Statement of Basis

Permit to Construct No. P-2019.0008
Project ID 62175

DeAtley Crushing Co. - Lewiston
Lewiston, Idaho

Facility ID 069-00070

Final

May 21, 2019
Shawnee Chen, P.E.
Senior Air Quality Permitting Engineer

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.

ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC	acceptable ambient concentrations
AACC	acceptable ambient concentrations for carcinogens
acfm	actual cubic feet per minute
AP-42	EPA's Compilation of Air Emissions Factors
ASTM	American Society for Testing and Materials
BACT	Best Available Control Technology
BMP	best management practices
BRC	below regulatory concern
Btu	British thermal units
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CAS No.	Chemical Abstracts Service registry number
CBP	concrete batch plant
CEMS	continuous emission monitoring systems
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CI	compression ignition
CMS	continuous monitoring systems
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalent emissions
COMS	continuous opacity monitoring systems
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
FEC	Facility Emissions Cap
GACT	Generally Available Control Technology
gph	gallons per hour
gpm	gallons per minute
gr	grains (1 lb = 7,000 grains)
HAP	hazardous air pollutants
HHV	higher heating value
HMA	hot mix asphalt
hp	horsepower
hr/yr	hours per consecutive 12 calendar month period
ICE	internal combustion engines
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
iwg	inches of water gauge
km	kilometers
lb/hr	pounds per hour
lb/qtr	pound per quarter
m	meters
MACT	Maximum Achievable Control Technology
mg/dscm	milligrams per dry standard cubic meter
MMBtu	million British thermal units
MMscf	million standard cubic feet
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide

NO_X	nitrogen oxides
NSPS	New Source Performance Standards
O&M	operation and maintenance
O_2	oxygen
PAH	polyaromatic hydrocarbons
PC	permit condition
PCB	polychlorinated biphenyl
PERF	Portable Equipment Relocation Form
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
POM	polycyclic organic matter
ppm	parts per million
ppmw	parts per million by weight
PSD	Prevention of Significant Deterioration
psig	pounds per square inch gauge
PTC	permit to construct
PTC/T2	permit to construct and Tier II operating permit
PTE	potential to emit
PW	process weight rate
RAP	recycled asphalt pavement
RFO	reprocessed fuel oil
RICE	reciprocating internal combustion engines
Rules	*Rules for the Control of Air Pollution in Idaho*
scf	standard cubic feet
SCL	significant contribution limits
SDS	Safety Data Sheet
SIP	State Implementation Plan
SM	synthetic minor
SM80	synthetic minor facility with emissions greater than or equal to 80% of a major source threshold
SO_2	sulfur dioxide
SO_x	sulfur oxides
T/day	tons per calendar day
T/hr	tons per hour
T/yr	tons per consecutive 12 calendar month period
T2	Tier II operating permit
TAP	toxic air pollutants
TEQ	toxicity equivalent
T-RACT	Toxic Air Pollutant Reasonably Available Control Technology
ULSD	ultra-low sulfur diesel
U.S.C.	United States Code
VOC	volatile organic compounds
yd^3	cubic yards
$\mu g/m^3$	micrograms per cubic meter

FACILITY INFORMATION

Description

Background:

DeAtley Crushing Company is a rock crushing company that operates portable rock crushing plants at sites throughout the Northwest. The plants provide road building aggregates for public and private projects. The company is based out of Lewiston, Idaho. Maintenance operations on the equipment of these crushing plants are performed in a building on the edge of the property, separate from the crushing operations. Maintenance operations mainly include painting with spray guns and minimal welding.

Process Description:

The paint booth is a stand-alone maintenance building located on a contiguous property. The building is 30 feet wide and 80 feet long, with two large sliding doors on the west end of the building where large machinery can be driven in and out.

Emission Sources:

The entire maintenance building is the paint booth. The building is vented by opening the large sliding doors and running a 4-foot fan on the opposite (east) end of the building. Only one operator works in the booth, averaging 40 hours per week spent on various maintenance activities. There are 9 paint guns in total: 4 gravity feed and 5 siphon feed. The gravity feed models are: Anest Iwata AZ3 HTE 3, SATA Jet 1000 B RP, SATA MC-B, and Starting Line HVLP. The Siphon feed models are: Anest Iwata LPH 200 (3), Anest Iwata W200, and Dayton 4XP64A. There are no filters for the exhaust air.

Permitting History

This is the initial PTC for an existing facility that was constructed in 2002 thus there is no permitting history.

Application Scope

This permit is the initial Permit to Construct (PTC) for this existing facility.

Application Chronology

February 1, 2019	DEQ received an application.
February 4, 2019	DEQ received an application fee.
February 8 – February 25, 2019	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action.
February 8, 2019	DEQ determined that the application was incomplete.
March 8, 2019	DEQ received supplemental information from the applicant.
April 5, 2019	DEQ determined that the application was complete.
April 25, 2019	DEQ made available the draft permit and statement of basis for peer and regional office review.
May 3, 2019	DEQ made available the draft permit and statement of basis for applicant review.
May 17, 2019	DEQ received the permit processing fee.
May 21, 2019	DEQ issued the final permit and statement of basis.

TECHNICAL ANALYSIS

Emissions Units and Control Equipment

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION

<table>
<tr><th>Sources</th><th>Control Equipment</th></tr>
<tr><td>Machinery Paint Booth:
Manufacturer: NA
Model: NA
Date manufactured: 2002

Paint booth(s) heater:
Manufacturer(s): Dayton
Model(s): 7D849A
Heat input rating: 0.15 MMBtu/hr
Fuel: natural gas</td><td>The paint booth does not have filters.

Coating spray gun(s):
<table><tr><th>Manufacturer</th><th>Model</th><th>Type</th><th>Gun Transfer Efficiency %</th></tr><tr><td>Anesi Iwata</td><td>AZ.3 HTE 3</td><td>HVLP</td><td>65%</td></tr><tr><td>Anesi Iwata</td><td>LPH 200</td><td>HVLP</td><td>65%</td></tr><tr><td>Anest Iwata</td><td>W200</td><td>HVLP</td><td>65%</td></tr><tr><td>Dayton</td><td>4XP64A</td><td>HVLP</td><td>65%</td></tr><tr><td>SATA</td><td>Jet 1000 B RP</td><td>RP (Reduced Pressure)</td><td>65%</td></tr><tr><td>SATA</td><td>MC-B</td><td>HVLP</td><td>65%</td></tr><tr><td>Starting Line</td><td>HVLP</td><td>HVLP</td><td>65%</td></tr></table></td></tr>
<tr><td>Machinery Welder:
Manufacturer: Lincoln Electric
Model: SR170T
Manufacture Date: 2002
Max. production: 1 lb/day</td><td>None</td></tr>
</table>

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 by the applicant and reviewed by DEQ staff. Emissions estimates of criteria pollutants and hazardous air pollutants (HAP) PTE were based on emission factors from AP-42 and coating material components and throughput for the coating operation.

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 uncontrolled Potential to Emit for regulated air pollutants as submitted by the applicant and verified by DEQ staff. See Appendix A for a detailed presentation of the calculations and the assumptions used to determine emissions for each emissions unit. The uncontrolled Potential to Emit is based upon a coating material annual usage that is three times of the 2018 tracked coating material coating annual usage.

Table 2 UNCONTROLLED POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	$PM_{10}/PM_{2.5}$	SO_2	NO_X	CO	VOC
	T/yr	T/yr	T/yr	T/yr	T/yr
Point Sources					
Coating	0.87	0	0	0	2.17
Welding	9.49E-04	0	0	0	0
Combustion	9.79E-03	7.73E-04	0.12	5.2E-02	7.09E-03
Total, Point Sources	**0.88**	**7.73E-04**	**0.12**	**0.05**	**2.18**

The uncontrolled Potential to Emit for HAP pollutants is less than 25 T/yr for combined HAP and less than 10 T/yr for any single HAP as submitted by the applicant and verified by DEQ staff. See Appendix A for a detailed presentation of the calculations and the assumptions used to determine emissions for each emissions unit.

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.

This is an existing facility. However, since this is the first time the facility is receiving a permit, pre-project emissions are set to zero for all criteria pollutants.

Post Project Potential to Emit

Post project Potential to Emit is used to establish the change in emissions at a facility and to determine the facility's classification as a result of this project. Post project Potential to Emit includes all permit limits resulting from this project.

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

Table 3 POST PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS[a]

Source	$PM_{10}/PM_{2.5}$	SO_2	NO_X	CO	VOC
	T/yr	T/yr	T/yr	T/yr	T/yr
Coating	0.87	0	0	0	2.17
Welding	9.49E-04	0	0	0	0
Combustion	9.79E-03	7.73E-04	0.12	5.2E-02	7.09E-03
Total, Point Sources	**0.88**	**7.73E-04**	**0.12**	**0.05**	**2.18**

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

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 4 CHANGES IN POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	$PM_{10}/PM_{2.5}$	SO_2	NO_X	CO	VOC
	T/yr	T/yr	T/yr	T/yr	T/yr
Pre-Project Potential to Emit	0	0	0	0	0
Post Project Potential to Emit	0.88	7.73E-04	0.12	0.05	2.18
Total, Point Sources	**0.88**	**7.73E-04**	**0.12**	**0.05**	**2.18**

TAP Emissions

A summary of the estimated PTE for emissions increase of toxic air pollutants (TAP) is provided in the following table. Since this is the first time the facility is receiving a permit, pre-project emissions are set to zero for all TAP.

Table 5 POST PROJECT POTENTIAL TO EMIT FOR NON-CARCINOGENIC TOXIC AIR POLLUTANTS

Pollutant	CAS #	lbs/hr	BRC Level[c] (lb/hr)	Exceed BRC?	Screening Emission Level (lb/hr)	Exceeds Screening Level?
2-methoxy-1-methylethyl acetate[a]	108-65-6	4.9E-01	2.4	No	24	< BRC
3-Methylchloranthrene[b]	56-49-5	5.3E-10	2.5E-07	No	2.5E-06	< BRC
4-methylpentan-2-one[a]	108-10-1	8.6E-01	1.4	No	13.7	< BRC
7-PAH Group[b]	--	3.4E-09	2.0E-07	No	2.0E-06	< BRC
Acetone[a]	67-64-1	3.0E+00	11.9	No	119	< BRC
Aluminum Metal[a]	7429-90-5	6.9E-02	6.7E-02	**Yes**	0.667	**No**
Arsenic[b]	7440-38-2	5.9E-08	1.5E-07	No	1.5E-06	< BRC
Barium[a]	7440-39-3	1.3E-06	3.3E-03	No	3.3E-02	< BRC
Benzene[b]	71-43-2	6.2E-07	8.0E-05	No	8.0E-04	< BRC
Beryllium[b]	7440-41-7	3.5E-09	2.8E-06	No	2.8E-05	< BRC
n-Butyl Acetate[a]	123-86-4	2.6E+00	4.73	No	47.3	< BRC
Cadmium[b]	7440-43-9	3.2E-07	3.7E-07	No	3.7E-06	< BRC
Carbon Black[a]	1333-86-4	1.1E-01	2.3E-02	**Yes**	0.23	**No**
Chromium[a]	7440-47-3	8.3E-07	3.3E-03	No	0.033	< BRC
Cobalt[a]	7440-48-4	4.4E-07	3.3E-04	No	0.0033	< BRC
Copper[a]	7440-50-8	1.3E-06	1.3E-03	No	0.013	< BRC
Ethyl Benzene[a]	100-41-4	8.0E-01	2.9	No	29	< BRC
Formaldehyde[b]	50-00-0	2.2E-05	5.1E-05	No	5.1E-04	< BRC
Glycol Ether[a]	111-76-2	6.0E-02	8.0E-01	No	8	< BRC
Heptan-2-one[a]	110-43-0	1.3E+00	1.57	No	15.7	< BRC
Hexane[a]	100-54-3	5.3E-04	1.2	No	12	< BRC
Iron Oxide[a]	1309-37-1	1.7E-01	3.3E-02	**Yes**	0.333	**No**
Limestone[a]	1317-65-3	5.9E-01	6.7E-02	**Yes**	0.667	**No**
Manganese[a]	7439-96-5	1.4E-04	6.7E-03	No	0.067	< BRC
Mercury[8]	7439-97-6	7.6E-08	2.9E-04	No	2.9E-03	< BRC
Molybdenum[a]	7439-98-7	3.2E-07	6.7E-02	No	0.667	< BRC
Methanol[a]	67-56-1	2.0E-02	1.73	No	17.3	< BRC
Methyl Acetate[a]	79-20-9	2.1E-01	4.07	No	40.7	< BRC
Methyl Ethyl Ketone[a]	78-93-3	1.8E+00	3.93	No	39.3	< BRC
Methyl Propyl Ketone[a]	107-87-9	2.4E-01	4.67	No	46.7	< BRC
Microcrystalline Silica[a]	14808-60-7	1.5E-02	6.7E-04	**Yes**	0.0067	**Yes**
Nickel[b]	7440-02-0	4.2E-07	2.7E-06	No	2.7E-05	< BRC
Pentane[a]	109-66-0	7.6E-04	11.8	No	118	< BRC
Polyaromatic Hydrocarbons[b]	--	2.0E-07	9.1E-06	No	9.1E-05	< BRC
Selenium[a]	7782-49-2	7.1E-09	1.3E-03	No	1.3E-02	< BRC
Silicon[a]	7440-21-3	2.5E-06	6.7E-02	No	0.667	< BRC
Stoddard Solvent[a]	8052-41-3	1.2E+00	3.5	No	35	< BRC
Styrene[a]	100-42-5	2.5E-01	0.667	No	6.67	< BRC
Toluene[a]	108-88-3	6.6E-01	2.5	No	25	< BRC
VMP Naphtha[a]	8032-32-4	2.8E-01	9.1	No	91.3	< BRC

Pollutant	CAS #	lbs/hr	BRC Level[c] (lb/hr)	Exceed BRC?	Screening Emission Level (lb/hr)	Exceeds Screening Level?
Xylene[a]	1330-20-7	3.2E+00	2.9	Yes	29	No
Zinc[a]	7440-66-6	8.5E-06	6.67E-02	No	0.667	< BRC

a) Non-carcinogenic per IDAPA 58.01.01.585
b) Carcinogenic per IDAPA 58.01.01.586.
c) Below Regulatory Concern (BRC) level: 10% of screening emissions level (EL)

Microcrystalline silica emissions exceed the 24-hour average non-carcinogenic screening emissions level (EL) identified in IDAPA 58.01.01.585. Therefore, modeling is required for microcrystalline Silica.

Post Project HAP Emissions

The controlled Potential to Emit for HAP pollutants is less than 25 T/yr for combined HAP and less than 10 T/yr for any single HAP as submitted by the applicant and verified by DEQ staff. See Appendix A for a detailed presentation of the calculations and the assumptions used to determine emissions for each emissions unit.

Ambient Air Quality Impact Analyses

As presented in the Modeling Memo in Appendix B, the estimated emission rates of PM_{10}, $PM_{2.5}$, SO_2, NO_X, and CO are below the published DEQ modeling thresholds established in the State of Idaho Air Quality Modeling Guideline[1]. Therefore, Modeling is not required for these pollutants. Refer to the Emissions Inventories section for additional information concerning the emission inventories.

Because microcrystalline silica emissions exceed its EL identified in IDAPA 58.01.01.585, modeling is performed. As presented in the Modeling Memo in Appendix B, the applicant has 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 analyses 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).

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

The facility is located in Nez Perce County, which is designated as attainment or unclassifiable for $PM_{2.5}$, PM_{10}, SO_2, NO_2, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

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 of Total HAPs.

[1] Criteria pollutant thresholds in Table 2, State of Idaho Guideline for Performing Air Quality Impact Analyses, Doc ID AQ-011, September 2013.

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 6 REGULATED AIR POLLUTANT FACILITY CLASSIFICATION

Pollutant	Uncontrolled PTE (T/yr)	Permitted PTE (T/yr)	Major Source Thresholds (T/yr)	AIRS/AFS Classification
PM	< 100	< 100	**100**	B
PM_{10}	< 100	< 100	**100**	B
$PM_{2.5}$	< 100	< 100	**100**	B
SO_2	< 100	< 100	**100**	B
NO_X	< 100	< 100	**100**	B
CO	< 100	< 100	**100**	B
VOC	< 100	< 100	**100**	B
HAP (single)	< 10	< 10	**10**	B
Total HAPs	< 25	< 25	**25**	B

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 for the existing facility. 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 emissions at this facility are subject to the State of Idaho visible emissions standard of 20% opacity. This is assured by Permit Condition 2.4.

Standards for New Sources (IDAPA 58.01.01.676)

IDAPA 58.01.01.677 ..... Standards for New Sources

The fuel burning equipment located at this facility, with a maximum rated input of ten (10) million BTU per hour or less, are subject to a particulate matter limitation of 0.015 gr/dscf of effluent gas corrected to 3% oxygen by volume when combusting gaseous fuels. Fuel-Burning Equipment is defined as any furnace, boiler, apparatus, stack and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer. This is assured by Permit Condition 2.6.

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 criteria pollutants 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 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)

The facility is not subject to any NSPS requirements 40 CFR Part 60.

NESHAP Applicability (40 CFR 61)

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

MACT/GACT Applicability (40 CFR 63)

40 CFR 63, Subpart HHHHHH ..... National Emission Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources

§63.11170 Am I subject to this subpart?

(a) You are subject to this subpart if you operate an area source of HAP as defined in paragraph (b) of this section, including sources that are part of a tribal, local, State, or Federal facility and you perform one or more of the activities in paragraphs (a)(1) through (3) of this section:

(1) Perform paint stripping using MeCl for the removal of dried paint (including, but not limited to, paint, enamel, varnish, shellac, and lacquer) from wood, metal, plastic, and other substrates.

DeAtley Crushing Company does not perform paint stripping.

(2) Perform spray application of coatings, as defined in §63.11180, to motor vehicles and mobile equipment including operations that are located in stationary structures at fixed locations, and mobile repair and refinishing operations that travel to the customer's location, except spray coating applications that meet the definition of facility maintenance in §63.11180. However, if you are the owner or operator of a motor vehicle or mobile equipment surface coating operation, you may petition the Administrator for an exemption from this subpart if

you can demonstrate, to the satisfaction of the Administrator, that you spray apply no coatings that contain the target HAP, as defined in §63.11180. Petitions must include a description of the coatings that you spray apply and your certification that you do not spray apply any coatings containing the target HAP. If circumstances change such that you intend to spray apply coatings containing the target HAP, you must submit the initial notification required by 63.11175 and comply with the requirements of this subpart.

DeAtley Crushing Company performs spray applications on mobile equipment but none of the coatings contain target HAPS. DeAtley Crushing Company has petitioned the EPA Region X office for an exemption from §63.111 70(a)(2). The petition package was delivered on March 16, 2019.

(3) Perform spray application of coatings that contain the target HAP, as defined in §63.11180, to a plastic and/or metal substrate on a part or product, except spray coating applications that meet the definition of facility maintenance or space vehicle in §63.11180.

DeAtley Crushing Company performs spray applications but none of the coatings contain target HAPS. Therefore,§63.11170(a)(3) does not apply.

DeAtley will not be subject to this subpart when it is granted an exemption from EAP.

Permit Conditions Review

This section describes the permit conditions for this initial permit.

PERMIT SCOPE

Permit Condition 1.1 states the purpose of this permitting action.

Table 1.1 lists all sources of regulated emissions in this permit.

COATING AND WELDING OPERATIONS

Permit Condition 2.1 describes the process.

Permit Condition 2.2 describes the control of the process.

Permit Condition 2.3

Permit Condition 2.3 follows DEQ's established permit conditions for Coatings Alternate Compliance Options (2017AAH2). The $PM_{2.5}/PM_{10}$ emissions rates are taken from the EI spreadsheet submitted by the applicant. The emissions limits for $PM_{2.5}/PM_{10}$ ensure that the emissions stay below regulatory concern level (BRC) for $PM_{2.5}/PM_{10}$ so that modeling for $PM_{2.5}/PM_{10}$ would not be required.

VOC emissions limits are not needed because with the coating usage limits, VOC emissions will be way below the major source threshold of 100 T/yr. According to the EI, the VOC emissions are 2.18 T/yr when using coating materials listed in Table 2.3 of the permit.

The HAP emissions limits ensure the facility's HAP emissions are less than 25 T/yr for combined HAP and less than 10 T/yr for any single HAP so that the facility stays as minor source for HAP. The reason to express the limit in a daily basis is because this permit allows the applicant to use alternate coating materials that are not listed in the EI spreadsheet of the application. The compliance method established in Coatings Alternate Compliance Options (2017AAH2) is daily operation scenario based. The HAP daily limits are developed based on the following calculations:

9 T/yr HAP * 2000 lb/T / 365 day/yr = 49.3 lb/day

24 T/yr HAP * 2000 lb/T / 365 day/yr = 131.5 lb/day.

The daily emissions limit for microcrystalline silica is for ensuring that the ambient impact of microcrystalline silica does not exceed its acceptable ambient concentration (AAC). The limit is 120% of the emissions rate provided in the EI spreadsheet in the application. Refer to Permit Condition 2.10 regarding discussions on 20% increase on coating material daily usage.

Permit Condition 2.4 states that the facility is subject to the 20% opacity limit.

Permit Condition 2.5 states that the facility needs to control odors from the facility, such as from the coating operation at the facility.

Permit Condition 2.6 limits the heater fuel type as natural gas only because EI and analysis are based on using natural gas.

Permit Condition 2.7 establishes the annual welding rod usage of 365 lb/yr. The reason the daily rod usage is not needed is because even assuming 365 pounds welding rod being used in a day, TAP emissions are still below ELs for non-carcinogenic TAP.

Permit Condition 2.8 states that the facility shall not use Methylene Chloride (MeCl) (CAS #75-09-0) to remove paint. The applicant has stated in the application that MeCl is not used in the facility and has submitted to EPA an exemption request for not being subject to requirements in 40 CFR 63 Subpart HHHHHH.

Permit Condition 2.9 establishes annual coating material usage limits and coating solid content limits. The coating solid content limits are developed by multiplying the maximum coating solid content weight percentage (wt %) by the maximum coating density (lb/gal) of primers, enamels, and base coats listed in Table 2.3 of the permit, respectively. These values are used in the analysis for this permitting action to demonstrate that emissions of $PM_{10}/PM_{2.5}$ are below regulatory concern (BRC) so that $PM_{10}/PM_{2.5}$ modeling would not be required. These limits shall apply to all coating materials used at the facility, including the ones listed in the applicant and the ones allowed through Alternate Daily Coating Usage Scenarios.

Permit Condition 2.10

Permit Condition 2.10 establishes daily coating material usage limits for the coating materials listed in the application that is listed in Table 2.3 of the permit. It is for ensuring compliance with the daily emissions limits in Permit Condition 2.3.

In the application, the maximum daily usage was assumed to be the highest amount used in one day per material usage logs May 2016-December 2018. The permit gives additional 20% increase for the daily coating material usage to provide operational flexibility. With 20% increase of daily coating material usage, the applicant still complies with the standards, such as TAP ELs and the AAC for microcrystalline silica.

Permit Conditions 2.11 to 2.14

Permit Conditions 2.11 to 2.14 allows the facility to use coating materials other than listed in the application or in Table 2.3 of the permit. Though the facility did not request using alternate coating materials, the components of coating material may change in the future. This permit provides this flexibility by following DEQ's established permit conditions in Coatings Alternate Compliance Options (2017AAH2). The facility can use approved Alternate Daily Coating Usage Scenarios developed in accordance with these permit conditions.

Permit Condition 2.11

To calculate $PM_{10}/PM_{2.5}$ emissions are not required here because with Annual Coating Usage limits and Coating Solid Content Limits in Table 2.2 of the permit, the facility will not exceed the $PM_{10}/PM_{2.5}$ emissions limits in Table 2.1 of the permit.

Permit Condition 2.12

Because the painting booth does not use filters, the following sentence is not included in the permit: *TAP emissions which are designated as a particulate in Table 2.4 may also be multiplied by one minus the documented spray gun transfer efficiency and by one minus the documented filtration system control efficiency when control equipment will be applied to such emissions.*

Permit Condition 2.13

The facility currently has one spray booth. For any TAP, if the spray booth is the only source from which that TAP emits; the unit ambient impact of 0.169 mg/m^3 can be used for that TAP to demonstrate that the impact of that TAP is less than its AAC/AACC when the emissions of that TAP exceed its EL.

The unit ambient impact of 0.169 mg/m^3 is developed using the information from the modeling memo for this permitting action. At the emissions rate of 0.013 lb/hr of microcrystalline silica, the modeled ambient impact of microcrystalline silica is 2.2 $\mu g/m^3$. Because the spray booth is the only source from which microcrystalline silica emits, a unit ambient impact for the spray booth can be calculated as:

2.2 ($\mu g/m^3$) / 0.013 (lb/hr) = 169.23 $\mu g/m^3$ = 0.169 mg/m^3

The permit gives 20% increase of coating usages from what were proposed in the application, the ambient from microcrystalline silica increase from 2.2 $\mu g/m^3$ to 2.64 $\mu g/m^3$; it is still below the AAC standard.

Table 2.4

According to DEQ's policy, it is presumed that EPA evaluated the 187 HAPs when developing the emission standards for new, modified or existing stationary sources regulated by 40 CFR Part 63; therefore, no further review is required under IDAPA 58.01.01.210 for these pollutants for sources subject to 40 CFR Part 63, including sources specifically exempted within the subpart. The coating operation at the facility is subject to 40 CFR 63 Subpart HHHHHH or specifically exempt from the requirements of 40 CFR63 Subpart HHHHH, therefore, any TAP from the coating operation that is one of the 187 Hazardous Air Pollutants is not included in Table 2.4 of the permit.

Permit Condition 2.14

Calculation to demonstrate compliance with daily $PM_{10}/PM_{2.5}$ and VOC limits in DEQ's established permit conditions for Coatings Alternate Compliance Options is not included here because this permit does not have daily $PM_{10}/PM_{2.5}$ and VOC limits. Refer to discussions under Permit Condition 2.3 of this section for details

Permit Condition 2.15 requires the facility to monitor welding rod usage to demonstrate compliance with the annual welding rod usage limit.

Permit Conditions 2.16 to 2.18 are monitoring and recordkeeping requirements for the coating operation.

Permit condition 2.19 is a reporting requirement that only applies to Coating Usage Scenarios that have not already been approved previously.

GENERAL PROVISIONS

General Provisions are taken from current PTC template; they are standard permit conditions and are included in all PTCs.

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. During this time, there was not a request for a public comment period on DEQ's proposed action. Refer to the chronology for public comment opportunity dates.

APPENDIX A – EMISSIONS INVENTORIES

SUMMARY

Maximum Usage[1]		
Product Type	Quantity	Units
Primer	120	gal
Enamel	550	gal
Base Coat	100	gal

Notes

1 Maximum Usage determined based on known usage from 2016-2018 and multiplied by a factor of 3. See Paint Usage tab for 2016-2018 usage.

2 Idaho DEQ *Guideline for Performing Air Quality Impact Analysis* Section 3.2, 10% of Significant Limit of IDAPA 58.01.01 Section 006.108 is Below Regulatory Concern (BRC).

3 IDAPA 58.01.01 Section 223.01.

4 IDAPA 58.01.01 Section 585 and 586.

5 If levels are exceeded, then modeling is required.

6 Non-carcinogenic per IDAPA 58.01.01.585.

7 Carcinogenic per IDAPA 58.01.01.586.

8 IDAPA 58.01.01.215 Mercury limited to 25 lbs/yr.

Criteria Pollutants

	PTE Uncontrolled					
Pollutant	lbs/hr	lb/day	lbs/yr	tons/yr	BRC[2] (tpy)	BRC Exceeded?
PM_{10}	1.85	44.5	1,766	0.88	1.5	No
$PM_{2.5}$	1.85	44.5	1,765	0.88	1	No
NO_X	2.8E-02	0.7	242	0.12	4	No
CO	1.2E-02	2.8E-01	103	5.2E-02	10	No
SO_2	1.8E-04	4.2E-03	1.5	7.7E-04	4	No
Lead	1.5E-07	3.5E-06	1.3E-03	6.4E-07	0.06	No
VOC	5.80	139	4,352	2.2	4	No

Toxic Pollutants

		PTE						
Pollutant	CAS #	lbs/hr	lb/day	lbs/yr	BRC[3] (lb/hr)	Exceed BRC?	Screening Emission Level[4] (lb/hr)	Exceeds Screening Level?[5]
2-methoxy-1-methylethyl acetate[6]	108-65-6	4.9E-01	1.2E+01	1,348	2.4	No	24	< BRC
3-Methylchloranthrene[7]	56-49-5	5.3E-10	1.3E-08	4.6E-06	2.5E-07	No	2.5E-06	< BRC
4-methylpentan-2-one[6]	108-10-1	8.6E-01	2.1E+01	186	1.4	No	13.7	< BRC
7-PAH Group[7]	--	3.4E-09	8.0E-08	2.9E-05	2.0E-07	No	2.0E-06	< BRC
Acetone[6]	67-64-1	3.0E+00	71.7	2,132	11.9	No	119	< BRC
Aluminum Metal[8]	7429-90-5	6.9E-02	1.65	189	6.7E-02	Yes	0.667	No
Arsenic[7]	7440-38-2	5.9E-08	1.4E-06	5.2E-04	1.5E-07	No	1.5E-06	< BRC
Barium[6]	7440-39-3	1.3E-06	3.1E-05	1.1E-02	3.3E-03	No	3.3E-02	< BRC
Benzene[7]	71-43-2	6.2E-07	1.5E-05	5.4E-03	8.0E-05	No	8.0E-04	< BRC
Beryllium[7]	7440-41-7	3.5E-09	8.5E-08	3.1E-05	2.8E-06	No	2.8E-05	< BRC
n-Butyl Acetate[6]	123-86-4	2.6E+00	6.3E+01	1,773	4.73	No	47.3	< BRC
Cadmium[7]	7440-43-9	3.2E-07	7.8E-06	2.8E-03	3.7E-07	No	3.7E-06	< BRC
Carbon Black[6]	1333-86-4	1.1E-01	2.6E+00	109	2.3E-02	Yes	0.23	No
Chromium[6]	7440-47-3	8.3E-07	2.0E-05	7.3E-03	3.3E-03	No	0.033	< BRC
Cobalt[6]	7440-48-4	4.4E-07	1.1E-05	3.9E-03	3.3E-04	No	0.0033	< BRC
Copper[6]	7440-50-8	1.3E-06	3.2E-05	1.2E-02	1.3E-03	No	0.013	< BRC
Ethyl Benzene[6]	100-41-4	8.0E-01	1.9E+01	755	2.9	No	29	< BRC
Formaldehyde[7]	50-00-0	2.2E-05	5.3E-04	1.9E-01	5.1E-05	No	5.1E-04	< BRC
Glycol Ether[6]	111-76-2	6.0E-02	1.4E+00	11.9	8.0E-01	No	8	< BRC
Heptan-2-one[6]	110-43-0	1.3E+00	3.2E+01	3,169	1.57	No	15.7	< BRC
Hexane[6]	100-54-3	5.3E-04	1.3E-02	4.6	1.2	No	12	< BRC
Iron Oxide[6]	1309-37-1	1.7E-01	4.1E+00	472	3.3E-02	Yes	0.333	No
Limestone[6]	1317-65-3	5.9E-01	1.4E+01	720	6.7E-02	Yes	0.667	No
Manganese[6]	7439-96-5	1.4E-04	3.3E-03	1.2	6.7E-03	No	0.067	< BRC
Mercury[6]	7439-97-6	7.6E-08	1.8E-06	6.7E-04	2.9E-04	No	2.9E-03	< BRC
Molybdenum[6]	7439-98-7	3.2E-07	7.8E-06	2.8E-03	6.7E-02	No	0.667	< BRC
Methanol[6]	67-56-1	2.0E-02	4.7E-01	54	1.73	No	17.3	< BRC
Methyl Acetate[6]	79-20-9	2.1E-01	5.1E+00	43	4.07	No	40.7	< BRC
Methyl Ethyl Ketone[6]	78-93-3	1.8E+00	43.9	2,865	3.93	No	39.3	< BRC
Methyl Propyl Ketone[6]	107-87-9	2.4E-01	5.69	142	4.67	No	46.7	< BRC
Microcrystalline Silica[6]	14808-60-7	1.5E-02	0.36	24	6.7E-04	Yes	0.0067	Yes
Nickel[7]	7440-02-0	4.2E-07	1.0E-05	3.7E-03	2.7E-06	No	2.7E-05	< BRC
Pentane[6]	109-66-0	7.6E-04	1.8E-02	6.7	11.8	No	118	< BRC
Polyaromatic Hydrocarbons[7]	--	2.0E-07	4.8E-06	1.8E-03	9.1E-06	No	9.1E-05	< BRC
Selenium[6]	7782-49-2	7.1E-09	1.7E-07	6.2E-05	1.3E-03	No	1.3E-02	< BRC
Silicon[6]	7440-21-3	2.5E-06	6.0E-05	2.2E-02	6.7E-02	No	0.667	< BRC
Stoddard Solvent[6]	8052-41-3	1.2E+00	28.2	3,234	3.5	No	35	< BRC
Styrene[6]	100-42-5	2.5E-01	6.0	149	0.667	No	6.67	< BRC
Toluene[6]	108-88-3	6.6E-01	15.7	631	2.5	No	25	< BRC
VMP Naphtha[8]	8032-32-4	2.8E-01	6.75	231	9.1	No	91.3	< BRC
Xylene[6]	1330-20-7	3.2E+00	77.7	3,229	2.9	Yes	29	No
Zinc[6]	7440-66-6	8.5E-06	2.0E-04	7.5E-02	6.67E-02	No	0.667	< BRC

May-Dec. 2016			
Product No.	**Product Name**	**Quantity**	**Units**
0808S1NL	Carboline Carbocoat 150 Universal Primer[1]	1	gal
M007S1NL	Carboline Multi-gard GP 5[1,4]	4	gal
M012S1NL	Carboline Multi-guard GP 14 FD[2]	35	gal
74811	Cloverdale Industrial Enamel[2]	30.5	gal
76002	Cloverdale Self-Priming Speed Enamel Bas	5	gal
DBC9700	PPG Basecoat Black[3]	0.1875	gal
AUE-300M-1	PPG Polyurethane Enamel[2]	2.75	gal
DC2000	PPG Ultra Velocity Clear[3]	0.1875	gal

Jan, March-Dec. 2017			
Product No.	**Product Name**	**Quantity**	**Units**
M012S1NL	Carboline Multi-guard GP 14 FD[2]	73.25	gal
74811	Cloverdale Industrial Enamel[2]	64.5	gal
76002	Cloverdale Self-Priming Speed Enamel Bas	18.5	gal
AUE-300M-1	PPG Polyurethane Enamel[2]	5.75	gal
708001	Rodda Barrier III[1]	4.25	gal

Jan-Dec 2018			
Product No.	**Product Name**	**Quantity**	**Units**
228FS1NL	Carboline Carbocoat 140[2]	35.75	gal
M012S1NL	Carboline Multi-guard GP 14 FD[2]	47.5	gal
74811	Cloverdale Industrial Enamel[2]	88.75	gal
76002	Cloverdale Self-Priming Speed Enamel Bas	25	gal
83953A	Cloverdale Armourshield[3]	5	gal
11101	Cloverdale Marine Enamel Gloss[2]	4	gal
100713	Evercoat Feather Fill G2 Gray[1]	2.5	gal
708001	Rodda Barrier III[1]	36.5	gal
AUE-300M-1	PPG Polyurethane Enamel[2]	2	gal

Notes:
1 Primer
2 Enamel
3 Basecoat
4 No longer in use

Usage by category (gal)

Category	2016	2017	2018	
Primer	7.5	4.6	39	117
Enamel	102	157	178	534
Basecoat	8.1	20	25	75

Emissions - Painting

Eff, %	Application Method[1]	Overspray, %
65%	HVLP	35%

20% increase is used for daily max. Annual is kept the same as proposed

	Paints	Operational Usage[2] (gal / yr)	Planned Maximum[3] (gal/yr)	Planned Maximum[3] (gal/day)	Density[4] (lbs/gal)	Weight Percent of Permitted Air Pollutants[4,5]																							
						VOC	Solids	2-methoxy-1-methylethyl acetate	4-methylpentan-2-one	Acetone	Aluminium Powder[5]	n-Butyl Acetate	Carbon Black[6]	Cumene	Ethyl Benzene	Glycol Ether	Heptan-2-one	Iron Oxide[6]	Limestone[6]	Methanol	Methyl Acetate	Methyl Ethyl Ketone[8]	Methyl Propyl Ketone	Microcrystalline Silica[6]	Portland cement[5]	Stoddard Solvent	Styrene	Toluene	VMP Naphtha[8]	Xylene (o,m, & p isomers)
						%	%	108-65-6	108-10-1	67-64-1	7429-90-5	123-86-4	1333-86-4	98-82-8	100-41-4	111-76-2	110-43-0	1309-37-1	1317-65-3	67-56-1	79-20-9	78-93-3	107-87-9	14808-60-7	65997-15-1	8052-41-3	100-42-5	108-88-3	8032-32-4	1330-20-7
1	Paint Booth - Primer	39	120	5	11.8	56	77	0.0	0.0	30.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	10.0	1.0	0.0	0.0	30.0	0.0	0.0	35.0
1	Paint Booth - Enamel	178	550	5	9.80	53	64	25.00	0.30	25.00	10.00	25.00	5.00	0.00	10.00	0.00	58.00	25.00	25.00	1.00	0.00	50.00	0.00	1.00	0.00	60.00	0.00	10.00	3.50	45.00
1	Paint Booth - Base Coat	25	100	12	8.51	81	52	0.00	20.00	42.00	0.00	50.00	5.00	0.00	8.70	1.40	5.00	0.00	0.00	0.00	5.00	20.00	0.00	0.00	0.00	0.00	0.00	10.80	5.00	35.90
	Subtotal	242.0	770	22																									
	Planned Maximum Uncontrolled Emissions, lb/yr					4,338	1,745	1,348	186	2,132	189	1,773	109	0	755	12	3,169	472	720	54	43	2,865	142	24	0	3,234	149	631	231	3,229
	24-hr Uncontrolled PTE, lb/day					139.2	44.4	11.8	20.6	71.7	1.6	62.8	2.6	0.0	19.3	1.4	32.4	4.1	14.1	0.5	5.1	43.9	5.7	0.4	0.0	28.2	6.0	15.7	6.8	77.7
	Planned Maximum Controlled Emissions, lb/yr																												
	24-hr Uncontrolled PTE, lb/day																												

References:

1 Per spray gun specifications, all guns are HVLP or equivalent. See attachment 2.
2 Per material usage logs May 2016 - Dec. 2018 (missing Feb 2017). To be conservative, operational usage should be considered CY2018.
3 Maximum annual usage assumed to be 3 times the tracked amount in 2018. Maximum daily used assumed to be the highest amount used in one day per material usage logs May 2016-December 2018 with 20% increase
4 Per paint SDSs and technical data sheets. Maximum density and weight percent used for each paint category. See attachment 5.
5 All compounds other then VOCs and Solids are toxics listed under IDAPA 58.01.01 Sections 585 and 586.
6 Solid compound with a transfer efficiency of 65%. Assume total solids=PM2.5.
7 Confidential data received from Carboline and is not significant to emissions calculations for cells marked NA.
8 Butanone and Methyl Ethyl Ketone are synonyms. Ligronine and VMP Naphtha are synonyms.

1752	25
1752	114.5833333
4380	8.333333333

Emissions - Welding

Annual Usage: 365 lb/yr

Welding Fume Pollutants	Welding Wire Composition (wt%)[1]	EF (lb/1000 lb) electrode consumed[2]	PTE[3]	
			(lb/yr)	(lb/day)[4]
PM_{10}		5.2	1.9	5.2E-03
$PM_{2.5}$		3.7	1.3	3.7E-03
Chromium		0.01	3.7E-03	1.0E-05
Cobalt		0.01	3.7E-03	1.0E-05
Nickel		0.01	3.7E-03	1.0E-05
Manganese	2.0%	3.18	1.2	3.3E-03
Silicon	1.15%		2.2E-02	6.0E-05
Copper	0.50%		9.5E-03	2.6E-05
Carbon	0.18%		3.4E-03	9.4E-06
Titanium	0.17%		3.2E-03	8.8E-06
Aluminum	0.15%		2.8E-03	7.8E-06
		TAP T/Yr:	6.3E-04	

Notes:

1 From SDS for carbon steel, low alloy welding wire.

2 Emissions factors from AP-42 Tables 12-19-1&2 for GMAW welding using E70S, January 1995. PM speciation for welding SCC codes from California Air Resources Board is 57.4% PM10 and 40.7% PM2.5, so PM2.5 assumed equal to 70.9% of PM10.

3 Emissions for PM2.5, chromium, cobalt, and nickel based on PM10 emissions and worst-case material composition. Emissions for all other pollutants are based on material composition.

4 Maximum daily production is 1 pound welding rod, so daily PTE is 1/365th of annual usage.

Emissions - Natural Gas Heaters

Number of Units=	2	
Fuel Usage=	0.15	MMBtu/hr
Natural Gas Heating Value=	1020	Btu/scf
	8760	hrs/yr

Criteria Pollutants

Pollutant	Emission Factor[1] (lb/MMscf)	Emissions Estimates (lb/hr)	(lb/yr)
NO_X	94	2.76E-02	242
CO	40	1.18E-02	103
PM	7.6	2.24E-03	19.6
Lead	0.0005	1.47E-07	1.29E-03
SO_2	0.6	1.76E-04	1.55
VOC	5.5	1.62E-03	14.2

Greenhouse Gases

Pollutant	Emission Factor[1] (lb/MMscf)	Emissions (lb/yr)	Metric tpy	Global Warming Potential (metric tpy)	CO_2e (metric tpy)	Below GHG Reporting?
CO_2	120,000	309,176	140	1	140	--
N_2O	2.2	5.7	2.6E-03	310	0.80	--
Methane	2.3	5.9	2.7E-03	21	5.6E-02	--
Total					141	Yes

Toxic Air Pollutants

CAS #	Pollutant	Emission Factor[2] (lb/MMscf)	Emissions Estimates (lb/hr)	(lb/yr)
91-57-6	2-Methylnaphthalene	2.4E-05	7.1E-09	6.2E-05
56-49-5	3-Methylcholanthrene	1.8E-06	5.3E-10	4.6E-06
--	7,12-Dimethylbenz(a)anthracene	1.6E-05	4.7E-09	4.1E-05
83-32-9	Acenaphthene	1.8E-06	5.3E-10	4.6E-06
203-96-8	Acenaphthylene	1.8E-06	5.3E-10	4.6E-06
120-12-7	Anthracene	2.4E-06	7.1E-10	6.2E-06
56-55-3	Benz(a)anthracene	1.8E-06	5.3E-10	4.6E-06
71-43-2	Benzene	2.1E-03	6.2E-07	5.4E-03
50-32-8	Benzo(a)pyrene	1.2E-06	3.5E-10	3.1E-06
205-99-2	Benzo(b)fluoranthene	1.8E-06	5.3E-10	4.6E-06
191-24-2	Benzo(g,h,i)perylene	1.2E-06	3.5E-10	3.1E-06
207-08-9	Benzo(k)fluoranthene	1.8E-06	5.3E-10	4.6E-06
106-97-8	Butane	2.1E+00	6.2E-04	5.4E+00
218-01-9	Chrysene	1.8E-06	5.3E-10	4.6E-06
53-70-3	Dibenzo(a,h)anthracene	1.2E-06	3.5E-10	3.1E-06
25321-22-(	Dichlorobenzene	1.2E-03	3.5E-07	3.1E-03
74-84-0	Ethane	3.1E+00	9.1E-04	8.0E+00
206-44-0	Fluoranthene	3.0E-06	8.8E-10	7.7E-06
86-73-7	Fluorene	2.8E-06	8.2E-10	7.2E-06
50-00-0	Formaldehyde	7.5E-02	2.2E-05	1.9E-01
110-54-3	Hexane	1.8E+00	5.3E-04	4.6E+00
193-39-5	Indenol(1,2,3-cd)pyrene	1.8E-06	5.3E-10	4.6E-06
91-20-3	Naphthalene	6.1E-04	1.8E-07	1.6E-03
109-66-0	Pentane	2.6E+00	7.6E-04	6.7E+00
85-01-8	Phenanathrene	1.7E-05	5.0E-09	4.4E-05
74-98-6	Propane	1.6E+00	4.7E-04	4.1E+00
129-00-0	Pyrene	5.0E-06	1.5E-09	1.3E-05
108-88-3	Toluene	3.4E-03	1.0E-06	8.8E-03
--	7-PAH Group[3]	1.1E-05	3.4E-09	2.9E-05
--	Polyaromatic Hydrocarbons[4]	6.9E-04	2.0E-07	1.8E-03
7440-38-2	Arsenic	2.0E-04	5.9E-08	5.2E-04
7440-39-3	Barium	4.4E-03	1.3E-06	1.1E-02
7440-41-7	Beryllium	1.2E-05	3.5E-09	3.1E-05
7440-43-9	Cadmium	1.1E-03	3.2E-07	2.8E-03
7440-47-3	Chromium	1.4E-03	4.1E-07	3.6E-03
7440-48-4	Cobalt	8.4E-05	2.5E-08	2.2E-04
7440-50-8	Copper	8.5E-04	2.5E-07	2.2E-03
7439-96-5	Manganese	3.8E-04	1.1E-07	9.8E-04
7439-97-6	Mercury	2.6E-04	7.6E-08	6.7E-04
7439-98-7	Molybdenum	1.1E-03	3.2E-07	2.8E-03
7440-02-0	Nickel	2.1E-03	6.2E-07	5.4E-03
7782-49-2	Selenium	2.4E-05	7.1E-09	6.2E-05
7440-62-2	Vanadium	2.3E-03	6.8E-07	5.9E-03
7440-66-6	Zinc	2.9E-02	8.5E-06	7.5E-02
			TAP T/yr	1.5E-02

Notes:

1 Emissions factors from AP-42 Tables 1.4-1 and 1.4-2 for a residential furnace since the heaters are used for building heat, July 1998.
2 Emissions factors from AP-42 Tables 1.4-3 and 1.4-4, July 1998.
3 IDAPA 58.01.01 Section 586, 7-PAH group consisting of benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracne, chrysene, indenol(1,2,3,-cd)pyrene, and benzo(a)pyrene.
4 Polycyclic aromatic hydrocarbons inculde 2-methylnaphthalene, 7,12-dimethylbenz(a)anthracene, acenaphthene, acenaphthylene, anthracene, benzo(g,h,i)perylene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene.

APPENDIX B – AMBIENT AIR QUALITY IMPACT ANALYSES

MEMORANDUM

DATE: **May** 15, 2019

TO: Shawnee Chen, Permit Writer, Air Program

FROM: Thomas Swain, Modeling Review Analyst, Air Program

PROJECT: PERMIT P-2019.0008, PROJ 62175, DeAtley Crushing Company located in Lewiston, Idaho.

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

Contents

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
ASOS	Automated Surface Observing System
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
DeAt	DeAtley Crushing Company
DEM	Digital Elevation Map
DEQ	Idaho Department of Environmental Quality
DV	Design Values
EL	Emissions Screening Level of a TAP
EPA	United States Environmental Protection Agency
GEP	Good Engineering Practice
hr	hours
Idaho Air Rules	Rules for the Control of Air Pollution in Idaho, located in the Idaho Administrative Procedures Act 58.01.01
ISCST3	Industrial Source Complex Short Term 3 dispersion model
K	Kelvin
lb/hr	Pounds per hour
m	Meters
m/sec	Meters per second
MMBtu	Million British Thermal Units
MQS	Microcrystalline quartz silica
NAAQS	National Ambient Air Quality Standards
NAD83	North American Datum of 1983
NED	National Elevation Dataset
NO	Nitrogen Oxide
NO_2	Nitrogen Dioxide
NOx	Oxides of Nitrogen
NWS	National Weather Service
O_3	Ozone
OLM	Ozone Limiting Method
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 billion
PRIME	Plume Rise Model Enhancement
PSD	Prevention of Significant Deterioration
PTC	Permit to Construct
PTE	Potential to Emit
PVMRM	Plume Volume Molar Ratio Method
SIL	Significant Impact Level
SO_2	Sulfur Dioxide
SPRING	Spring Environmental , Inc.
TAP	Toxic Air Pollutant
tpy	Tons per year
USGS	United States Geological Survey
UTM	Universal Transverse Mercator
VOC	Volatile Organic Compounds
°F	Degrees Fahrenheit
$\mu g/m^3$	Micrograms per cubic meter of air

1.0 Summary

The DeAtley Crushing Company (DeAt) submitted a Permit to Construct (PTC) application for their existing facility located in Lewiston, Idaho. Project-specific air quality analyses involving atmospheric dispersion modeling of estimated emissions associated with the proposed facility were submitted to DEQ to demonstrate that applicable emissions do not result in violation of a National Ambient Air Quality Standard (NAAQS) or Toxic Air Pollutant (TAP) increment as required by the Idaho Administrative Procedures Act 58.01.01.203.02 and 203.03 (Idaho Air Rules Section 203.02 and 203.03). This memorandum provides a summary of the applicability assessment for analyses and air impact analyses used to demonstrate compliance with applicable NAAQS and TAP increments, as required by Idaho Air Rules Section 203.02 and 203.03.

Spring Environmental, Inc. (Spring), on behalf of DeAt, prepared the PTC application and performed ambient air impact analyses for this project. 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 operation of the facility 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.

Table 1 presents key assumptions and results to be considered in the development of the permit. Idaho Air Rules require air impact analyses be conducted in accordance with methods outlined in 40 CFR 51, Appendix W *Guideline on Air Quality Models* (Appendix W). Appendix W requires that air quality impacts be assessed using atmospheric dispersion models with emissions and operations representative of design capacity or as limited by a federally enforceable permit condition.

The submitted information 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 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 and to assure the requirements of Appendix W are met regarding emissions representative of design capacity or permit allowable rates.

Summary of Submittals and Actions

- Date: Application submitted : February 1, 2019
- Incompleteness issued on February 8, 2019.
- Application resubmitted March 8, 2019
- Application deemed complete 4/5/2019

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES	
Criteria/Assumption/Result	**Explanation/Consideration**
General Emission Rates. Emission rates used in the air impact 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 emission rates greater than those used in the air impact analyses.
Air Impact Analyses for Criteria Pollutant Emissions. Total allowable emission rates of all criteria pollutants are below levels defined as BRC.	Project-specific air impact analyses demonstrating compliance with NAAQS, as required by Idaho Air Rules Section 203.02, are required for pollutant increases above BRC thresholds, or for pollutants having an emissions increase that is greater than Level I modeling applicability thresholds (where the BRC exclusion cannot be used).
Air Impact Analyses for TAP Emissions. Allowable emissions of TAPs other than Microcrystalline quartz silica (MQS) are below ELs. Analyses demonstrating compliance with MQS increments were performed.	A TAP increment compliance demonstration would be required for any TAPs with emissions above ELs.

[a] Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
[b] Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.

2.0 Background Information

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

2.1 Project Description

The DeAtley Crushing Company is a rock crushing company that operates portable rock crushing plants at sites throughout Idaho. The company provides aggregate for road building for public and private projects. This project deals with the maintenance operations that occur on the property and are separate from crushing operations. These operations are largely from painting and welding activities that occur within a stand-alone building on the northern edge of the property. The building is used as a paint booth, with exhausted air being vented through a 4-foot fan on the east side of the building. The PTC addresses all air pollutant-emitting activities associated with the facility.

2.2 Proposed Location and Area Classification

The facility is located in Lewiston, Idaho, within Nez Perce County (Northing: 5135825 m; Easting: 496455 m; UTM Zone 11). This area is designated as an attainment or unclassifiable area for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), lead (Pb), ozone (O_3), particulate matter

with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}), and particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers ($PM_{2.5}$). The area is not classified as non-attainment for any criteria pollutants.

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.

Table 2. APPLICABLE REGULATORY LIMITS				
Pollutant	**Averagin g 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	40,000[m]	Maximum 2nd highest[n]
	8-hour	500	10,000[m]	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.

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 when the violation occurred.

2.5 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.*

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 the 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 Emission Source Data

Emissions of criteria pollutants and TAPs resulting from operation of the DeAt facility were estimated by SPRING for various applicable averaging periods. 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 model. The rates listed must represent the maximum allowable rate as averaged over the specified period.

Emission rates used in the impact modeling applicability analyses and any modeling analyses, as listed in this memorandum, should be reviewed by the DEQ permit writer and compared with those in the final emission inventory. All modeled 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 Emission 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.

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.

NAAQS compliance demonstrations were not required for this project since the submitted application demonstrated that the project qualified for the BRC NAAQS compliance demonstration exemption.

Table 3 provides a comparison between project allowable emissions and BRC levels.

Table 3. CRITERIA POLLUTANT NAAQS COMPLIANCE DEMONSTRATION APPLICABILITY

Criteria Pollutant	BRC Level (ton/year)	Applicable Facility-Wide PTE Emissions (ton/year)	Air Impact Analyses Required?
PM_{10}[a]	1.5	0.88	No
$PM_{2.5}$[b]	1.0	0.88	No
Carbon Monoxide (CO)	10.0	0.05	No
Sulfur Dioxide (SO_2)	4.0	7.7E-04	No
Nitrogen Oxides (NOx)	4.0	0.12	No
Lead (Pb)	0.06	6.4E-07	No
Volatile Organic Compounds (VOCs)	4.0	2.2	No

a. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
b. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.

Ozone (O_3) differs from other criteria pollutants in that it is not typically emitted directly into the atmosphere. O_3 is formed in the atmosphere through reactions of VOCs, NOx, and sunlight. Atmospheric dispersion models used in stationary source air permitting analyses cannot be used to estimate O_3 impacts resulting from VOC and NOx emissions from an industrial facility. O_3 concentrations resulting from area-wide emissions are predicted by using more complex airshed models such as the Community Multi-Scale Air Quality (CMAQ) modeling system. Use of the CMAQ model is very resource-intensive and DEQ asserts that performing a CMAQ analysis for a particular permit application is not typically a reasonable or necessary requirement for air quality permitting. Addressing secondary formation of O_3 within the context of permitting a new stationary source has been somewhat addressed in EPA regulation and policy. As stated in a letter from Gina McCarthy of EPA to Robert Ukeiley, acting on behalf of the Sierra Club (letter from Gina McCarthy, Assistant Administrator, United States Environmental Protection Agency, to Robert Ukeiley, January 4, 2012):

> *. . . footnote 1 to sections 51.166(I)(5)(I) of the EPA's regulations says the following: "No de minimis air quality level is provided for ozone. However, any net emission increase of 100 tons per year or more of volatile organic compounds or nitrogen oxides subject to PSD would be required to perform an ambient impact analysis, including the gathering of air quality data."*

The EPA believes it unlikely a source emitting below these levels would contribute to such a violation of the 8-hour ozone NAAQS, but consultation with an EPA Regional Office should still be conducted in accordance with section 5.2.1.c. of Appendix W when reviewing an application for sources with emissions of these ozone precursors below 100 TPY."

DEQ determined it was not appropriate or necessary to require a quantitative source-specific O_3 impact analysis because allowable emission estimates of VOCs and NOx are below the 100 tons/year threshold. Additionally, both VOC and NOx emissions satisfied BRC exemption criteria.

3.1.2 TAPs Modeling Applicability

TAP emission regulations under Idaho Air Rules Section 210 are only applicable for new or modified sources constructed after July 1, 1995.

Facility-wide emissions of Microcrystalline quartz silica (MQS) exceed the applicable emission screening levels (ELs) of Idaho Air Rules Section 586. Air impact modeling analyses were then required to demonstrate that maximum impacts of MQS are below applicable ambient increment standards expressed in Idaho Air Rules Section 585 and 586 as AACs and AACCs.

MQS is a non-carcinogenic TAP that is regulated on a short-term averaging basis. Therefore, the appropriate emission rates for impact analyses are maximum daily emissions, expressed as an average pound/hour value over a 24-hour period.

Table 4 provides a summary of TAP emission increases for the project for those TAPs that had an increase exceeding the ELs of Idaho Air Rules Section 585 or 586.

Table 4. TAP EMISSION INCREASES THAT TRIGGER MODELING

Toxic Air Pollutant	Emissions (lb/hr)[a]	Screening Emissions Level (lb/hr)
Microcrystalline quartz silica [b]	0.013	0.0067

a. Pounds per hour.

b. Non-carcinogenic TAP. ELs are daily maximum emissions expressed as pounds/hour. The emissions rate is the daily emissions divided by 24 hours/day.

3.1.3 Emission Release Parameters

Table 5 lists emission release parameters, including stack height, stack diameter, exhaust temperature, and exhaust velocity for emission sources modeled in the air impact analyses. Emission point release parameters were based on information provided by the applicant or DEQ assumptions based on similar sources with a margin of conservatism (less favorable dispersion characteristics such as shorter stack heights, lower flow volumes, etc). SPRING provided information of an exhaust flow of 7000 actual cubic feet per minute (acfm), but performed the modeling with a much higher value. DEQ performed refined modeling with a corrected value of 7000 acfm.

Table 5. POINT SOURCE STACK PARAMETERS								
Release Point	Description	UTM[a] Coordinates		Stack Height (m)	Stack Gas Flow Temp. (K)[c]	Stack Gas Flow Velocity (m/sec)[d]	Modeled Stack Diameter (m)	Orient. Of Release[e]
		Easting-X (m)[b]	Northing-Y (m)					
Paintexhaust	Exhaust from Painting	496452	5135822	3.0	296	2.4[f]	1.33	H

a. Universal Transverse Mercator.
b. Meters.
c. Kelvin.
d. Meters per second.
e. Vertical uninterrupted, rain-capped, or horizontal release.
f. Recalculated by DEQ to reflect acfm of 7000.

3.2 Background Concentrations

Background concentrations are used if a cumulative NAAQS impact analysis is needed to demonstrate compliance with applicable NAAQS. Cumulative NAAQS analyses were not required for this project because emissions of all criteria pollutants were below levels defined as BRC, and as such, a NAAQS compliance demonstration was not required for these emissions.

3.3 Impact Modeling Methodology

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

3.3.1 General Overview of Impact Analyses

DeAt and SPRING performed the project-specific air pollutant emission inventory and air impact analyses that were submitted with the application. DEQ performed a refined air impact analyses based on corrections to information submitted by the applicant. 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.

Table 6 provides a brief description of parameters used in the modeling analyses.

3.3.2 Modeling Methodology

Project-specific modeling and other required impact 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 estimates of ambient concentrations be 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 it includes more advanced algorithms to assess turbulent mixing processes in the planetary boundary layer for both convective and stable stratified layers.

AERMOD version 18081 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.

Table 6. MODELING PARAMETERS		
Parameter	**Description/Values**	**Documentation/Addition Description**
General Facility Location	Lewiston, Idaho	The area is an attainment or unclassified area for all criteria pollutants.
Model	AERMOD	AERMOD with the PRIME downwash algorithm, version **18081**.
Meteorological Data	Lewiston surface data; Spokane, WA upper air data	See Section 3.3.4 of this memorandum for additional details of the meteorological data.
Terrain	Considered	1 arc second National Elevation Dataset (NED) was acquired from the USGS for the surrounding area. AERMAP version 18081 was used to process terrain elevation data for all buildings and receptors. See Section 3.3.5 for more details.
Building Downwash	Considered	Considered in a generic method. See Section 3.3.6.
Receptor Grid	**TAPs Analysis** The selection of receptors for use in the TAPs Analyses is as follows:	
	Grid 1	12.5 meter spacing along the ambient air boundary out to 150 meters
	Grid 2	25-meter spacing from 150 to 400 meters
	Grid 3	50-meter spacing from 400 to 900 meters
	Grid 4	100-meter spacing from 900 to 2,000 meters
	Grid 5	300-meter spacing from 2,000 to 4,500 meters

3.3.4 Meteorological Data

SPRING processed a meteorological dataset from Lewiston, Idaho (KLWS; station ID 727830-24149) covering the years 2013-2017. The upper air soundings required by AERMET were obtained from the Spokane, Washington airport station (site ID 72786). Surface characteristics were determined by using AERSURFACE version 13016. AERMINUTE version 15272 was used to process Automated Surface Observing Systems (ASOS) wind data for use in AERMET. AERMET version 18081 was used to process surface and upper air data and to generate a model-ready meteorological data input file. The "adjust u star" (ADJ_U*) option was applied in AERMET to enhance model performance during low wind speeds under stable conditions. DEQ determined that these data are adequately representative of the meteorology at the DeAt facility for minor source permitting. DEQ reconfirmed the accuracy of the data by remodeling with DEQ's already processed years of 2012-2016 from Lewiston, Idaho. Figure 1 shows the correlating wind roses between the two sets of data.

3.3.5 Effects of Terrain on Modeled Impacts

Submitted ambient air impact analyses used terrain data extracted from United States Geological Survey (USGS) National Elevation Dataset (NED) files.

The terrain preprocessor AERMAP version 18081 was used by SPRING to extract the elevations from the NED files and assign them to receptors in the modeling domain in a format usable by AERMOD. AERMAP also determined the hill-height scale for each receptor. The hill-height scale is an elevation value based on the surrounding terrain which has the greatest effect on that individual receptor. AERMOD uses those heights to evaluate whether the emissions plume has sufficient energy to travel up and over the terrain or if the plume will travel around the terrain.

3.3.6 Facility Layout and Downwash

DEQ verified proper identification of the site location, equipment locations, and the ambient air boundary by comparing a graphical representation of the modeling input file to plot plans submitted in the

application. Aerial photographs on Google Earth (available at https://www.google.com/earth) were also used to assure that horizontal coordinates were accurate as described in the application.

Potential downwash effects on emission plumes were accounted for in the model by using building dimensions and locations (locations of building corners, base elevation, and building heights). Dimensions and orientation of proposed buildings were used as input to the Building Profile Input Program for the Plume Rise Model Enhancements downwash algorithm (BPIP-PRIME version 04274) to calculate direction-specific dimensions and Good Engineering Practice (GEP) stack height information for input to AERMOD. Because the base elevations of the building and source were inconsistent (a difference 1.6 meters), DEQ revised the elevations before revised modeling was performed.

3.3.7 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." To exclude areas of the site from consideration as ambient air, the permittee must have the legal and practical ability to control access to such areas of the site. Public access to the property is denied by staff and general topography of the surrounding area.

3.3.8 Receptor Network

The receptor grid used in DEQ's analyses met the minimum recommendations specified in the *Idaho Air Quality Modeling Guideline*[2] and DEQ determined that it was adequate to resolve maximum modeled impacts.

Table 8 describes the receptor network used in the submitted modeling analyses. The receptor grids used in the model provided good resolution of the maximum design concentrations for the project and provided extensive coverage. The full receptor grid was used TAPs ambient air impact analyses. DEQ determined that the receptor network was effective in reasonably assuring compliance with applicable air quality standards at all ambient air locations.

3.3.9 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.

All sources at the DeAt facility are below GEP stack height. Therefore, consideration of downwash caused by nearby buildings was required.

4.0 NAAQS and TAPs Impact Modeling Results

4.1 Results for NAAQS Analyses

A NAAQS impact analysis was not performed for DeAt. Idaho Air Rules Section 203.02, requiring air impact analyses demonstrating compliance with NAAQS, is not applicable to pollutants having project emissions increase that are less than BRC levels, provided the project would have qualified for a BRC permitting exemption except for the emissions levels of another criteria pollutant exceeding the ton/year BRC threshold.

4.2 Results for TAPs Impact Analyses

Dispersion modeling was required to demonstrate compliance with TAP increments specified by Idaho Air Rules Section 585 and 586 for those TAPs with facility-wide emissions exceeding screening emission levels (ELs). Table 7 lists the maximum modeled impacts for specific TAPs. All modeled impacts are below applicable AACs and AACCs.

Table 7. TAP AIR IMPACT ANALYSIS RESULTS

TAP	Maximum Modeled Impact ($\mu g/m^3$)[a]	AAC or AACC ($\mu g/m^3$)	Percent of AAC/ AACC
MQS[b]	2.2	5	44%

a. Micrograms per cubic meter.

b. Microcrystalline quartz silica, a non-carcinogenic TAP. Modeled impact and AAC represent a 24-hour averaged concentration.

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 DeAtley Crushing Company will not cause or significantly contribute to a violation of any applicable ambient air quality standard or TAP increment.

DEQ is proposing to allow a 20% increase in daily painting activities in the permit application in order to provide more flexibility in daily operations. Based on the data in the emission inventory, this would only affect the one TAP pollutant already modeled, MQS. Maximum modeled impacts would increase from 2.2 ug/m^3 to 2.64 ug/m^3. This value is 53% of the AAC, and assures that the facility will not violate any TAPS increments.

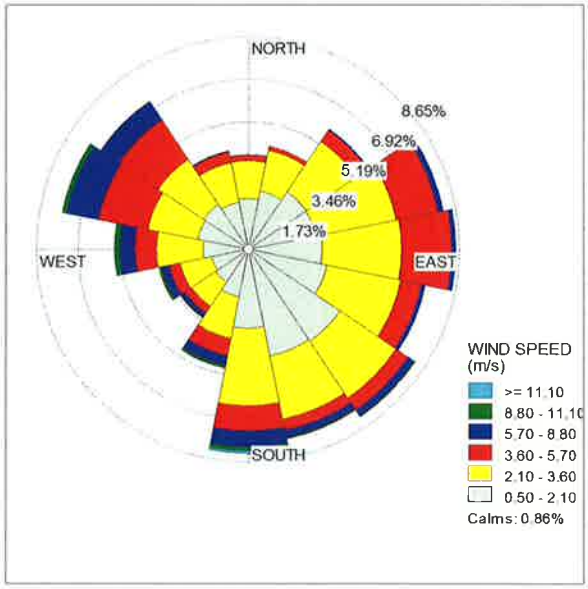
References

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

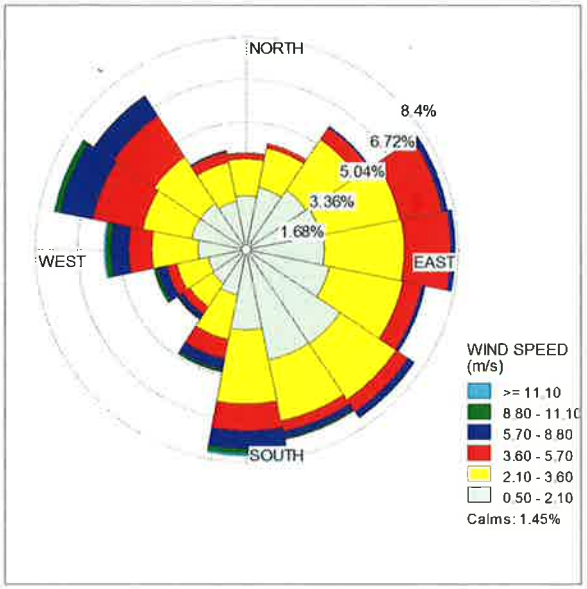
2. *State of Idaho Guideline for Performing Air Quality Impact Analyses*. Idaho Department of Environmental Quality. September 2013. State of Idaho DEQ Air Doc. ID AQ-011. Available at http://www.deq.idaho.gov/media/1029/modeling-guideline.pdf.

3. *Clarification on the Use of AERMOD Dispersion Modeling for Demonstrating Compliance with the NO_2 National Ambient Air Quality Standard.* Office of Air Quality Planning and Standards. Air Quality Modeling Group. Research Triangle Park, NC. Guidance memorandum from R. Chris Owen and Roger Brode to Regional Dispersion Modeling Contacts. September 30, 2014.

Figure 1. Comparison of Meteorological Wind Roses



Lewiston 2013-2017 /SPRING



Lewiston 2012-2016/DEQ

APPENDIX C – FACILITY DRAFT COMMENTS

The facility did not have comments on the draft permit.

APPENDIX D – 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:
Address:
City:
State:
Zip Code:
Facility Contact:
Title:
AIRS No.:

N 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	0.12	0	0.1
SO_2	7.73E-04	0	0.0
CO	0.05	0	0.1
PM10	0.88	0	0.9
VOC	2.18	0	2.2
Total:	3.23	0	**3.2**
Fee Due	**$ 2,500.00**		

Comments: