up to 50% RAP as a raw material.

Permit Condition 3.10 (Asphalt Drum Mixer Baghouse Exhaust Stack Height Requirement)

This permit condition was added to ensure the baghouse stack height employed at the facility is appropriate for the given setback distance requirement.

Permit Condition 3.11 (Baghouse Control Equipment)

This permit condition was added to specify the type of PM control device used at the facility.

Permit Condition 3.12 (Asphalt Drum Dryer Fuel Specifications)

This permit condition was revised to align its language with that contained in the HMA Plant General Permit Template.

Permit Condition 3.13 ($PM_{2.5}$ and Opacity Performance Testing)

Permit Condition 3.20 was modified to make the emission source nomenclature consistent with Table 1.1.

Permit Condition 3.15 (Performance Test Monitoring and Recordkeeping)

Permit Condition 3.18 was modified to require monitoring and recordkeeping of the fuel combusted in the asphalt drum drier (previously it had required such action for the drum mixer).

Permit Condition 3.16 (Asphalt Production Recordkeeping)

Permit Condition 3.17 was added to require recordkeeping of hourly, daily, and annual asphalt production to demonstrate compliance with the Asphalt Production Limits permit condition.

Permit Condition 3.17(RAP Weight Percentage Recordkeeping)

Permit Condition 3.18 was added to require recordkeeping of the weight percent of RAP in produced asphalt to demonstrate compliance with the Allowable Raw Materials permit condition.

Permit Condition 3.18 (Asphalt Operation Setback Distance Recordkeeping)

Permit condition 3.19 was added to require the permittee to measure and record the distance from the leased or owned property boundary and the asphalt drum mixer baghouse exhaust stack each time the asphalt drum mixer is moved to demonstrate compliance with the Asphalt Operation Setback Distance Requirement permit condition.

Permit Condition 3.19 (Baghouse/Filter System Procedures)

Permit Condition 3.20 was added to require a baghouse/filter system procedures document.

Permit Condition 3.20 (Used Oil Certification Recordkeeping)

Permit Condition 3.21 was added to require recordkeeping of the characteristics of each received shipment of used oil.

Existing Permit Condition 3.22 (40 CFR 60, Subpart I - Standards for Particulate Matter Performance Test Methods and Procedures)

Existing Permit Condition 3.23 was deleted because the facility has already performed the one-time initial NSPS required source test.

PUBLIC REVIEW

Public Comment Opportunity

An opportunity for public comment period on the application was provided in accordance with IDAPA 58.01.01.209.01.c or IDAPA 58.01.01.404.01.c. During this time, there were no comments on the application and there was not a request for a public comment period on DEQ's proposed action. Refer to the chronology for public comment opportunity dates.

Public Comment Period

A public comment period was made available to the public in accordance with IDAPA 58.01.01.209.01.c. During this time, comments were not submitted in response to DEQ's proposed action. Refer to the chronology for public comment period dates.

APPENDIX A – EMISSIONS INVENTORIES

Facility: Sunroc Corporation 00255
4/21/2020 10:43 **Permit/Facility ID:** P-2016.0053 777-00255

EMISSION INVENTORY
POUNDS PER HOUR

Max Controlled Emissions of Any Pollutant from Drum Mix HMA Plant Fabric Filter, Tank Heater, Generator, Silo Fill/Load-out

A. Drum Mix Plant: **250** Tons/hour 5,606 Hours/year **1,401,600** Tons/year **3,500** Tons/day
Maximum emission for each pollutant from any fuel-burning options selected on "Facility Data" worksheet. Fuels Selected = Used Oil
B. Tank Heater: **0.0000** MMBtu/hr **4,000** Hours/year **0** hrs/day
Maximum emission for each pollutant for heater burning any fuel selected on "Facility Data" worksheet. Fuels Selected =
C1. IC Engine 1: **0.00** gal/hour **0** Hours/year IC Engine < 600hp #2 Fuel Oil **0** hrs/day
C2. IC Engine 2: **0.00** gal/hour **0** Hours/year IC Engine > 600hp #2 Fuel Oil **0** hrs/day

Pollutant	A **Drum Mix** Max Emission Rate for Pollutant (lb/hr)	B **Asphalt Tank Heater** Max Emission Rate for Pollutant (lb/hr)	C **IC Engine 1 + IC Engine 2** Max Emission Rate for Pollutant (lb/hr)	D **Load-out & Silo Filling** Emission Rate for Pollutant (lb/hr)	E **TOTAL** of Max Emission Rates from A, B, C & D (lb/hr)
PM (total)	8.25	0.00E+00	0.00E+00	2.77E-01	8.53
PM-10 (total)	5.75	0.00E+00	0.00E+00	2.77E-01	6.03
PM-2.5	5.58	0.00E+00	0.00E+00	2.77E-01	5.85
CO	32.50	0.00E+00	0.00E+00	6.32E-01	33.13
NOx	13.75	0.00E+00	0.00E+00		13.75
SO_2	4.45	0.00E+00	0.00E+00		4.45
VOC	8.00	0.00E+00	0.00E+00	1.01E+00	9.01
Lead	3.75E-03	0.00E+00	0.00E+00		3.75E-03
HCl [e]	5.25E-02	0.00E+00	0.00E+00		5.25E-02
Dioxins[e]					
2,3,7,8-TCDD	3.36E-11				**3.36E-11**
Total TCDD	1.49E-10				**1.49E-10**
1,2,3,7,8-PeCDD	4.96E-11				**4.96E-11**
Total PeCDD	3.52E-09				**3.52E-09**
1,2,3,4,7,8-HxCDD	6.72E-11	0.00E+00			**6.72E-11**
1,2,3,6,7,8-HxCDD	2.08E-10				**2.08E-10**
1,2,3,7,8,9-HxCDD	1.57E-10	0.00E+00			**1.57E-10**
Total HxCDD	1.92E-09				**1.92E-09**
1,2,3,4,6,7,8-Hp-CDD	7.68E-10	0.00E+00			**7.68E-10**
Total HpCDD	3.04E-09	0.00E+00			**3.04E-09**
Octa CDD	4.00E-09	0.00E+00			**4.00E-09**
Total PCDD[h]	1.26E-08	0.00E+00			**1.26E-08**
Furans[e]					
2,3,7,8-TCDF	1.55E-10				**1.55E-10**
Total TCDF	5.92E-10	0.00E+00			**5.92E-10**
1,2,3,7,8-PeCDF	6.88E-10				**6.88E-10**
2,3,4,7,8-PeCDF	1.34E-10				**1.34E-10**
Total PeCDF	1.34E-08	0.00E+00			**1.34E-08**
1,2,3,4,7,8-HxCDF	6.40E-10				**6.40E-10**
1,2,3,6,7,8-HxCDF	1.92E-10				**1.92E-10**
2,3,4,6,7,8-HxCDF	3.04E-10				**3.04E-10**
1,2,3,7,8,9-HxCDF	1.34E-09				**1.34E-09**
Total HxCDF	2.08E-09	0.00E+00			**2.08E-09**
1,2,3,4,6,7,8-HpCDF	1.04E-09				**1.04E-09**
1,2,3,4,7,8,9-HpCDF	4.32E-10				**4.32E-10**
Total HpCDF	1.60E-09	0.00E+00			**1.60E-09**
Octa CDF	7.68E-10	0.00E+00			**7.68E-10**
Total PCDF[h]	6.40E-09	0.00E+00			**6.40E-09**
Total PCDD/PCDF[h]	1.92E-08	0.00E+00	0.00E+00		**1.92E-08**
Non-PAH HAPs					
Acetaldehyde[e]	2.08E-01		0.00E+00		**2.08E-01**
Acrolein[e]	3.79E-03		0.00E+00		3.79E-03
Benzene[e]	6.24E-02	0.00E+00	0.00E+00	9.70E-04	**6.34E-02**
1,3-Butadiene[e]			0.00E+00		**0.00E+00**
Ethylbenzene[e]	3.50E-02			2.37E-03	3.74E-02
Formaldehyde[e]	4.96E-01	0.00E+00	0.00E+00	1.40E-02	**5.10E-01**
Hexane[e]	1.34E-01	0.00E+00		2.69E-03	1.37E-01
Isooctane	5.83E-03			1.64E-05	5.85E-03
Methyl Ethyl Ketone[e]	2.92E-03			9.90E-04	3.91E-03
Pentane[e]		0.00E+00			0.00E+00
Propionaldehyde[e]	1.90E-02				1.90E-02
Quinone[e]	2.33E-02				2.33E-02
Methyl chloroform[e]	7.00E-03				7.00E-03
Toluene[e]	4.23E-01	0.00E+00	0.00E+00	2.38E-03	4.25E-01
Xylene[e]	2.92E-02		0.00E+00	1.19E-02	4.11E-02
POM (7-PAH Group)[e]	8.76E-05	0.00E+00	0.00E+00	1.82E-04	**2.69E-04**
TOTAL PAH HAPs	1.42E-01	0.00E+00	0.00E+00	7.87E-03	**1.49E-01**

Pollutant	A **Drum Mix** Max Emission Rate for Pollutant (lb/hr)	B **Asphalt Tank Heater** Max Emission Rate for Pollutant (lb/hr)	C **IC Engine IC1 + IC2** Max Emission Rate for Pollutant (lb/hr)	D **Load-out & Silo Filling** Emission Rate for Pollutant (lb/hr)	E **TOTAL** of Max Emission Rates from A, B, C & D (lb/hr)
PAH HAPs					
2-Methylnaphthalene	2.72E-02	0.00E+00		3.44E-03	**3.06E-02**
3-Methylchloranthrene[e]	0.00E+00	0.00E+00			**0.00E+00**
Acenaphthene	2.24E-04	0.00E+00	0.00E+00	3.33E-04	**5.57E-04**
Acenaphthylene	3.52E-03	0.00E+00	0.00E+00	2.10E-05	**3.54E-03**
Anthracene	4.96E-04	0.00E+00	0.00E+00	9.10E-05	**5.87E-04**
Benzo(a)anthracene[e]	3.36E-05	0.00E+00	0.00E+00	3.31E-05	**6.67E-05**
Benzo(a)pyrene[e]	1.57E-06	0.00E+00	0.00E+00	1.25E-06	**2.82E-06**
Benzo(b)fluoranthene[e]	1.60E-05	0.00E+00	0.00E+00	4.15E-06	**2.01E-05**
Benzo(e)pyrene	1.76E-05	0.00E+00		8.11E-06	**2.57E-05**
Benzo(g,h,I)perylene	6.40E-06	0.00E+00	0.00E+00	1.04E-06	**7.44E-06**
Benzo(k)fluoranthene[e]	6.56E-06	0.00E+00	0.00E+00	1.20E-06	**7.76E-06**
Chrysene[e]	2.88E-05	0.00E+00	0.00E+00	1.41E-04	**1.70E-04**
Dibenzo(a,h)anthracene[e]	0.00E+00	0.00E+00	0.00E+00	2.02E-07	**2.02E-07**
Dichlorobenzene	0.00E+00	0.00E+00			**0.00E+00**
Fluoranthene	9.76E-05	0.00E+00	0.00E+00	8.82E-05	**1.86E-04**
Fluorene	1.76E-03	0.00E+00	0.00E+00	8.30E-04	**2.59E-03**
Indeno(1,2,3-cd)pyrene[e]	1.12E-06	0.00E+00	0.00E+00	2.56E-07	**1.38E-06**
Naphthalene[e]	1.04E-01	0.00E+00	0.00E+00	1.42E-03	**1.05E-01**
Perylene	1.41E-06	0.00E+00		2.42E-05	**2.56E-05**
Phenanthrene	3.68E-03	0.00E+00	0.00E+00	1.17E-03	**4.85E-03**
Pyrene	4.80E-04	0.00E+00	0.00E+00	2.61E-04	**7.41E-04**
Non-HAP Organic Compounds					
Acetone[e]	1.21E-01	0.00E+00		1.26E-03	1.22E-01
Benzaldehyde	1.60E-02	0.00E+00			1.60E-02
Butane	9.77E-02	0.00E+00			9.77E-02
Butyraldehyde	2.33E-02	0.00E+00			2.33E-02
Crotonaldehyde[e]	1.25E-02	0.00E+00			1.25E-02
Ethylene	1.02E+00	0.00E+00		2.39E-02	1.04E+00
Heptane	1.37E+00	0.00E+00			1.37E+00
Hexanal	1.60E-02	0.00E+00			1.60E-02
Isovaleraldehyde	4.67E-03	0.00E+00			4.67E-03
2-Methyl-1-pentene	5.83E-01	0.00E+00			5.83E-01
2-Methyl-2-butene	8.46E-02	0.00E+00			8.46E-02
3-Methylpentane	2.77E-02	0.00E+00			2.77E-02
1-Pentene	3.21E-01	0.00E+00			3.21E-01
n-Pentane	3.06E-02	0.00E+00			3.06E-02
Valeraldehyde[e]	9.77E-03	0.00E+00			9.77E-03
Metals					
Antimony[e]	2.63E-05	0.00E+00			2.63E-05
Arsenic[e]	8.96E-05	0.00E+00			**8.96E-05**
Barium[e]	8.46E-04	0.00E+00			8.46E-04
Beryllium[e]	0.00E+00	0.00E+00			**0.00E+00**
Cadmium[e]	6.56E-05	0.00E+00			**6.56E-05**
Chromium[e]	8.02E-04	0.00E+00			8.02E-04
Cobalt[e]	3.79E-06	0.00E+00			3.79E-06
Copper[e]	4.52E-04	0.00E+00			4.52E-04
Hexavalent Chromium[e]	7.20E-05	0.00E+00			**7.20E-05**
Manganese[e]	1.12E-03	0.00E+00			1.12E-03
Mercury[e]	3.79E-04	0.00E+00			3.79E-04
Molybdenum[e]	0.00E+00	0.00E+00			0.00E+00
Nickel[e]	1.01E-02	0.00E+00			**1.01E-02**
Phosphorus[e]	4.08E-03	0.00E+00			4.08E-03
Silver[e]	7.00E-05	0.00E+00			7.00E-05
Selenium[e]	5.10E-05	0.00E+00			5.10E-05
Thallium[e]	5.98E-07	0.00E+00			5.98E-07
Vanadium[e]	0.00E+00	0.00E+00			0.00E+00
Zinc[e]	8.90E-03	0.00E+00			8.90E-03

e) IDAPA Toxic Air Pollutant

Criteria Pollutant lb/hr emissions are maximum 1-hr averages
TAPs lb/hr rates are 24-hr averages except for those in bold text. Lb/hr rates for bold TAPs (carcinogens) are annual averages.
Pollutants shown in blue text are emitted only when burning Used Oil, but not when burning #2 Fuel Oil or Natural Gas

Facility: **Sunroc Corporation 00255**
4/21/2020 10:43 **Permit/Facility ID:** **P-2016.0053** **777-00255**

EMISSION INVENTORY

POUNDS PER HOUR

Max Controlled Emissions of Any Pollutant from Drum Mix HMA Plant Fabric Filter, Tank Heater, Generator, Silo Fill/Load-out

A. Drum Mix Plant: **250** Tons/hour 5,606 Hours/year **1,401,600** Tons/year HMA throughput **3,500** hrs/day
Maximum emission for each pollutant from any fuel-burning option selected. Fuels Selected = Used Oil
B. Tank Heater: **0.0000** MMBtu/hr **4,000** Hours/year **0** hrs/day
Maximum emission for each pollutant from any fuel-burning option selected. Fuels Selected =
C1. IC Engine 1: **0.00** gal/hour **0** Hours/year #2 Fuel Oil Generator < 600hp **0** hrs/day
C2. IC Engine 2: **0.00** gal/hour **0** Hours/year #2 Fuel Oil Generator > 600hp **0** hrs/day

Pollutant	A **Drum Mix** Max Emission Rate for Pollutant (lb/hr)	B **Asphalt Tank Heater** Max Emission Rate for Pollutant (lb/hr)	C **IC Engine** Max Emission Rate for Pollutant (lb/hr)	D **Load-out & Silo Filling** Emission Rate for Pollutant (lb/hr)	E **TOTAL** of Max Emission Rates from A, B, C & D (lb/hr)
non-PAH HAPs[g]					
Bromomethane[e]				1.45E-04	1.45E-04
2-Butanone (see Methyl Ethyl Ketone)					
Carbon disulfide[e]				3.63E-04	3.63E-04
Chloroethane (Ethyl chloride[e])				7.24E-05	7.24E-05
Chloromethane (Methyl chloride[e])				5.00E-04	5.00E-04
Cumene				6.67E-04	6.67E-04
n-Hexane					
Methylene chloride (Dichloromethane[e])				4.80E-06	4.80E-06
MTBE					
Styrene[e]				1.40E-04	1.40E-04
Tetrachloroethene (Tetrachloroethylene[e])				4.67E-05	4.67E-05
1,1,1-Trichloroethane (Methyl chloroform[e])					
Trichloroethene (Trichloroethylene[e])					
Trichlorofluoromethane				7.88E-06	7.88E-06
m-/p-Xylene[e]				6.04E-03	6.04E-03
o-Xylene[e]				5.87E-03	5.87E-03
Phenol[e,f]				5.87E-04	5.87E-04
Non-HAP Organic Compounds					
Methane				5.02E-01	5.02E-01

e) IDAPA Toxic Air Pollutant

TAPs lb/hr rates are 24-hr averages except for those in bold text. Lb/hr rates for bold TAPs (carcinogens) are annual averages.

Facility: **Sunroc Corporation 00255**

4/21/2020 10:43 **Permit/Facility ID:** **P-2016.0053** **777-00255**

EMISSION INVENTORY

TONS PER YEAR

Max Controlled Emissions of Any Pollutant from Drum Mix HMA Plant Fabric Filter, Tank Heater, Generator, Silo Fill/Load-out

A. Drum Mix Plant: **250** Tons/hour 5,606 Hours/year **1,401,600** Tons/year HMA throughput **3,500** hrs/day

Maximum emission for each pollutant from any fuel-burning options selected on "Facility Data" worksheet. Fuels Selected = Used Oil

B. Tank Heater: **0.0000** MMBtu/hr **4,000** Hours/year **0** hrs/day

Maximum emission for each pollutant for heater burning any fuel selected on "Facility Data" worksheet. Fuels Selected =

C1. IC Engine 1: **0.00** gal/hour **0** Hours/year IC Engine <600hp #2 Fuel Oil **0** hrs/day

C2. IC Engine 2: **0.00** gal/hour **0** Hours/year IC Engine > 600hp #2 Fuel Oil **0** hrs/day

Pollutant	**A Drum Mix** Max Emission Rate for Pollutant (T/yr)	**B Asphalt Tank Heater** Max Emission Rate for Pollutant (T/yr)	**C IC Engine IC1 + IC2** Max Emission Rate for Pollutant (T/yr)	**D Load-out & Silo Filling,** Emission Rate for Pollutant (T/yr)	**E POINT SOURCE TOTAL** of Max Emission Rates from A, B, & C (T/yr) Exclude Fugitives (D)
PM (total)	23.13	0.00E+00	0.00E+00	7.76E-01	23.13
PM-10 (total)	16.12	0.00E+00	0.00E+00	7.76E-01	16.12
PM-2.5	15.63	0.00E+00	0.00E+00	7.76E-01	15.63
CO	91.10	0.00E+00	0.00E+00	1.77E+00	91.10
NOx	38.54	0.00E+00	0.00E+00		38.54
SO_2	12.47	0.00E+00	0.00E+00		12.47
VOC	22.43	0.00E+00	0.00E+00	2.83E+00	22.43
Lead	1.05E-02	0.00E+00	0.00E+00		1.05E-02
HCl [e]	1.47E-01	0.00E+00	0.00E+00		1.47E-01
Dioxins[e]					
2,3,7,8-TCDD	1.47E-10				1.47E-10
Total TCDD	6.52E-10				6.52E-10
1,2,3,7,8-PeCDD	2.17E-10				2.17E-10
Total PeCDD	1.54E-08				1.54E-08
1,2,3,4,7,8-HxCDD	2.94E-10	0.00E+00			2.94E-10
1,2,3,6,7,8-HxCDD	9.11E-10				9.11E-10
1,2,3,7,8,9-HxCDD	6.87E-10	0.00E+00			6.87E-10
Total HxCDD	8.41E-09				8.41E-09
1,2,3,4,6,7,8-Hp-CDD	3.36E-09	0.00E+00			3.36E-09
Total HpCDD	1.33E-08	0.00E+00			1.33E-08
Octa CDD	1.75E-08	0.00E+00			1.75E-08
Total PCDD[h]	5.54E-08	0.00E+00			5.54E-08
Furans[e]					
2,3,7,8-TCDF	6.80E-10				6.80E-10
Total TCDF	2.59E-09	0.00E+00			2.59E-09
1,2,3,7,8-PeCDF	3.01E-09				3.01E-09
2,3,4,7,8-PeCDF	5.89E-10				5.89E-10
Total PeCDF	5.89E-08	0.00E+00			5.89E-08
1,2,3,4,7,8-HxCDF	2.80E-09				2.80E-09
1,2,3,6,7,8-HxCDF	8.41E-10				8.41E-10
2,3,4,6,7,8-HxCDF	1.33E-09				1.33E-09
1,2,3,7,8,9-HxCDF	5.89E-09				5.89E-09
Total HxCDF	9.11E-09	0.00E+00			9.11E-09
1,2,3,4,6,7,8-HpCDF	4.56E-09				4.56E-09
1,2,3,4,7,8,9-HpCDF	1.89E-09				1.89E-09
Total HpCDF	7.01E-09	0.00E+00			7.01E-09
Octa CDF	3.36E-09	0.00E+00			3.36E-09
Total PCDF[h]	2.80E-08	0.00E+00			2.80E-08
Total PCDD/PCDF[h]	8.41E-08	0.00E+00			8.41E-08
Non-PAH HAPs					
Acetaldehyde[e]	9.11E-01		0.00E+00		9.11E-01
Acrolein[e]	1.82E-02		0.00E+00		1.82E-02
Benzene[e]	2.73E-01	0.00E+00	0.00E+00	4.25E-03	2.73E-01
1,3-Butadiene[e]	0.00E+00		0.00E+00		0.00E+00
Ethylbenzene[e]	1.68E-01			1.14E-02	1.68E-01
Formaldehyde[e]	2.17E+00	0.00E+00	0.00E+00	6.15E-02	2.17E+00
Hexane[e]	6.45E-01	0.00E+00		1.29E-02	6.45E-01
Isooctane	2.80E-02			7.89E-05	2.80E-02
Methyl Ethyl Ketone[e]	1.40E-02			4.76E-03	1.40E-02
Pentane[e]	0.00E+00	0.00E+00			0.00E+00
Propionaldehyde[e]	9.11E-02				9.11E-02
Quinone[e]	1.12E-01				1.12E-01
Methyl chloroform[e]	3.36E-02				3.36E-02
Toluene[e]	2.03E+00	0.00E+00	0.00E+00	1.14E-02	2.03E+00
Xylene[e]	1.40E-01	0.00E+00	0.00E+00	5.72E-02	1.40E-01
TOTAL Federal HAPs (T/yr)=					**7.53E+00**

Pollutant	**A Drum Mix** Max Emission Rate for Pollutant (T/yr)	**B Asphalt Tank Heater** Max Emission Rate for Pollutant (T/yr)	**C IC Engine IC1 + IC2** Max Emission Rate for Pollutant (T/yr)	**D Load-out & Silo Filling** Emission Rate for Pollutant (T/yr)	**E POINT SOURCE TOTAL** of Max Emission Rates from A, B, & C (T/yr) Exclude Fugitives (D)
PAH HAPs					
2-Methylnaphthalene	1.19E-01	0.00E+00		1.51E-02	1.19E-01
3-Methylchloranthrene[e]	0.00E+00	0.00E+00			0.00E+00
Acenaphthene	9.81E-04	0.00E+00	0.00E+00	1.46E-03	9.81E-04
Acenaphthylene	1.54E-02	0.00E+00	0.00E+00	9.18E-05	1.54E-02
Anthracene	2.17E-03	0.00E+00	0.00E+00	3.99E-04	2.17E-03
Benzo(a)anthracene[e]	1.47E-04	0.00E+00	0.00E+00	1.45E-04	1.47E-04
Benzo(a)pyrene[e]	6.87E-06	0.00E+00	0.00E+00	5.50E-06	6.87E-06
Benzo(b)fluoranthene[e]	7.01E-05	0.00E+00	0.00E+00	1.82E-05	7.01E-05
Benzo(e)pyrene	7.71E-05	0.00E+00		3.55E-05	7.71E-05
Benzo(g,h,I)perylene	2.80E-05	0.00E+00	0.00E+00	4.54E-06	2.80E-05
Benzo(k)fluoranthene[e]	2.87E-05	0.00E+00	0.00E+00	5.26E-06	2.87E-05
Chrysene[e]	1.26E-04	0.00E+00	0.00E+00	6.20E-04	1.26E-04
Dibenzo(a,h)anthracene[e]	0.00E+00	0.00E+00	0.00E+00	8.84E-07	0.00E+00
Dichlorobenzene	0.00E+00	0.00E+00			0.00E+00
Fluoranthene	4.27E-04	0.00E+00	0.00E+00	3.86E-04	4.27E-04
Fluorene	7.71E-03	0.00E+00	0.00E+00	3.64E-03	7.71E-03
Indeno(1,2,3-cd)pyrene[e]	4.91E-06	0.00E+00	0.00E+00	1.12E-06	4.91E-06
Naphthalene[e]	4.56E-01	0.00E+00	0.00E+00	6.22E-03	4.56E-01
Perylene	6.17E-06	0.00E+00		1.06E-04	6.17E-06
Phenanthrene	1.61E-02	0.00E+00	0.00E+00	5.14E-03	1.61E-02
Pyrene	2.10E-03	0.00E+00	0.00E+00	1.14E-03	2.10E-03
Non-HAP Organic Compounds					
Acetone[e]	5.82E-01	0.00E+00		6.06E-03	5.82E-01
Benzaldehyde	7.71E-02	0.00E+00			7.71E-02
Butane	4.70E-01	0.00E+00			4.70E-01
Butyraldehyde	1.12E-01	0.00E+00			1.12E-01
Crotonaldehyde[e]	6.03E-02	0.00E+00			6.03E-02
Ethylene	4.91E+00	0.00E+00		1.15E-01	4.91E+00
Heptane	6.59E+00	0.00E+00			6.59E+00
Hexanal	7.71E-02	0.00E+00			7.71E-02
Isovaleraldehyde	2.24E-02	0.00E+00			2.24E-02
2-Methyl-1-pentene	2.80E+00	0.00E+00			2.80E+00
2-Methyl-2-butene	4.06E-01	0.00E+00			4.06E-01
3-Methylpentane	1.33E-01	0.00E+00			1.33E-01
1-Pentene	1.54E+00	0.00E+00			1.54E+00
n-Pentane[e]	1.47E-01	0.00E+00			1.47E-01
Valeraldehyde[e]	4.70E-02	0.00E+00			4.70E-02
Metals					
Antimony[e]	1.26E-04	0.00E+00			1.26E-04
Arsenic[e]	3.92E-04	0.00E+00			3.92E-04
Barium[e]	4.06E-03	0.00E+00			4.06E-03
Beryllium[e]	0.00E+00	0.00E+00			0.00E+00
Cadmium[e]	2.87E-04	0.00E+00			2.87E-04
Chromium[e]	3.85E-03	0.00E+00			3.85E-03
Cobalt[e]	1.82E-05	0.00E+00			1.82E-05
Copper[e]	2.17E-03	0.00E+00			2.17E-03
Hexavalent Chromium[e]	3.15E-04	0.00E+00			3.15E-04
Manganese[e]	5.40E-03	0.00E+00			5.40E-03
Mercury[e]	1.82E-03	0.00E+00			1.82E-03
Molybdenum[e]	0.00E+00	0.00E+00			0.00E+00
Nickel[e]	4.42E-02	0.00E+00			4.42E-02
Phosphorus[e]	1.96E-02	0.00E+00			1.96E-02
Silver[e]	3.36E-04	0.00E+00			3.36E-04
Selenium[e]	2.45E-04	0.00E+00			2.45E-04
Thallium[e]	2.87E-06				2.87E-06
Vanadium[e]	0.00E+00	0.00E+00			0.00E+00
Zinc[e]	4.27E-02	0.00E+00			4.27E-02

Facility: **Sunroc Corporation 00255**
4/21/2020 10:43 **Permit/Facility ID:** **P-2016.0053** **777-00255**

EMISSION INVENTORY

TONS PER YEAR

Max Controlled Emissions of Any Pollutant from Drum Mix HMA Plant Fabric Filter, Tank Heater, Generator, Silo Fill/Load-out

A. Drum Mix Plant: **250** Tons/hour 5,606 Hours/year **1,401,600** Tons/year **3,500** Tons/day
Maximum emission for each pollutant from any fuel-burning option selected. Fuels Selected = Used Oil
B. Tank Heater: **0.0000** MMBtu/hr **4,000** Hours/year **0** hrs/day
Maximum emission for each pollutant from any fuel-burning option selected. Fuels Selected =
C1. Generator G1: **0.00** gal/hour **0** Hours/year No Generator #2 Fuel Oil IC Engine <600hp **0** hrs/day
C2. Generator G2: **0.00** gal/hour **0** Hours/year #2 Fuel Oil IC Engine > 600hp **0** hrs/day

Pollutant	**A** **Drum Mix** Max Emission Rate for Pollutant (T/yr)	**B** **Asphalt Tank Heater** Max Emission Rate for Pollutant (T/yr)	**C Generator** Max Emission Rate for Pollutant (T/yr)	**D Load-out, Silo Filling, & Tank Storage** Emission Rate for Pollutant (T/yr)	**E POINT SOURCE TOTAL** of Max Emission Rates from A, B, & C (T/yr) Exclude Fugitives (D)
non-PAH HAPs[g]					
Bromomethane[e]				6.98E-04	0.00E+00
2-Butanone (see Methyl Ethyl Ketone)					0.00E+00
Carbon disulfide[e]				1.75E-03	0.00E+00
Chloroethane (Ethyl chloride[e])				3.48E-04	0.00E+00
Chloromethane (Methyl chloride[e])				2.40E-03	0.00E+00
Cumene				3.21E-03	0.00E+00
n-Hexane				0.00E+00	0.00E+00
Methylene chloride (Dichloromethane[e])				2.31E-05	0.00E+00
MTBE					0.00E+00
Styrene[e]				6.74E-04	0.00E+00
Tetrachloroethene (Tetrachloroethylene[e])				2.24E-04	0.00E+00
1,1,1-Trichloroethane (Methyl chloroform[e])				0.00E+00	0.00E+00
Trichloroethene (Trichloroethylene[e])				0.00E+00	0.00E+00
Trichlorofluoromethane				3.79E-05	0.00E+00
m-/p-Xylene[e]				2.90E-02	0.00E+00
o-Xylene[e]				2.82E-02	0.00E+00
Phenol[e,f]				2.82E-03	0.00E+00
Non-HAP Organic Compounds					
Methane				2.41E+00	0.00E+00

e) IDAPA Toxic Air Pollutant

APPENDIX B – AMBIENT AIR QUALITY IMPACT ANALYSIS

M E M O R A N D U M

DATE: April 15, 2019

TO: Chris Duerschner, Permit Writer, Air Program

FROM: Kevin Schilling, Air Quality Dispersion Modeling Supervisor, Air Program

PROJECT: P-2016.0053 Project 62318 – Sunroc Corporation, Permit to Construct (PTC) application to modify their Notus Boise River Road Hot Mix Asphalt plant to allow use of used RAP and increase production.

SUBJECT: Demonstration of Compliance with IDAPA 58.01.01.203.02 (NAAQS) and 203.03 (TAPs) as it relates to air quality impact analyses.

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Acronyms, Units, and Chemical Nomenclature

AAC	Acceptable Ambient Concentration of a non-carcinogenic TAP
AACC	Acceptable Ambient Concentration of a Carcinogenic TAP
acfm	Actual cubic feet per minute
AERMAP	The terrain data preprocessor for AERMOD
AERMET	The meteorological data preprocessor for AERMOD
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
Appendix W	40 CFR 51, Appendix W – Guideline on Air Quality Models
ARM2	Ambient Ratio Method 2
BPIP	Building Profile Input Program
BRC	Below Regulatory Concern
CFR	Code of Federal Regulations
CMAQ	Community Multi-Scale Air Quality Modeling System
CO	Carbon Monoxide
DEQ	Idaho Department of Environmental Quality
EL	Emissions Screening Level of a TAP
EPA	United States Environmental Protection Agency
GEP	Good Engineering Practice
hr	hours
HMA	hot mix asphalt
Idaho Air Rules	Rules for the Control of Air Pollution in Idaho, located in the Idaho Administrative Procedures Act 58.01.01
IC	Internal Combustion
ISCST3	Industrial Source Complex Short Term 3 dispersion model
K	Kelvin
lb	Pounds
LPG	Liquefied Petroleum Gas
m	Meters
m/sec	Meters per second
MMBtu	Million British Thermal Units
NAAQS	National Ambient Air Quality Standards
NO	Nitrogen Oxide
NO_2	Nitrogen Dioxide
NOx	Oxides of Nitrogen
NWS	National Weather Service
O_3	Ozone
Pb	Lead
PM_{10}	Particulate matter with an aerodynamic particle diameter less than or equal to a nominal 10 micrometers
$PM_{2.5}$	Particulate matter with an aerodynamic particle diameter less than or equal to a nominal 2.5 micrometers
ppb	parts per million
PRIME	Plume Rise Model Enhancement
PAH	Polyaromatic Hydrocarbons

PTC	Permit to Construct
PTE	Potential to Emit
RFO	Recycled Fuel Oil
SIL	Significant Impact Level
Sunroc	Sunroc Corporation
SO_2	Sulfur Dioxide
TAP	Toxic Air Pollutant
tpy	tons per year
VOC	Volatile Organic Compounds
$\mu g/m^3$	Micrograms per cubic meter of air

1.0 Summary

Sunroc Corporation (Sunroc) submitted a Permit to Construct (PTC) application to modify their existing hot mix asphalt (HMA) plant permit P-2016.0053 to allow the use of RAP, increase hourly asphalt production, and add a RAP mixer drum. No other changes to the permit were requested. Idaho Administrative Procedures Act 58.01.01.203.02 and 203.03 (Idaho Air Rules Section 203.02 and 203.03) requires that no permit be issued unless it is demonstrated that applicable emissions do not result in violation of a National Ambient Air Quality Standard (NAAQS) or Toxic Air Pollutant (TAP) increment. NAAQS compliance demonstrations were required for permit issuance because the increase in production will result in an increase in criteria pollutant emissions. TAP analyses are not applicable for this project because 24-hour and annual production rates do not change; and therefore, emissions of both non-carcinogenic TAPs (regulated on a 24-hour basis) and carcinogenic TAPs (regulated on an annual basis) do not change as a result of the project. This memorandum provides a summary of the applicability assessments and analyses used to demonstrate compliance with applicable NAAQS and TAP increments, as required by Idaho Air Rules Section 203.02 and 203.03.

Sunroc prepared the PTC application. DEQ calculated air pollutant emissions associated with the project, evaluated the need to perform air impact analyses, and performed impact analyses to demonstrate compliance with applicable NAAQS and TAP increments. DEQ review of submitted data and DEQ analyses summarized by this memorandum addressed only the rules, policies, methods, and data pertaining to the air impact analyses used to demonstrate that estimated emissions associated with proposed modification will not cause or significantly contribute to a violation of any applicable air quality standard. This review did not address/evaluate compliance with other rules or analyses not pertaining to the air impact analyses. Evaluation of emission estimates was the responsibility of the DEQ permit writer and is addressed in the main body of the DEQ Statement of Basis, and emission calculation methods were not evaluated in this modeling review memorandum.

The submitted information, combined with DEQ-generated data and analyses: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data (review of emission estimates was addressed by the DEQ permit writer); 3) adhered to established DEQ guidelines for new source review air pollutant dispersion modeling; 4) showed either a) that estimated potential/allowable emissions are at a level defined as below regulatory concern (BRC) and do not require a NAAQS compliance demonstration; b) that predicted pollutant concentrations from emissions associated with the project as modeled were below Significant Impact Levels (SILs) or other applicable regulatory thresholds; or c) that predicted pollutant concentrations from emissions associated with the project, when appropriately combined with co-contributing sources and background concentrations, were below applicable NAAQS at ambient air locations where and when the project has a significant impact; 5) showed that TAP emission increases associated with the project will not result in increased ambient air impacts exceeding allowable TAP increments. This conclusion assumes that conditions in Table 1 are representative of facility design capacity or operations as limited by a federally enforceable permit condition. The DEQ permit writer should use Table 1 and other information presented in this memorandum to generate appropriate permit provisions/restrictions to assure emissions do not exceed applicable regulatory thresholds requiring further analyses that air pollutant impacts from the project do not cause a violation of applicable air quality standards, and to assure the requirements of Appendix W are met regarding emissions representative of design capacity or permit allowable rates.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES	
Criteria/Assumption/Result	**Explanation/Consideration**
Criteria Pollutants Analyzed: 1-hour NO_2, 1-hour SO_2, 1-hour CO, and 8-hour CO are the only criteria pollutants subject to the NAAQS compliance demonstration requirements for this project.	Emissions of other criteria pollutants and other averaging periods do not change since allowable 24-hour and annual production rates do not change with the project.
Setback from Ambient Air Boundary. A minimum setback distance of 164 feet (50 meters) between the nearest point of potential public access and the stacks of the drum dryer must be maintained.	The applicable setback distance is necessary to assure compliance with 1-hour NO_2 NAAQS. Impacts of 1-hour SO_2 do not drive NAAQS compliance.
Allowable Production. Maximum HMA production does not exceed 250 tons/hour or the previous permitted allowable rates of 3,500 tons/day and 1,401,600 tons/year.	Short-term pollutant impact analyses were performed using emissions based on these rates.
Internal Combustion Engines. Internal combustion (IC) engines will not be used for power generation.	IC engines have high emissions of NOx. If these were operated at the site, the setback distances from ambient air would likely be greater.
General Emissions Rates. Emissions rates used in the dispersion modeling analyses, as listed in this memorandum, must represent maximum potential emissions as given by design capacity, inherently limited by the nature of the process or configuration of the facility, or as limited by the issued permit for the specific pollutant and averaging period.	Compliance has not been demonstrated for emissions rates greater than those used in the modeling analyses.
Location with other pollutant emitting equipment. Co-contributing emissions sources such as other HMA plants, concrete batch plants, or rock crushing plants will not locate on the plant property and within 1,000 feet of the drum dryer stack of the HMA plant, except as noted below for a rock crushing plant. NAAQS compliance is assured for the HMA plant with a co-contributing rock crushing plant, provided the HMA plant does not operate during any day when the rock crushing plant is operating.	Emissions are considered co-contributing if they occur within 1,000 feet (305 meters) of each other. Once the HMA plant is established at a specific site, that facility is not responsible for controlling other facilities from moving in nearby, provided they are not on the same property. Neighboring facilities would be required to account for the HMA impacts for their permitting analyses.
Neighboring Co-Contributing Facilities. The HMA plant will not relocated to a site where there are co-contributing stationary emissions sources within 1,000 feet of the drum dryer stack except as noted for a rock crushing plant above.	After the HMA plant is established at a location, the permittee is not responsible for ensuring neighboring facilities do not move in.
Release Parameters for Emission Points. Stack heights are no shorter than what is indicated in this memorandum. Stack diameters are no larger than what is indicated in this memorandum. Exhaust flow rates and temperatures at the point of release are not less than about 80 percent of the values indicated in this memorandum.	Compliance with applicable air quality standards are not assured if release parameters vary substantially from what was used in impact analyses.
Operation in Non-Attainment Areas. The HMA plant will not locate in any NO_2 or SO_2 non-attainment areas.	For other criteria pollutants, the existing permit restrictions for location in non-attainment areas should be carried over.
Data and Assumptions from Previous Analyses. Except as noted above, permit specifications, limits, etc. from the previous permit and supporting analyses are unchanged.	Such conditions pertain to engine characteristics and restrictions, control of fugitive dust, and location in non-attainment areas,

2.0 Background Information

This section provides background information applicable to the project and the site where the facility is located. It also provides a brief description of the applicable air impact analyses requirements for the project.

2.1 Project Description

The proposed project involves modifying the existing permit to allow the use of RAP, including the addition of a RAP mixer. The modification also requested an increase in hourly production.

Pollutant-emitting processes conducted at the HMA plant include drum drying aggregate and mixing with asphalt oil, handling of aggregate materials, and handling of produced asphalt. The proposed modification only affects NOx and SO_2 emissions from the drum dryer.

2.2 Project Location and Area Classification

The HMA plant is a portable facility. The HMA plant will only locate in areas designated as attainment or unclassifiable for NO_2, SO_2, and CO criteria pollutants. The existing permit requirements for location in non-attainment areas other than NO_2, SO_2, and CO non-attainment areas should be carried over to the new permit.

2.3 Air Impact Analyses Required for All Permits to Construct

Idaho Air Rules Sections 203.02 and 203.03:

> *No permit to construct shall be granted for a new or modified stationary source unless the applicant shows to the satisfaction of the Department all of the following:*
>
> ***02. NAAQS**. The stationary source or modification would not cause or significantly contribute to a violation of any ambient air quality standard.*
>
> ***03. Toxic Air Pollutants.** Using the methods provided in Section 210, the emissions of toxic air pollutants from the stationary source or modification would not injure or unreasonably affect human or animal life or vegetation as required by Section 161. Compliance with all applicable toxic air pollutant carcinogenic increments and toxic air pollutant non-carcinogenic increments will also demonstrate preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586.*

Atmospheric dispersion modeling, using computerized simulations, is used to demonstrate compliance with both NAAQS and TAPs. Idaho Air Rules Section 202.02 states:

> ***02. Estimates of Ambient Concentrations**. All estimates of ambient concentrations shall be based on the applicable air quality models, data bases, and other requirements specified in 40 CFR 51 Appendix W (Guideline on Air Quality Models).*

2.4 Significant Impact Level and Cumulative NAAQS Impact Analyses

If specific criteria pollutant emission increases associated with the proposed permitting project cannot qualify for a BRC exemption as per Idaho Air Rules Section 221, then the permit cannot be issued unless the application demonstrates that applicable emission increases will not cause or significantly contribute to a violation of NAAQS, as required by Idaho Air Rules Section 203.02.

The first phase of a NAAQS compliance demonstration is to evaluate whether the proposed facility/project could have a significant impact to ambient air. Section 3.1.1 of this memorandum describes the applicability evaluation of Idaho Air Rules Section 203.02. The Significant Impact Level (SIL) analysis for a new facility or proposed modification to a facility involves modeling estimated criteria air pollutant emissions from the facility or modification to determine the potential impacts to

ambient air. Air impact analyses are required by Idaho Air Rules to be conducted in accordance with methods outlined in Appendix W. Appendix W requires that facilities be modeled using emissions and operations representative of design capacity or as limited by a federally enforceable permit condition.

A facility or modification is considered to have a significant impact on air quality if maximum modeled impacts to ambient air exceed the established SIL listed in Idaho Air Rules Section 006 (referred to as a "significant contribution" in Idaho Air Rules) or as incorporated by reference as per Idaho Air Rules Section 107.03.b. Table 2 lists the applicable SILs.

If modeled maximum pollutant impacts to ambient air from the emission sources associated with a new facility or modification exceed the SILs, then a cumulative NAAQS impact analysis is necessary to demonstrate compliance with NAAQS and Idaho Air Rules Section 203.02.

A cumulative NAAQS impact analysis for attainment area pollutants involves assessing ambient impacts (typically the design values consistent with the form of the standard) from potential/allowable emissions resulting from the project and emissions from any nearby co-contributing sources (including existing emissions from the facility that are unrelated to the project), and then adding a DEQ-approved background concentration value to the modeled result that is appropriate for the criteria pollutant/averaging-period at the facility location and the area of significant impact. The resulting pollutant concentrations in ambient air are then compared to the NAAQS listed in Table 2. Table 2 also lists SILs and specifies the modeled design value that must be used for comparison to the NAAQS. NAAQS compliance is evaluated on a receptor-by-receptor basis for the modeling domain.

If the cumulative NAAQS impact analysis indicates a violation of the standard, the permit may not be issued if the proposed project has a significant contribution (exceeding the SIL) to the modeled violation. If project-specific impacts are below the SIL, then the project does not have a significant contribution to the specific violations.

Compliance with Idaho Air Rules Section 203.02 is generally demonstrated if: a) applicable specific criteria pollutant emission increases are at a level defined as BRC, using the criteria established by DEQ regulatory interpretation[1]; or b) all modeled impacts of the SIL analysis are below the applicable SIL or other level determined to be inconsequential to NAAQS compliance; or c) modeled design values of the cumulative NAAQS impact analysis (modeling all emissions from the facility and co-contributing sources, and adding a background concentration) are less than applicable NAAQS at receptors where impacts from the proposed facility/modification exceeded the SIL or other identified level of consequence; or d) if the cumulative NAAQS analysis showed NAAQS violations, the impact of proposed facility/modification to any modeled violation was inconsequential (typically assumed to be less than the established SIL) for that specific receptor and for the specific modeled time of the violation.

2.4 Toxic Air Pollutant Analyses

Emissions of toxic substances are generally addressed by Idaho Air Rules Section 161:

> *Any contaminant which is by its nature toxic to human or animal life or vegetation shall not be emitted in such quantities or concentrations as to alone, or in combination with other contaminants, injure or unreasonably affect human or animal life or vegetation.*

Table 2. APPLICABLE REGULATORY LIMITS				
Pollutant	**Averaging Period**	**Significant Impact Levels[a] ($\mu g/m^3$)[b]**	**Regulatory Limit[c] ($\mu g/m^3$)**	**Modeled Design Value Used[d]**
PM_{10}[e]	24-hour	5.0	150[f]	Maximum 6th highest[g]
$PM_{2.5}$[h]	24-hour	1.2	35[i]	Mean of maximum 8th highest[j]
	Annual	0.2	12[k]	Mean of maximum 1st highest[l]
Carbon monoxide (CO)	1-hour	2,000	35 ppm[m] (40,000 $\mu g/m^3$)	Maximum 2nd highest[n]
	8-hour	500	9 ppm[m] (10,000 $\mu g/m^3$)	Maximum 2nd highest[n]
Sulfur Dioxide (SO_2)	1-hour	3 ppb[o] (7.8 $\mu g/m^3$)	75 ppb[p] (196 $\mu g/m^3$)	Mean of maximum 4th highest[q]
	3-hour	25	1,300[m]	Maximum 2nd highest[n]
	24-hour	5	365[m]	Maximum 2nd highest[n]
	Annual	1.0	80[r]	Maximum 1st highest[n]
Nitrogen Dioxide (NO_2)	1-hour	4 ppb (7.5 $\mu g/m^3$)	100 ppb[s] (188 $\mu g/m^3$)	Mean of maximum 8th highest[t]
	Annual	1.0	100[r]	Maximum 1st highest[n]
Lead (Pb)	3-month[u]	NA	0.15[r]	Maximum 1st highest[n]
	Quarterly	NA	1.5[r]	Maximum 1st highest[n]
Ozone (O_3)	8-hour	40 TPY VOC[v]	70 ppb[w]	Not typically modeled

a. Idaho Air Rules Section 006 (definition for significant contribution) or as incorporated by reference as per Idaho Air Rules Section 107.03.b.
b. Micrograms per cubic meter.
c. Incorporated into Idaho Air Rules by reference, as per Idaho Air Rules Section 107.
d. The maximum 1st highest modeled value is always used for the significant impact analysis unless indicated otherwise. Modeled design values are calculated for each ambient air receptor.
e. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
f. Not to be exceeded more than once per year on average over 3 years.
g. Concentration at any modeled receptor when using five years of meteorological data.
h. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
i. 3-year mean of the upper 98th percentile of the annual distribution of 24-hour concentrations.
j. 5-year mean of the 8th highest modeled 24-hour concentrations at the modeled receptor for each year of meteorological data modeled. For the SIL analysis, the 5-year mean of the 1st highest modeled 24-hour impacts at the modeled receptor for each year.
k. 3-year mean of annual concentration.
l. 5-year mean of annual averages at the modeled receptor.
m. Not to be exceeded more than once per year.
n. Concentration at any modeled receptor.
o. Interim SIL established by EPA policy memorandum.
p. 3-year mean of the upper 99th percentile of the annual distribution of maximum daily 1-hour concentrations.
q. 5-year mean of the 4th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of 1st highest modeled 1-hour impacts for each year is used.
r. Not to be exceeded in any calendar year.
s. 3-year mean of the upper 98th percentile of the annual distribution of maximum daily 1-hour concentrations.
t. 5-year mean of the 8th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of maximum modeled 1-hour impacts for each year is used.
u. 3-month rolling average.
v. An annual emissions rate of 40 ton/year of VOCs is considered significant for O_3.
w. Annual 4th highest daily maximum 8-hour concentration averaged over three years.

Permitting requirements for toxic air pollutants (TAPs) from new or modified sources are specifically addressed by Idaho Air Rules Section 203.03 and require the applicant to demonstrate to the satisfaction of DEQ the following:

> *Using the methods provided in Section 210, the emissions of toxic air pollutants from the stationary source or modification would not injure or unreasonably affect human or animal life or vegetation as required by Section 161. Compliance with all applicable toxic air pollutant carcinogenic increments and toxic air pollutant non-carcinogenic increments will also demonstrate preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586.*

Per Section 210, if the total project-wide emission increase of any TAP associated with a new source or modification exceeds screening emission levels (ELs) of Idaho Air Rules Section 585 or 586, then the ambient impact of the emission increase must be estimated. If ambient impacts are less than applicable Acceptable Ambient Concentrations (AACs) for non-carcinogens of Idaho Air Rules Section 585 and Acceptable Ambient Concentrations for Carcinogens (AACCs) of Idaho Air Rules Section 586, then compliance with TAP requirements has been demonstrated.

Idaho Air Rules Section 210.20 states that if TAP emissions from a specific source are regulated by the Department or EPA under 40 CFR 60, 61, or 63, then a TAP impact analysis under Section 210 is not required for that TAP. The DEQ permit writer evaluates the applicability of specific TAPs to the Section 210.20 exclusion.

3.0 Analytical Methods and Data

This section describes the methods and data used in analyses to demonstrate compliance with applicable air quality impact requirements. The DEQ Statement of Basis provides a discussion of the methods and data used to estimate criteria and TAP emission rates.

3.1 Emissions Source Data

Emissions increases of criteria pollutants and TAPs resulting from the proposed project were estimated by DEQ for the applicable averaging periods using a DEQ-developed emission calculation spreadsheet for HMA plants. The calculation of potential emissions is the responsibility of the DEQ permit writer, and the representativeness and accuracy of emission estimates is not addressed in this modeling memorandum. DEQ air impact analysts are responsible for assuring that potential emission rates provided in the emission inventory are properly used in the modeling applicability assessment. The rates listed must represent the maximum allowable rate as averaged over the specified period.

Emission rates used in the impact modeling applicability analyses, as listed in this memorandum, should be reviewed by the DEQ permit writer and compared with those in the final emission inventory. All criteria air pollutant and TAP emission rates must be equal to or greater than the facility's potential emissions calculated in the PTC emission inventory or proposed permit allowable emission rates.

3.1.1 Modeling Applicability and Modeled Criteria Pollutant Emissions Rates

If project-specific emission increases for criteria pollutants would qualify for a BRC permit exemption as per Idaho Air Rules Section 221 if it were not for potential emissions of one or more pollutants exceeding the BRC threshold of 10 percent of emissions defined by Idaho Air Rules as significant, then a NAAQS compliance demonstration may not be required for those pollutants with emissions below BRC levels. DEQ's regulatory interpretation policy of exemption provisions of Idaho Air Rules is that: "A DEQ NAAQS compliance assertion will not be made by the DEQ modeling group for specific criteria pollutants having a project emissions increase below BRC levels, provided the proposed project would have qualified for a Category I Exemption for BRC emissions quantities except for the emissions of another criteria pollutant.[1]" The interpretation policy also states that the exemption criteria of uncontrolled potential to emit (PTE) not to exceed 100 ton/year (Idaho Air Rules Section 220.01.a.i) is not applicable when evaluating whether a NAAQS impact analyses is required. A permit will be issued limiting PTE below 100 ton/year, thereby negating the need to maintain calculated uncontrolled PTE under 100 ton/year. The BRC exemption cannot be used to exempt a project from a pollutant-specific

NAAQS compliance demonstration in most cases where a PTC is required for the action regardless of emission quantities, such as the modification of an existing emission or throughput limit.

A NAAQS compliance demonstration must be performed for pollutant increases that would not qualify for the BRC exemption from the requirement to demonstrate compliance with NAAQS. In this project, the applicant proposes to change an existing permit restriction that limits emissions under the previous PTC. Therefore, the BRC exemption from NAAQS compliance demonstration requirements cannot be used unless facility-wide emissions of the pollutant are below BRC.

Site-specific air impact modeling analyses may not be necessary for some pollutants, even where such emissions do not qualify for the BRC exemption. DEQ has developed modeling applicability thresholds, below which a site-specific modeling analysis is not required. DEQ generic air impact modeling analyses that were used to develop the modeling thresholds provide a conservative SIL analysis for projects with emissions below identified threshold levels. Project-specific modeling applicability thresholds are provided in the *Idaho Air Modeling Guideline*[2]. These thresholds were based on assuring an ambient impact of less than the established SIL for specific pollutants and averaging periods.

If total project-specific emission rate increases of a pollutant are below Level I Modeling Applicability Thresholds, then project-specific air impact analyses are not necessary for permitting. Use of Level II Modeling Applicability Thresholds are conditional, requiring DEQ approval. DEQ approval is based on dispersion-affecting characteristics of the emission sources such as stack height, stack gas exit velocity, stack gas temperature, distance from sources to ambient air, presence of elevated terrain, and potential exposure to sensitive public receptors.

Air impact analyses for portable facilities involves modeling allowable emissions, determining the distance between the source and the next receptor beyond the furthest point where the NAAQS is not attained, and then using that distance as a required setback from the ambient air boundary. Since the proposed modification involves relaxation of permit restriction that potentially affects NAAQS compliance, it is appropriate to perform a cumulative NAAQS impact analysis for those pollutants affected by the permit modification. The change in allowable hourly production results in emission increases in only NOx, SO_2, and CO.

Table 3 provides a comparison between facility-wide PTE emissions and Modeling Applicability Thresholds for criteria pollutants affected by the modification. As shown in Table 3, a NAAQS compliance demonstration is required for 1-hour NO_2, 1-hour SO_2, because the facility-wide emission rates are larger than Level I and Level II Modeling Applicability Thresholds. Level II Modeling Thresholds are questionably appropriate for CO emissions from the dryer stack. Compared to parameters in the modeling analyses used to develop Level II thresholds, the HMA sources have a slightly shorter stack height, but will still achieve good dispersion from the high volume of hot exhaust from the drum dryer. Additionally, the thresholds are designed to assure an impact below the SIL, and estimated emissions are facility-wide. Therefore, impacts slightly above the SIL would almost certainly still result in a cumulative impact well below NAAQS. Allowable emissions of 1-hour CO were substantially below the 175 pound/hour Level II Modeling Threshold and project-specific air impact analyses were not performed for CO.

Table 3. CRITERIA POLLUTANT NAAQS COMPLIANCE DEMONSTRATION APPLICABILITY					
Criteria Pollutant	**Averaging Period**	**Level I Thresholds**	**Level II Thresholds**	**Applicable Facility-Wide PTE Emissions**	**Air Impact Analyses Required?**
Sulfur Dioxide (SO_2)	1-hour	0.21 lb/hour	2.5 lb/hour	4.45 lb/hour	Yes
Nitrogen Oxides (NOx)	1-hour	0.20 lb/hour	2.4 lb/hour	13.8 lb/hour	Yes
Carbon Monoxide (CO)	1-hour, 8-hour	15 lb/hour	175 lb/hour	33 lb/hour	No

Modeled Emission Rates

Table 4 lists criteria pollutant emissions rates used in the cumulative NAAQS impact analyses.

Table 4. EMISSIONS USED IN DEQ ANALYSES			
Emissions Point in Model	**Pollutant**	**Averaging Period**	**Emissions Rate (lb/hr)[a]**
DRYER – drum dryer/mixer - emissions controlled by a baghouse	NOx	1-hour	13.75
	SO_2	1-hour	4.45
	CO	1-hour, 8-hour	32.5
SILO – asphalt silo filling	CO	1-hour, 8-hour	0.2950
LOAD – asphalt loadout	CO	1-hour, 8-hour	0.3373

a. Pounds per hour emissions rate used in modeling analyses for specified averaging periods.

3.1.2 Toxic Air Pollutant Emissions Rates

TAP emissions regulations under Idaho Air Rules Section 210 are only applicable for new or modified sources constructed after July 1, 1995. TAP compliance for the proposed modification was demonstrated using the change in emissions associated with the allowable change in production. This is appropriate because TAP AACs and AACCs are incremental standards. Since only hourly production was increased, with daily and annual allowable production remaining unchanged from the existing permit, there was no increase in TAP emissions for applicable averaging periods (24-hour for non-carcinogens and annual for carcinogens).

3.1.3 Emissions Release Parameters

Table 5 lists emissions release parameters for emissions sources modeled in the air impact analyses, including stack height, stack diameter, exhaust temperature, and exhaust velocity. Additional details are provided in Attachment 1.

The HMA plant equipment layout at any site is not predicable, and the positioning of emission sources can substantially affect total combined impacts. To provide a reasonable worst-case scenario of impacts, the drum dryer was positioned at the center of the polar grid. The asphalt silo filling and asphalt loadout sources.

Table 5. POINT SOURCE STACK PARAMETERS USED IN MODELING							
Release Point	Description	UTM Coordinates (meters)		Stack Height (m)[a]	Stack Gas Flow Temp. (K)[b]	Stack Flow Velocity (m/sec)[c]	Stack Dia. (m)[d]
		East.	North.				
DRYER	Drum dryer	0.0	0.0	10.4(34)	355	15.4	1.05 (3.4)

a. Height in meters at the point of release. Values in parentheses are in feet.
b. Kelvin.
c. Meters per second.
d. Stack diameter in meters at the point of release to the atmosphere. Values in parentheses are in feet.

3.2 Background Concentrations

Background concentrations are used in the cumulative NAAQS impact analyses to account for impacts from sources not explicitly modeled. Table 6 lists reasonably conservative background concentrations for Idaho.

Background concentration values were based on a background concentration tool developed by the Northwest International Air Quality Environmental Science and Technology Consortium (NW AIRQUEST) and provided through Idaho DEQ (located at https://idahodeq.maps.arcgis.com/apps/MapSeries/index.html?appid=0c8a006e11fe4ec5939804b873098dfe). The tool uses regional scale modeling of pollutants in Washington, Oregon, and Idaho, with model results adjusted according to available monitoring data. DEQ used the background concentration tool to determine design value concentrations at the following locations: Boise, Nampa, Coeur d'Alene, McCall, St. Maries, Pocatello, Soda Springs, Payette, Kamiah, Rathdrum, Lewiston, Grangeville, Star, Twin Falls, Blackfoot, Plummer, Sandpoint, Kamiah, Idaho Falls, Burley, Caldwell, and Mountain Home. The statewide background concentration for each pollutant and applicable averaging period was then determined by using the mean of all locations plus the standard deviation.

Table 6. BACKGROUND CONCENTRATIONS		
Pollutant	Averaging Period	Background Concentration ($\mu g/m^3$)[a]
Nitrogen dioxide (NO_2)	1-hour	71.3
Sulfur dioxide (SO_2)	1-hour	38.6

a. Micrograms per cubic meter.

3.3 Impact Modeling Methodology

This section describes the modeling methods used by DEQ to demonstrate preconstruction compliance with applicable air quality standards.

3.3.1 General Overview of Impact Analyses

DEQ performed the project-specific air pollutant emissions inventory and air impact analyses based on information submitted from the Sunroc facility. The submitted information/analyses, in combination with results from DEQ's air impact analyses, demonstrate compliance with applicable air quality standards to DEQ's satisfaction, provided the facility is operated as described in the submitted application and in this memorandum.

The Sunroc HMA plant is a portable facility that may locate anywhere within Idaho (with noted exceptions for non-attainment areas). Therefore, site-specific data/characteristics used in air impact

analyses, such as meteorological data, site layout, and terrain, cannot be represented as accurately as can be achieved for one fixed site. This increases the uncertainty in analytical results. DEQ used several methods to account for and offset this increased uncertainty, and these methods are described in subsequent sections of this memorandum. The general method used for portable sources was the following:

1. Use a polar receptor grid with the emission points located at the center in a conservatively tight grouping.

2. Run the model for numerous meteorological datasets, collected throughout Idaho.

3. For each model run and pollutant, identify the controlling receptor. The controlling receptor is the one just beyond (further from the emission points) the most distant receptor showing a concentration value over the applicable standard.

4. Determine the distance between the controlling receptor and the emission points for each model run.

5. The minimum setback requirement distance is the furthest distance between the controlling receptor and key emission points (the drum dryer for this project), considering all model runs.

6. Compliance with identified applicable standards is assured provided the HMA plant operates as described and the minimum setback between emission sources and the nearest point of ambient air is maintained.

Setback distances were calculated for requested operations using multiple meteorological datasets.

Table 7 provides a brief description of parameters used in the air impact modeling analyses.

Table 7. MODELING PARAMETERS

Parameter	Description/Values	Documentation/Addition Description
General Facility Location	Portable in Idaho	Air impact modeling was performed to determine a setback distance needed between emission sources and the nearest point of ambient air for any location where the HMA plant may operate.
Model	AERMOD	AERMOD with the PRIME downwash algorithm, version 19191.
Meteorological Data	Multiple Areas	See Section 3.3.4 of this memorandum for additional details of the meteorological data.
Terrain	Not Considered	Flat terrain was assumed in the analyses.
Building Downwash	Not Considered	There were no structures identified that could substantially cause plume downwash.
Receptor Grid	Polar Grid	Adequate to resolve maximum modeled impacts.

3.3.2 Modeling Methodology

Final project-specific air impact modeling analyses were generally conducted using data and methods described in the *Idaho Air Quality Modeling Guideline*[2].

3.3.3 Model Selection

Idaho Air Rules Section 202.02 requires that pollutant concentration estimates in ambient airs are based on air quality models specified in Appendix W. The refined, steady-state, multiple-source, Gaussian dispersion model AERMOD was promulgated as the replacement model for ISCST3 in December 2005.

AERMOD retains the single straight-line trajectory of ISCST3, but includes more advanced algorithms to assess turbulent mixing processes in the planetary boundary layer for both convective and stable stratified layers.

AERMOD version 19191 was used by DEQ for the modeling analyses to evaluate impacts of the facility. This version was the current version at the time the application was received by DEQ.

3.3.4 Meteorological Data

DEQ air impact analyses used processed meteorological data from numerous locations throughout Idaho. DEQ determined that NAAQS compliance is reasonably assured for all areas of Idaho when compliance is demonstrated by multiple analyses using the following 17 meteorological datasets: Boise, Coeur d'Alene, Grangeville, Twin Falls, Pocatello (Airport and DEQ tower downtown), Idaho Falls, Rexburg, Burley, Lewiston, McCall, Spokane, Bonners Ferry, Jerome, Challis, Pullman/Moscow, and Sandpoint. All data were processed using the option in AERMET to adjust the surface friction velocity (u*) to address AERMOD's tendency to over-predict concentrations from some sources under stable, low wind speed conditions.

3.3.5 NOx Chemistry

The atmospheric chemistry of NO, NO_2, and O_3 complicates accurate prediction of NO_2 impacts resulting from NOx emissions. The conversion of NO to NO_2 can be conservatively addressed through the use of several methods as outlined in a *2014 EPA NO_2 Modeling Clarification Memorandum*.[3] The guidance outlines a three-tiered approach:

- Tier 1 – assume full conversion of NO to NO_2 where total NOx emissions are modeled and modeled impacts are assumed to be 100 percent NO_2.

- Tier 2 – use an ambient ratio to adjust impacts from the Tier 1 analysis.

- Tier 3 – use a detailed screening method to account for $NO/NO_2/O_3$ chemistry such as the Ozone Limiting Method (OLM) or the Plume Volume Molar Ratio Method (PVMRM).

DEQ used the Ambient Ratio Method 2 (ARM2) method, a Tier 2 analysis method which assumes an ambient equilibrium between NO and NO_2, in which the conversion of NO to NO_2 is predicted using hourly ambient NOx monitoring data. ARM2 has been adopted by the EPA as a default regulatory Tier 2 option. A minimum and maximum NO_2/NOx ratio of 0.5 and 0.9, respectively, were specified in the model.

3.3.6 Effects of Terrain on Modeled Impacts

Terrain effects on dispersion were not considered in the non-site-specific analyses. DEQ determined that assuming flat terrain is not a critical limitation of the analyses because most emission points associated with HMA plants are near ground-level and the immediate surrounding area is typically flat for dispersion modeling purposes. Emissions sources near ground-level typically have maximum pollutant impacts near the source, minimizing the potential effect of surrounding terrain to influence the magnitude of maximum modeled impacts.

3.3.7 Facility Layout

DEQ's analyses for portable HMA plants use a conservative generic facility layout. This is done because the specific layout will vary depending on product needs and specific characteristics of the site and equipment. To provide conservative results, DEQ uses a tight grouping of emissions sources. Sources are positioned within 7 meters of the center of the facility. The drum dryer stack is placed at the center of the facility. The drum dryer is the only source affected by this project, so spacing between sources was not a consideration.

3.3.8 Effects of Building Downwash on Modeled Impacts

No substantial structures were identified in the application. Downwash effects from equipment or other minor structures at the site were not considered in the analysis because much of the equipment is porous with regard to wind, thereby minimizing downwash effects.

3.3.9 Ambient Air Boundary

Ambient air is defined in Section 006 of the Idaho Air Rules as "that portion of the atmosphere, external to buildings, to which the general public has access." The "general public" is considered as anyone not under direct control of the permittee. Workers of neighboring businesses are considered as the general public. Ambient air is typically considered areas external to the identified property boundary where the facility is located, assuming that reasonable measures will be taken to preclude public access.

DEQ's non-site-specific air impact analysis methods, using a generic facility layout, were used to generate minimum setback distances between emission points and the property boundary or the established boundary to ambient air (if not the same as the property boundary). Setback distances were specified as the distance between the drum dryer stack and the closest point of potential public access. Compliance with applicable air quality standards and increments is not demonstrated unless setback distances are maintained.

3.3.10 Receptor Network

A polar grid with 10-meter receptor spacing extending out from 50 meters to 230 meters, 25-meter spacing extending out to 400 meters, and 50-meter spacing extending out to 700 meters was used in the non-site-specific air impact modeling analyses performed by DEQ.

3.3.11 Good Engineering Practice Stack Height

An allowable good engineering practice (GEP) stack height may be established using the following equation in accordance with Idaho Air Rules Section 512.03.b:

$H = S + 1.5L$, where:

H = good engineering practice stack height measured from the ground-level elevation at the base of the stack.

S = height of the nearby structure(s) measured from the ground-level elevation at the base of the stack.

L = lesser dimension, height or projected width, of the nearby structure.

Since no downwash causing structures were identified at the Sunroc HMA plant, downwash was not assessed.

3.3.12 Crucial HMA Plant Characteristics Affecting Air Quality Impacts

Table 8 lists characteristics of the HMA plant that are critical to the NAAQS compliance demonstrations.

Table 8. IMPORTANT CHARACTERISTIC OF HMA PLANT USED IN DEQ ANALYSES

Parameter	Value or Description
HMA Throughput Rates	250 tons/hour, 3,500 tons/day, 1,401,600 tons/year
Co-Contributing Sources	The HMA plant will not move into an area where there is a co-contributing stationary emissions source within 1,000 feet of the drum dryer stack. Also, co-contributing emissions sources will not locate on the plant property and within 1,000 feet of emissions points of the HMA plant, except as noted below for a rock crushing plant. A rock crushing plant could be operated at the site provided it is not operated during any day when the HMA plant is operated and annual throughput is less than 500,000 tons/year. Alternatively, a rock crusher could be operated simultaneously (both operating in a given day) with the HMA plant provided the HMA throughput for that day does not exceed a value of half that otherwise allowed (1,750 tons/day).
Electrical Power	Electrical needs will be provided by line power. Generators powered by IC engines will not be used. If IC engines were allowed, then required setback distances would likely be larger.
Dryer Stack Parameters	Stack height ≥34 feet, stack diameter ≈3.4 feet, gas temp ≥ 180° F, flow velocity ≥50.5 feet/second.
HMA Production	Emissions were based on 250 tons/hour HMA production. To assure there is no increase for other averaging periods, the following limits should be carried over from the previous permit: 3,500 tons/day, 1,401,600 tons/year.

4.0 NAAQS and TAPs Impact Modeling Results

4.1 Results for NAAQS Analyses

DEQ generated required setback distances for each non-site-specific air impact model run (for each applicable pollutant, averaging period of the NAAQS, and meteorological dataset). The setback distance was the distance between the center of the facility (point 0.0 meters north and 0.0 meters east in the model layout) and the furthest point where the applicable NAAQS is just met. Attachment 2 provides setback distances for each applicable pollutant, averaging period, and meteorological dataset. Table 9 lists the controlling setback distance, which is a maximum of all analyses performed and listed in Attachment 2. Compliance with the setback distance at a specific operation site will be demonstrated if the distance between the drum dryer stack and the closest point of ambient air (typically the property boundary) is greater than the setback distance.

Table 9. SETBACK DISTANCES AS A FUNCTION OF THROUGHPUT AND OPERATIONAL CONFIGURATION

HMA Configuration Scenario	Setback (ft (m))	Controlling Pollutant
250 tons HMA/hour, drum dryer fueled by used oil/RFO, operating with no generator engines.	164 (<50)	1-hr NO_2

4.2 Results for TAPs Impact Analyses

TAPs impact analyses were not triggered by this project since neither 24-hour or annual allowable emissions are increasing.

4.3 Locating with Other Facilities/Equipment

The air impact analyses performed by DEQ assume there are no other emissions sources in the immediate area that measurably contribute to pollutant concentrations in a way not adequately accounted for by the background concentrations used. Such emissions sources could include a rock crushing plant, another HMA plant, a ready-mix concrete plant, or other permitted facility. DEQ modeling staff established a rule-of-thumb distance of 1,000 feet from emissions sources at the HMA plant where emissions from a nearby source/facility would need to be considered in the air impact analyses for the HMA plant. Emissions sources located beyond 1,000 feet are considered to too distant to have a measurable impact on receptors substantially impacted by the HMA plant.

HMA plants commonly co-locate with rock crushing plants. Since only short-term impacts are applicable for this project, simultaneous operation on an annual basis is not a large concern provided the previous permit does not prohibit such operations. DEQ modeling staff determined NAAQS compliance is still assured when a rock crushing plant locates with the HMA plant, provided the HMA plant does not operate during any day when the rock crushing plant is operating.

Once the HMA plant is established at a site, the plant has no control over other facilities locating on neighboring properties (this does not include facilities locating on the same property as the HMA plant). Cumulative impacts would be assessed in the permitting analyses performed for the neighboring facility. The 1,000-foot restriction assumption on off-property co-contributing sources only applies when the HMA plant is relocating to a new site.

5.0 Conclusions

The information submitted with the PTC application, combined with DEQ air impact analyses, demonstrated to DEQ's satisfaction that emissions from the Sunroc HMA facility will not cause or significantly contribute to a violation of any applicable ambient air quality standard.

References

1. *Policy on NAAQS Compliance Demonstration Requirements.* Idaho Department of Environmental Quality Policy Memorandum. July 11, 2014.

2. *State of Idaho Guideline for Performing Air Quality Impact Analyses.* Idaho Department of Environmental Quality. September 2013. State of Idaho DEQ Air Doc. ID AQ-011. Available at http://www.deq.idaho.gov/media/1029/modeling-guideline.pdf.

3. *User's Guide for the AMS/EPA Regulatory Model – AERMOD.* U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Emissions Monitoring and Analysis Division. EPA-454/B-03-001. September 2014. (Section 3.3.2.2).

ATTACHMENT 1

EMISSIONS CALCULATIONS AND MODELING PARAMETERS FOR

DEQ'S AIR IMPACT ANALYSES

HMA Plant Modeled Emissions Rates

Setback requirements are linked to throughput levels and the equipment configuration.

Drum Dryer Emissions

The DEQ-generated HMA emission calculation spreadsheet was used to calculate emissions rates for various averaging periods.

Hourly emissions from the drum dryer were based on the requested 1-hour HMA production of 250 tons/hour.

HMA Plant Modeling Parameters

Dryer baghouse Stack

Stack temperature and flow rate were based on information provided by the applicant. These values were within reasonable ranges, based on other HMA plant applications.

Release height = 10.4 meters; effective diameter of release area = 1.05 meters;
typical stack gas temperature = 355 K; typical flow velocity = 15.4 meters/second

ATTACHMENT 2

CALCULATED SETBACK DISTANCES FOR

DEQ'S AIR IMPACT ANALYSES

Setback Distances Resulting from 250 Ton/Hour Production in the Drum Dryer		
Meteorological Data	**1-Hour NO_2 Setback (meters)**	**1-Hour SO_2 Setback (meters)**
Burley	<50 (max = 137 µg/m^3)	NA[a]
Sandpoint	<50 (max = 132 µg/m^3)	NA[a]
McCall	<50 (max = 176 µg/m^3)	<50 (max = 81 µg/m^3)
Boise	<50 (max = 157 µg/m^3)	<50 (max = 71 µg/m^3)
Jerome	<50 (max = 161 µg/m^3)	<50 (max = 72 µg/m^3)
Spokane	<50 (max = 146 µg/m^3)	NA[a]
Twin Falls	<50 (max = 164 µg/m^3)	NA[a]
Coeur d'Alene	<50 (max = 133 µg/m^3)	NA[a]
Pocatello – Airport	<50 (max = 169 µg/m^3)	NA[a]
Pocatello – DEQ station	<50 (max = 184 µg/m^3)	<50 (max = 83 µg/m^3)
Idaho Falls	<50 (max = 164 µg/m^3)	NA[a]
Lewiston	<50 (max = 140 µg/m^3)	NA[a]
Rexburg	<50 (max = 155 µg/m^3)	NA[a]
Grangeville	<50 (max = 163 µg/m^3)	NA[a]
Moscow	<50 (max = 150 µg/m^3)	NA[a]
Challis	<50 (max = 143 µg/m^3)	NA[a]
Bonners Ferry	<50 (max = 176 µg/m^3)	<50 (max = 80 µg/m^3)

a. Not analyzed. Additional meteorological datasets were not used in the analyses because impacts were so far below applicable standards that DEQ concluded that analysis of other datasets could not result in a modeled violation.

APPENDIX C – PROCESSING FEE

PTC Processing Fee Calculation Worksheet

Instructions:
Fill in the following information and answer the following questions with a Y or N. Enter the emissions increases and decreases for each pollutant in the table.

Company:	**Sunroc Corporation 00255**
Address:	**501 E 41st St**
City:	**Boise**
State:	**Idaho**
Zip Code:	**83714**
Facility Contact:	**Kamren Garfield**
Title:	**Environmental Specialist**
AIRS No.:	**324121**

Y	Does this facility qualify for a general permit (i.e. concrete batch plant, hot-mix asphalt plant)? Y/N
Y	Did this permit require engineering analysis? Y/N
N	Is this a PSD permit Y/N (IDAPA 58.01.01.205.04)

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO_X	0.0	0	0.0
SO_2	0.0	0	0.0
CO	0.0	0	0.0
PM10	0.0	0	0.0
VOC	0.0	0	0.0
Total:	0.0	0	**0.0**
Fee Due	**$ 500.00**		

Comments: