



State of Utah

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Department of
Environmental Quality

Kimberly D. Shelley
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DIVISION OF AIR QUALITY
Bryce C. Bird
Director

RN161200001

May 1, 2023

Quinten Bingham
Granite Construction Company
1000 North Warm Springs Rd.
Salt Lake City, UT 84116
quin.bingham@gcinc.com

Dear Quinten Bingham,

Re: Engineer Review:
New I-80 Aggregate Mining Facility
Project Number: N161200001

The DAQ requests a company representative (Title V Responsible Official for enhanced Approval Order application) review and sign the attached Engineer Review (ER). This ER identifies all applicable elements of the New Source Review permitting program. Granite Construction Company should complete this review within **10 business days** of receipt.

Granite Construction Company should contact **John Persons** at (385) 306-6503 if there are questions or concerns with the review of the draft permit conditions. Upon resolution of your concerns, please email jpersons@utah.gov the signed cover letter to John Persons. Upon receipt of the signed cover letter, the DAQ will prepare an ITA for a 30-day public comment period. At the completion of the comment period, the DAQ will address any comments and will prepare an AO for signature by the DAQ Director.

If Granite Construction Company does not respond to this letter within **10 business days**, the project will move forward without source concurrence. If Granite Construction Company has concerns that cannot be resolved and the project becomes stagnant, the DAQ Director may issue an Order prohibiting construction.

Approval Signature _____

Quinten G Bingham

Digitally signed by Quinten G Bingham
DN: cn=US, email=quin.bingham@gcinc.com,
o=Granite Construction Company, c=Quinten G
Bingham
Location: SL, UT
Reason: I have reviewed this document
Contact Info: 435-704-4319
Date: 2023.05.16 16:37:23-0600

(Signature & Date)

UTAH DIVISION OF AIR QUALITY ENGINEER REVIEW

SOURCE INFORMATION

Project Number	N161200001
Owner Name	Granite Construction Company
Mailing Address	1000 North Warm Springs Rd. Salt Lake City, UT, 84116
Source Name	Granite Construction Company- I-80 South Quarry
Source Location	Off Exit 132, Ranch Exit of Interstate I-80 East of Salt Lake City Salt Lake County, UT
UTM Projection	437,048 m Easting, 4,509,436 m Northing
UTM Datum	NAD83
UTM Zone	UTM Zone 12
SIC Code	1442 (Construction Sand & Gravel)
Source Contact	Quinten Bingham
Phone Number	(801) 526-6050
Email	quin.bingham@gcinc.com
Project Engineer	John Persons, Engineer
Phone Number	(385) 306-6503
Email	jpgersons@utah.gov
Notice of Intent (NOI) Submitted	September 7, 2022
Date of Accepted Application	September 29, 2022

SOURCE DESCRIPTION

General Description

The Granite Construction Company has requested to operate an aggregate mining facility at its I-80 South Quarry located in Salt Lake County. The facility will act as a standalone aggregate mining, crushing, and screening operation. This facility will produce up to 1,100,000 tons of aggregate per year.

NSR Classification:

New Minor Source

Source Classification

Located in the Northern Wasatch Front O3 NAA, Salt Lake City UT PM_{2.5} NAA, and Salt Lake County SO₂ NAA
Salt Lake County
Airs Source Size: B

Applicable Federal Standards

NSPS (Part 60), A: General Provisions
NSPS (Part 60), OOO: Standards of Performance for Nonmetallic Mineral Processing Plants
NSPS (Part 60), IIII: Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
MACT (Part 63), A: General Provisions
MACT (Part 63), ZZZZ: National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

Project Proposal

New I-80 Aggregate Mining Facility

Project Description

The Granite Construction Company (GCC) has requested to install and operate an aggregate mining, crushing, and screening facility. This new facility will consist of one (1) feeder, two (2) crushers, three (3) diesel-fired generators, one (1) triple-deck screen, and eight (8) conveyors.

EMISSION IMPACT ANALYSIS

The PM₁₀ emissions from Granite Construction Company's new I-80 South Quarry exceed the respective modeling threshold established in R307-410-4. Therefore, the PM₁₀ emissions were modeled. This resulted in operating conditions being added to this permit limiting the times at which the source can operate various parts of the facility. These conditions are listed in this permit as II.B.1.c and II.B.1.d. All other criteria pollutants were below their respective modeling thresholds listed in R307-410-4. All hazardous air pollutants are below their respective modeling thresholds listed in R307-410-5.

Air Pollutant: PM₁₀

Period: 24-Hour

Prediction: 76.70 ug/m³

Class II Significant Impact Level: 5 ug/m³

Background: 63.6 ug/m3

Nearby Sources: 0.6 ug/m3

Total: 140.9 ug/m3

NAAQS: 150 ug/m3

Percent: 93.9% NAAQS

[Last updated March 23, 2023]

SUMMARY OF EMISSIONS

The emissions listed below are an estimate of the total potential emissions from the source. Some rounding of emissions is possible.

Criteria Pollutant	Change (TPY)	Total (TPY)
CO ₂ Equivalent	403103.00	403103.00
Carbon Monoxide	16.68	16.68
Nitrogen Oxides	1.73	1.73
Particulate Matter - PM ₁₀ (Fugitives)	11.40	11.40
Particulate Matter - PM _{2.5}	2.44	2.44
Sulfur Dioxide	0.03	0.03
Volatile Organic Compounds	0.78	0.78

Hazardous Air Pollutant	Change (lbs/yr)	Total (lbs/yr)
Total HAPs (CAS #THAPS)	100	100
	Change (TPY)	Total (TPY)
Total HAPs	0.05	0.05

Note: Change in emissions indicates the difference between previous AO and proposed modification.

Review of BACT for New/Modified Emission Units

1. **BACT review regarding Facility Emissions**

Granite Construction Company (GCC) has researched the best available control technology (BACT) for the emissions from its new aggregate processing plant located near I-80 in Salt Lake County. This facility will emit Particulate Matter (PM), NO_x, CO, SO₂, VOCs, and HAPs. This BACT analysis will discuss technologies and methods to control emissions from the processing of aggregate, disturbed and exposed areas, haul roads, drilling and blasting, fuel storage tanks, and the diesel-fired generator engines. [Last updated March 31, 2023]

2. **BACT review regarding PM Emissions from the Processing of Aggregate**

Fugitive particulate matter in the form of PM₁₀ and PM_{2.5} is emitted during the processing of aggregates. Processing of aggregate consists of mining, crushing, screening, conveying, and transferring material. The crushing, screening, and conveying are subject to 40 CFR 60 (NSPS) Subpart OOO. There are several options for controlling these types of emissions. These options include baghouses/fabric filters, cyclones, electrostatic precipitators (ESPs), wet scrubbers, enclosures, watering, and best management practices.

The use of baghouses/fabric filters, cyclones, ESPs, wet scrubbers, and enclosures are technically feasible. However, GCC will be moving the processing equipment around to various locations on site as different areas of the site are processed. This mobile work makes setting up an enclosure to capture PM emissions economically infeasible. The use of baghouses/fabric filters, cyclones, ESPs, and wet scrubbers all rely on an enclosure to capture the PM emissions so that the emissions can be routed to them. Because the source operates this equipment outside and has to routinely move the equipment around the site, the use of constantly constructing and deconstructing a full enclosure is not economically feasible. Because enclosures are infeasible, all of these options are infeasible as well. The use of watering and best management practices is feasible. Watering is between 50-90% effective at controlling PM emissions from the processing of aggregate. Best management practices consist of minimizing drop heights and regular inspection and maintenance.

The use of watering and best management practices is economically feasible.

The Selected BACT is as follows:

The source will operate water sprayers to apply water on all crushers, screens, and conveyor transfer points throughout the facility.

The source will operate all crushers, screens, and conveyors using best management practices.

The source will minimize conveyor drop heights where possible to ensure that opacity limits are not breached.

The use of water sprayers will be used to meet the visible emission limitations outlined in Utah's Administrative Code.

The source will not allow visible emissions from all screens and conveyor transfer points to exceed 7% opacity.

The source will not allow visible emissions from all crushers to exceed 12% opacity.

[Last updated May 1, 2023]

3. **BACT review regarding Fugitive PM Emissions from Haul Roads**

Truck and Loader traffic on haul roads creates significant PM emissions. There are several options for controlling these emissions. These options include road paving, road sweeping, chemical treatment, watering, and silt content reduction.

The use of road paving is feasible for the entrance road to the quarry but infeasible for the interior

roads in the quarry due to the dynamic nature of the work. Road sweeping is technically feasible on paved roads but infeasible on unpaved roads. The use of chemical suppressants and watering is feasible on roads that are used by haul trucks but not on roads used exclusively by loaders. Using chemical suppressants on loader interior mine roads could contaminate the aggregate being moved around by the loaders. The use of Basic watering with silt reduction is feasible on unpaved haul roads.

The control options are listed below in order of effectiveness (1 - most effective):

Road Paving with Vacuum Sweeping and Watering (95% effective)

Chemical Suppressants and Watering (85% effective)

Basic Watering and Silt Reduction (75% effective)

Basic Watering (70% effective)

It is technically feasible to pave the entrance road to the quarry. Therefore, this road should be paved and controlled with street sweeping and watering. The most effective control for unpaved haul roads is the use of chemical suppressants, watering, and road base. Using all these controls is economically feasible and should be considered BACT.

The Selected BACT is as follows:

The source will pave the entrance road to the quarry.

The source will use road sweeping and watering to minimize fugitive dust on all paved haul roads.

The source will use chemical suppressants, watering, and road base to minimize fugitive dust on all unpaved roads.

The source shall use watering and road base to minimize fugitive dust on all non-permanent roads and unpaved surfaces (ex. Roads in proximity to the mining face).

The source will not allow visible emissions from haul roads to exceed 20% opacity on-site and 10% at the property boundary.

[Last updated April 28, 2023]

4. **BACT review regarding PM Emissions from Drilling and Blasting**

Drilling and Blasting have the potential to emit PM emissions. There are several options for controlling these emissions. These options include: dust collection systems, wet drilling and blasting, drilling shrouds, and best management practices.

The use of a dust collection system is up to 99% effective at controlling PM emissions from drilling. The use of wet drilling or drilling shrouds is around 88% effective at controlling PM emissions. Dust collection systems, wet drilling, and drilling shrouds are all technically feasible. The use of wet blasting and best management practices are both technically feasible. In the emissions calculations, the source set the maximum number of blasts per year to twelve (12). Therefore, this will be included as a condition in the AO.

For controlling the PM emissions from drilling the control options are listed below in order of effectiveness (1 - most effective):

Dust Collection Systems (95 - 99% effective)

Wet drilling (88% effective)

Drilling Shrouds (88% effective)

Best Management Practices

The use of a dust collection system is the most effective control option and it is both technically and economically feasible. Therefore, a dust collection system should be used to control PM emissions from drilling. The use of wet blasting is both technically and economically feasible.

Therefore, wet blasting should be used to control PM emissions from blasting.

The Selected BACT is as follows:

The source shall use a dust collection system to control all emissions from drilling.

The source will apply water to any drilling or blasting area before blasting or drilling when the area is not already naturally wet.

The source will not allow visible emissions from any fugitive dust source to exceed 20% opacity on-site and 10% at the property boundary. [Last updated April 28, 2023]

5. **BACT review regarding PM Emissions from Disturbed and Exposed Areas**

Disturbed and exposed areas generate fugitive emissions by wind and continued activity on the disturbed soil. There are two different controls for controlling these emissions: water sprayers and minimum disturbance.

Both the use of water sprayers and minimum disturbance are technologically feasible. Water sprayers are 70-95% effective at reducing PM₁₀ and PM_{2.5} emissions. Using a minimum disturbance strategy is up to 50% effective at reducing PM₁₀ and PM_{2.5} emissions. The use of water sprayers is not economically feasible because of the large volume of water that would be needed to keep the entire area wet during operation. This is also not an environmentally friendly option due to the large amount of water consumption in an already drought-stricken area.

The NSR selects the following as BACT:

The source will operate using a minimal disturbance strategy. This will include leaving natural vegetation in for as long as possible and allowing natural vegetation to grow back as soon as possible.

The source will not allow visible emissions from disturbed and exposed areas to exceed 20% opacity on-site and 10% at the property boundary.

The storage piles at this facility have the potential to emit fugitive PM₁₀/PM_{2.5}. There are several ways to control these emissions. These control options include water application and enclosures.

The use of water application via water trucks, spray bars, and water cannons is technically and economically feasible. The use of enclosures (full or partial) is also technically feasible. However, the use of enclosures is not economically feasible. The cost of enclosing the acres of storage piles is not economically feasible due to the large size of the piles.

The use of water application via water trucks, spray bars, and water cannons is 75 percent effective at controlling these emissions.

The selected BACT is as follows:

The source shall use water application via water trucks, spray bars, and water cannons to control PM emissions from the storage piles. [Last updated May 1, 2023]

6. **BACT review regarding BACT Regarding Diesel-Fired Generator Engines**

GCC will install and operate three (3) diesel-fired generator engines (440 hp, 260 hp, and 175 hp). These engines will have the potential to emit NO_x, CO, PM, SO₂, and VOCs. These engines will be evaluated by pollutant below.

NO_x emissions from Diesel Generator Engines

The three (3) generator engines have the potential to emit a large amount of NO_x. There are several

options for controlling NO_x emissions. These options include Tier 4 engines, Selective Catalytic Reduction (SCR), limited hours of operation, and Exhaust Gas Recirculation (EGR).

The selected engines will be Tier 4 engines. These engines will also be equipped with EGR systems and be limited to 2,200 hours of operation per year (each). The only further control that could be used to further limit NO_x emissions is an SCR system. However, the use of SCR on the engines is infeasible because retrofitting the relatively small engines with an SCR system would create back pressure causing a power reduction. Furthermore, because the engines are already Tier 4 the cost analysis of retrofitting the engines with SCR systems will not be cost-effective.

The Selected BACT is as follows:

The source shall install diesel engines that meet the Tier 4 certification.

The source shall install Exhaust Gas Recirculation (EGR) systems on all engines.

The source will not allow the opacity of the emissions from the generator engines to exceed 20%.

PM, CO, SO₂, and VOC Emissions from Diesel Generator Engines

The diesel generator engines will also emit PM, CO, SO₂, and VOCs. Various control technologies could be used to limit these pollutants. These technologies include Tier 4 engines, diesel particulate filters (DPF), ultra-low sulfur diesel, a diesel oxidation catalyst, and exhaust gas recirculation (EGR).

The engines being installed are Tier 4 engines with EGR systems. Each engine will also have a limited run time of 2,200 hours per year. The use of diesel particulate filters and a diesel oxidation catalyst are both technically infeasible options due to the back pressure and reduced power they would have on the relatively small engines. The use of ultra-low sulfur diesel is feasible and required under MACT Subpart ZZZZ.

The Selected BACT is as Follows:

The source shall only use ultra-low sulfur diesel (<15 ppm) in all generator engines.

The source shall install diesel engines that meet the Tier 4 certification.

The source shall install Exhaust Gas Recirculation (EGR) systems on all engines.

The source will not allow the opacity of the emissions from the generator engines to exceed 20%.

The source shall operate the diesel-fired generator engines according to the manufactures operational and maintenance guidelines.

[Last updated April 28, 2023]

7. **BACT review regarding VOC and HAP Emissions from Storage Tanks**

GCC will have three 250-gallon diesel storage tanks onsite. These tanks will throughput a maximum of 10,000 gallons of diesel per year. These tanks have the potential to emit a very small amount of VOCs and HAPs (1.5 lbs per year). Due to the very small size of these tanks, the only control options available are the use of submerged loading and best management practices. Best management practices consist of minimizing working and breathing losses.

The Selected BACT is as follows:

The source will only fill the diesel storage tanks using submerged loading.

The source will operate the diesel storage tanks in a way to minimize working and breathing losses from the tanks.

[Last updated April 28, 2023]

SECTION I: GENERAL PROVISIONS

The intent is to issue an air quality AO authorizing the project with the following recommended conditions and that failure to comply with any of the conditions may constitute a violation of the AO. (New or Modified conditions are indicated as “New” in the Outline Label):

I.1	All definitions, terms, abbreviations, and references used in this AO conform to those used in the UAC R307 and 40 CFR. Unless noted otherwise, references cited in these AO conditions refer to those rules. [R307-101]
I.2	The limits set forth in this AO shall not be exceeded without prior approval. [R307-401]
I.3	Modifications to the equipment or processes approved by this AO that could affect the emissions covered by this AO must be reviewed and approved. [R307-401-1]
I.4	All records referenced in this AO or in other applicable rules, which are required to be kept by the owner/operator, shall be made available to the Director or Director's representative upon request, and the records shall include the two-year period prior to the date of the request. Unless otherwise specified in this AO or in other applicable state and federal rules, records shall be kept for a minimum of two (2) years. [R307-401-8]
I.5	At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any equipment approved under this AO, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Director which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. All maintenance performed on equipment authorized by this AO shall be recorded. [R307-401-4]
I.6	The owner/operator shall comply with UAC R307-107. General Requirements: Breakdowns. [R307-107]
I.7	The owner/operator shall comply with UAC R307-150 Series. Emission Inventories. [R307-150]
I.8	The owner/operator shall submit documentation of the status of construction or modification to the Director within 18 months from the date of this AO. This AO may become invalid if construction is not commenced within 18 months from the date of this AO or if construction is discontinued for 18 months or more. To ensure proper credit when notifying the Director, send the documentation to the Director, attn.: NSR Section. [R307-401-18]

SECTION II: PERMITTED EQUIPMENT

The intent is to issue an air quality AO authorizing the project with the following recommended conditions and that failure to comply with any of the conditions may constitute a violation of the AO. (New or Modified conditions are indicated as “New” in the Outline Label):

II.A THE APPROVED EQUIPMENT

II.A.1 NEW	Aggregate Mining Facility
II.A.2 NEW	One (1) Feeder 40 CFR 60 (NSPS) Applicability: Subpart 000
II.A.3 NEW	(1) Primary Crusher 40 CFR 60 (NSPS) Applicability: Subpart 000
II.A.4 NEW	One (1) Secondary Crusher 40 CFR 60 (NSPS) Applicability: Subpart 000
II.A.5 NEW	One (1) Triple Deck Screen 40 CFR 60 (NSPS) Applicability: Subpart 000
II.A.6 NEW	Various Conveyors and Stackers 40 CFR 60 (NSPS) Applicability: Subpart 000
II.A.7 NEW	One (1) Diesel-Fired Generator engine Power: 440 hp (329 kW) 40 CFR 60 (NSPS) Applicability: Subpart IIII 40 CFR 63 (MACT) Applicability: Subpart ZZZZ
II.A.8 NEW	One (1) Diesel-Fired Generator Engine Power: 260 hp (194 kW) 40 CFR 60 (NSPS) Applicability: Subpart IIII 40 CFR 63 (MACT) Applicability: Subpart ZZZZ
II.A.9 NEW	One (1) Diesel-Fired Generator Engine Power: 175 hp (131 kW) 40 CFR 60 (NSPS) Applicability: Subpart IIII 40 CFR 63 (MACT) Applicability: Subpart ZZZZ
II.A.10 NEW	Three (3) Diesel Storage Tanks Capacity: 250 Gallons each
II.A.11 NEW	One (1) Dust Collection System

SECTION II: SPECIAL PROVISIONS

The intent is to issue an air quality AO authorizing the project with the following recommended conditions and that failure to comply with any of the conditions may constitute a violation of the AO. (New or Modified conditions are indicated as “New” in the Outline Label):

II.B REQUIREMENTS AND LIMITATIONS

II.B.1.a NEW	Unless otherwise specified in this AO, the owner/operator shall not allow visible emissions from any source on site to exceed 20% opacity. [R307-305-3]
II.B.1.a.1 NEW	Unless otherwise specified in this AO, opacity observations of emissions from stationary sources shall be conducted according to 40 CFR 60, Appendix A, Method 9. [R307-305-3]
II.B.1.b NEW	The owner/operator shall not produce more than 1,100,000 tons of aggregate per rolling 12-month period with no more than 1,000,000 tons of aggregate being processed in the aggregate equipment. [R307-401-8]
II.B.1.b.1 NEW	The owner/operator shall: <ul style="list-style-type: none"> A. Determine production and bank run by belt scale records or scale house records B. Record production and bank run on a daily basis C. Use this data to calculate a new rolling 12-month total by the 20th day of each month using data from the previous 12 months D. Keep these records for all periods the plant is in operation. [R307-401-8]
II.B.1.c NEW	The owner/operator shall not operate the crushers, screens, conveyors, feeder, and generator engines at the I-80 South Quarry for more than 12 hours per day from January 1st through the last of February. [R307-401-8]
II.B.1.c.1 NEW	The owner/operator shall: <ul style="list-style-type: none"> A. Determine the hours of operation for the above-listed equipment using hours of operation records/logs B. Record hours of operation on a daily basis C. Keep the hours of operation records onsite for all periods the plant is in operation. [R307-401-8]
II.B.1.d NEW	The owner/operator shall not conduct drilling or blasting operations at the I-80 South Quarry before 9:00 am or after 2:00 pm. [R307-401-8]

II.B.1.d.1 NEW	The owner/operator shall: A. Determine the hours drilling and blasting occur by keeping a records log B. Record the time drilling and/or blasting start and end on a daily basis C. Keep the hourly records onsite for all periods the facility is in operation. [R307-401-8]
II.B.1.e NEW	The owner/operator shall not operate more than One (1) bulldozer onsite. [R307-401-8]
II.B.1.f NEW	The owner/operator shall not operate the bulldozer on site for more than 2,903 hours per rolling 12-month period. [R307-401-8]
II.B.1.f.1 NEW	The owner/operator shall: A. Determine hours of operation by keeping an operational hours log B. Record hours of operation on a daily basis C. Use the hours of operation data to calculate a new rolling 12-month total by the 20th day of each month using data from the previous 12 months D. Keep the production records for all periods the plant is in operation. [R307-401-8]
II.B.1.g NEW	The owner/operator shall only fill the diesel storage tanks using submerged filling. [R307-401-8]
II.B.2 NEW	Aggregate Processing Equipment Requirements
II.B.2.a NEW	The owner/operator shall install water sprays on each crusher, screen, conveyor transfer point, and conveyor drop point on site to control emissions. Water sprays shall operate as necessary to prevent visible emissions from exceeding the opacity limits listed in this AO. [R307-401-8]
II.B.2.b NEW	The owner/operator shall perform monthly periodic inspections to check that water is flowing to water sprays associated with each crusher, screen, and conveyor. If the owner/operator finds that water is not flowing properly during an inspection of the water sprays, the owner/operator shall initiate corrective action within 24 hours and complete corrective action as expediently as practical. [R307-401-8]
II.B.2.b.1 NEW	Records of the water spray inspections shall be maintained in a logbook for all periods when the plant is in operation. The records shall include the following items: A. Date the inspections were made B. Any corrective actions taken C. Control mechanism used if sprays are not operating. [R307-401-8]

II.B.2.c NEW	The owner/operator shall not exceed the following opacity limits for the indicated emission units. A. Crushers - 12% Opacity B. Screens - 7% Opacity C. Conveyor Transfer Points - 7% Opacity D. Conveyor Drop Points - 20% Opacity. [R307-312-4, R307-401-8]
II.B.3 NEW	All NSPS Subpart OOO Equipment on Site Shall be Subject to the Following:
II.B.3.a NEW	The owner/operator shall conduct an initial performance test for all crushers, screens, and conveyor transfer points. Performance tests shall meet the limitations specified in Table 3 to Subpart OOO. Records of initial performance tests shall be kept and maintained on-site for the life of the equipment. [40 CFR 60 Subpart OOO]
II.B.3.b NEW	Initial performance tests for fugitive emissions limits shall be conducted according to 40 CFR 60.675(c). The owner or operator may use methods and procedures specified in 40 CFR 60.675(e) as alternatives to the reference methods and procedures specified in 40 CFR 60.675(c). [40 CFR 60 Subpart OOO]
II.B.3.c NEW	The owner/operator shall submit written reports to the Director of the results of all performance tests conducted to demonstrate compliance with the standards set forth in 40 CFR 60.672. [40 CFR 60 Subpart OOO]
II.B.4 NEW	Paved Haul Road Requirements
II.B.4.a NEW	The owner/operator shall pave the entrance road to the quarry with concrete or asphalt. The total length of all paved haul roads on-site shall not be less than 0.46 miles combined. [R307-401-8]
II.B.4.a.1 NEW	The owner/operator shall: A. Record the length of all paved haul roads using satellite imagery or measurement equipment, or other methods acceptable to the Director B. Keep a record of the total paved haul road length on site at all times the facility is in operation. [R307-401-8]
II.B.4.b NEW	The owner/operator shall vacuum sweep and use water to flush all paved haul roads on-site to maintain the opacity limits listed in the AO. If the temperature is below freezing, the owner/operator shall continue to vacuum sweep the road but may stop flushing the paved haul roads with water. If the haul roads are covered in snow and ice, the owner/operator may stop vacuum sweeping and flushing the paved haul roads. [R307-401-8]

II.B.4.b.1 NEW	Records of vacuum sweeping and water application shall be kept for all periods when the plant is in operation. The records shall include the following items: A. Date and time treatments were made B. Number of treatments made and quantity of water applied C. Rainfall amount received, if any D. Records of temperature, if the temperature is below freezing E. Records shall note if the paved haul roads are covered with snow or ice. [R307-401-8]
II.B.5 NEW	Unpaved Roads and Surfaces
II.B.5.a NEW	The owner/operator shall cover all unpaved haul roads with road base material to reduce fugitive dust emissions from unpaved haul roads. [R307-401-8]
II.B.5.b NEW	The owner/operator shall use a chemical suppressant, water application, or other control options contained in R307-309 to minimize emissions from fugitive dust and fugitive emissions sources, including haul roads, storage piles, and unpaved areas. Controls shall be applied as needed to ensure the opacity limits in this AO are not exceeded. [R307-401-8]
II.B.5.b.1 NEW	Records of water and chemical treatment shall be kept for all periods when the plant is in operation. The records shall include the following items: A. Date of treatment B. Number of treatments made, dilution ratio, and quantity C. Rainfall received, if any, and approximate amount D. Time of day treatments were made E. Records of temperature if the temperature is below freezing. [R307-401-8]
II.B.6 NEW	Fugitive Dust Source Requirements
II.B.6.a NEW	The owner/operator shall not conduct more than 12 blasts per rolling 12-month period. [R307-401-8]
II.B.6.a.1 NEW	The owner/operator shall: A. Record the time and date of each blast on an operations log B. Use the blast data to calculate a new rolling 12-month total by the 20th day of each month using the blasting data from the previous 12-months. C. Keep blasting records onsite at all times the facility is in operation. [R307-401-8]

II.B.6.b NEW	The owner/operator shall not allow visible emissions from haul roads and fugitive dust sources on-site to exceed 20% opacity on site and 10% opacity at the property boundary. [R307-401-8]
II.B.6.b.1 NEW	Opacity observations of fugitive dust from intermittent sources shall be conducted according to 40 CFR 60, Appendix A, Method 9; however, the requirement for observations to be made at 15-second intervals over a six-minute period shall not apply. The number of observations and the time period shall be determined by the length of the intermittent source. For fugitive dust generated by mobile sources, visible emissions shall be measured at the densest point of the plume but at a point not less than one-half vehicle length behind the vehicle and not less than one-half the height of the vehicle. [R307-401-8]
II.B.6.c NEW	The owner/operator shall control particulate emissions from storage piles using water trucks and/or water cannons. The water trucks and/or water cannons shall operate as required to ensure the opacity limits in this AO are not exceeded. [R307-401-8]
II.B.6.c.1 NEW	Records of water application to the storage piles kept for all periods when the plant is in operation. The records shall include the following items: A. The date, time, and location of applications B. The volume of water applied. [R307-401-8]
II.B.6.d NEW	The owner/operator shall install and operate a dust collection system on all drills to control emissions from drilling. [R307-401-8]
II.B.6.d.1 NEW	The owner/operator shall keep records of dust-control systems installed on all drills on-site at all times the facility is in operation. [R307-401-8]
II.B.6.e NEW	The owner/operator shall apply water to any drilling or blasting area before blasting or drilling when the area is not already naturally wet. [R307-401-8]
II.B.6.e.1 NEW	Records of water application shall be kept for all periods that the plant is in operation. The records should include the following: A. Date and time treatments were made B. Number of treatments made and quantity of water applied C. Rainfall amount received, if any. [R307-401-8]
II.B.6.f NEW	Within 30 days of the date of this AO, the owner/operator shall submit a FDCP in electronic or written format. An electronic FDCP can be completed through the Utah DEQ Fugitive Dust Plan Permit Application Website. If a written FDCP is completed, it shall be submitted to the Director, attention: Compliance Branch, for approval. The owner/operator shall comply with the FDCP for control of all fugitive dust sources associated with the I-80 South Quarry. [R307-309-6]
II.B.6.g NEW	The owner/operator shall not allow the disturbed and exposed area to exceed 10 acres in size. [R307-401-8]

II.B.6.g.1 NEW	The owner/operator shall measure the size of the disturbed and exposed area using aerial photographs, land surveys, on-site measurements, or other methods acceptable to the Director at least once per calendar year. [R307-401-8]
II.B.6.h NEW	The owner/operator shall not allow the total storage pile area to exceed 1.5 acres in size. [R307-401-8]
II.B.6.h.1 NEW	The owner/operator shall measure the total storage pile area using aerial photographs, land surveys, on-site measurements, or other methods acceptable to the Director at least once per calendar year. [R307-401-8]
II.B.7 NEW	Diesel Engine Requirements
II.B.7.a NEW	The owner/operator shall not operate any engine on-site for more than 2,200 hours per rolling 12-month period. [R307-401-8]
II.B.7.a.1 NEW	The owner/operator shall: <ul style="list-style-type: none"> A. Determine hours of operation by supervisor monitoring and maintaining an operations log B. Records hours of operation each day C. Use the hours of operation to calculate a new rolling 12-month total by the 20th day of each month using data from the previous 12 months D. Keep hours of operation records for all periods the plant is in operation. [R307-401-8]
II.B.7.b NEW	The owner/operator shall install diesel-fired generator engines that are certified to meet a NO _x emission rate of 0.30 g/hp-hr or less. [R307-401-8]
II.B.7.b.1 NEW	To demonstrate compliance with the emission rate, the owner/operator shall keep a record of the manufacturer's certification of the emission rate. The record shall be kept for the life of the equipment. [R307-401-8]
II.B.7.c NEW	The owner/operator shall not allow visible emissions from the stationary diesel generator engine on-site to exceed 20% opacity. [R307-401-8]
II.B.7.d NEW	The owner/operator shall only combust diesel fuel that meets the definition of ultra-low sulfur diesel (ULSD), which has a sulfur content of 15 ppm or less. [R307-401-8]
II.B.7.d.1 NEW	To demonstrate compliance with the ULSD fuel requirement, the owner/operator shall maintain records of diesel fuel purchase invoices or obtain certification of sulfur content from the diesel fuel supplier. The diesel fuel purchase invoices shall indicate that the diesel fuel meets the ULSD requirements. [R307-401-8]
II.B.7.e NEW	The owner/operator shall operate the diesel-fired generator engines according to the manufacturer's operational and maintenance guidelines. [R307-401-8]

PERMIT HISTORY

When issued, the approval order shall supersede (if a modification) or will be based on the following documents:

Incorporates	NOI dated September 7, 2022
Incorporates	Additional Information dated September 13, 2022
Incorporates	Additional Information dated September 29, 2022
Incorporates	Additional Information dated October 17, 2022
Incorporates	Additional Information dated November 10, 2022
Incorporates	Additional Information dated November 14, 2022
Incorporates	Additional Information dated December 8, 2022
Incorporates	Additional Information dated January 24, 2023
Incorporates	Additional Information dated February 2, 2023
Incorporates	Additional Information dated February 28, 2023

REVIEWER COMMENTS

1. **Comment regarding Emissions Estimates:**

There are various sources of emissions at this facility including emissions from crushing, screening, dozing, loading, drilling, blasting, disturbed land, fugitive road, engines, and tanks. The basis for these emission calculations is briefly listed below.

The emissions from crushing, screening and material handling were calculated using the emissions factors per "EPA Potential to Emit Calculator for Stone, Quarrying, Crushing, and Screening Plants" (November 2013) and from AP-42 11.19.2.

The emissions from the operation of bulldozers was calculated using emissions factors from AP-42 Section 1.9 (October 1998) Tables 11.9-1 and 11.9-3.

The drop emissions from loading aggregate onto crushers and haul trucks was calculated with uncontrolled emissions factors using the "drop equation" contained in AP-42 Section 13.2.4 (November 2006).

The emissions from the wind erosion of stockpiles was calculated using the stockpile wind erosion factor for active storage piles from AP-42 4th edition Table 8-19.1.1.

The emissions from drilling and blasting were calculated using emissions factors from AP-42 11.9.

The emissions from disturbed ground were calculated using emissions factors for "Wind Erosion of Exposed Areas" from AP-42 Table 11.9-4 and scaling factors based on bulldozing overburden from Table 11.9-1.

The emissions from paved and unpaved haul roads from the "UDAQ guidelines: Emissions Factors for Paved and Unpaved Haul Roads" (January 2015) and from Ap-42 Section 13.2.2 (November 2006).

The emissions from the diesel generator engines were calculated using based on manufacturer performance data sheets and from 40 CR 98 Subpart C for distillate fuel oil No.2 Table C-1.

The emissions from storing No.2 fuel oil for the generator were calculated using AP-42 Section 7.1. [Last updated April 28, 2023]

2. **Comment regarding MACT and NSPS Applicability:**

This source is subject to 40 CFR 63 (MACT) Subpart ZZZZ and 40 CFR 60 (NSPS) Subparts OOO and IIII.

40 CFR 63 Subpart ZZZZ applies to "hazardous air pollutants (HAP) emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions". Because this source is an area source and has a RICE that produces HAPs, this source is subject to Subpart ZZZZ.

40 CFR 60 Subpart OOO applies to "the following affected facilities in fixed or portable nonmetallic mineral processing plants: each crusher, grinding mill, screening operation, bucket elevator, belt conveyor, bagging operation, storage bin, enclosed truck or railcar loading station." Because this source is a mineral processing plant with crushers and screening operations, Subpart OOO applies to this source.

40 CFR 60 Subpart IIII applies to owners and operators of a stationary compression-ignition internal combustion engine that was manufactured after April 1, 2006. Because this source has engines that fit these criteria, Subpart IIII applies to this source. [Last updated April 18, 2023]

3. **Comment regarding Title V Applicability:**

Title V of the 1990 Clean Air Act (Title V) applies to the following:

1. Any major source
2. Any source subject to a standard, limitation, or other requirement under Section 111 of the Act, Standards of Performance for New Stationary Sources;
3. Any source subject to a standard or other requirement under Section 112 of the Act, Hazardous Air Pollutants.
4. Any Title IV affected source.

This source is not a major source or a Title IV affected source. The source is subject to 40 CFR 60 (NSPS) Subparts A, IIII, and OOO under Section 111 and 40 CFR 63 (MACT) Subparts A and ZZZZ under Section 112. NSPS Subpart OOO includes opacity limitations applicable to equipment at this source. MACT Subpart ZZZZ and NSPS Subpart IIII exempt sources from the obligation to obtain a permit under 40 CFR part 70 (Title V permit) if the source is not otherwise required by law to obtain a permit. Therefore, Title V will apply and the source will be subject to Title V for area sources as specified in R307-415-5a. [Last updated April 28, 2023]

ACRONYMS

The following lists commonly used acronyms and associated translations as they apply to this document:

40 CFR	Title 40 of the Code of Federal Regulations
AO	Approval Order
BACT	Best Available Control Technology
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CDS	Classification Data System (used by EPA to classify sources by size/type)
CEM	Continuous emissions monitor
CEMS	Continuous emissions monitoring system
CFR	Code of Federal Regulations
CMS	Continuous monitoring system
CO	Carbon monoxide
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent - 40 CFR Part 98, Subpart A, Table A-1
COM	Continuous opacity monitor
DAQ/UDAQ	Division of Air Quality
DAQE	This is a document tracking code for internal UDAQ use
EPA	Environmental Protection Agency
FDCP	Fugitive dust control plan
GHG	Greenhouse Gas(es) - 40 CFR 52.21 (b)(49)(i)
GWP	Global Warming Potential - 40 CFR Part 86.1818-12(a)
HAP or HAPs	Hazardous air pollutant(s)
ITA	Intent to Approve
LB/HR	Pounds per hour
LB/YR	Pounds per year
MACT	Maximum Achievable Control Technology
MMBTU	Million British Thermal Units
NAA	Nonattainment Area
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NOI	Notice of Intent
NO _x	Oxides of nitrogen
NSPS	New Source Performance Standard
NSR	New Source Review
PM ₁₀	Particulate matter less than 10 microns in size
PM _{2.5}	Particulate matter less than 2.5 microns in size
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
R307	Rules Series 307
R307-401	Rules Series 307 - Section 401
SO ₂	Sulfur dioxide
Title IV	Title IV of the Clean Air Act
Title V	Title V of the Clean Air Act
TPY	Tons per year
UAC	Utah Administrative Code
VOC	Volatile organic compounds

Phase 1

Source	Total Emissions lb/hr		
	PM10 (non-diesel)	PM10 (diesel)	PM10 (total)
Primary Crushing	0.062		
Secondary Crushing	0.062		
Screening	0.084		
Conveyor Transfer	0.005		
Conveyor Transfer	0.005		
Conveyor Transfer	0.005		
Conveyor Transfer	0.005		0.01
Material Handling 1 (Loader to Jaw Crusher 1)	0.171		
Material Handling 2 (Loader to Haul Truck)	0.156		
Stockpile Wind Erosion	0.263		
Aggregates Processing Plant Engine 1		0.009	0.009
Aggregates Processing Plant Engine 2		0.006	0.006
Aggregates Processing Plant Engine 3		0.014	0.014
Dozer	1.133		
Blasting/Drilling	0.364		0.4
Unpaved Road	0.825		0.8
Paved Road Aggregates Export	0.309		0.31
Disturbed Ground	0.651		0.65

Table B-7. Annual Potential Emissions Increase Summary

Process	Annual Emission Rates (tpy)							
	PM ₁₀ (fugitive)	PM _{2.5}	NO _x	CO	SO ₂	VOC	Total HAP	CO ₂ e
Crushing and Screening Operations	1.00	0.44	--	--	--	--	--	--
Bulldozing & Loading Operations	4.28	1.01	--	--	--	--	--	--
Drillingd & Blasting	0.05	3.02E-03	0.11	2.49	2.21E-04	--	--	--
Disturbed Ground	2.85	0.40	--	--	--	--	--	--
Roads	2.31	0.49	--	--	--	--	--	--
Engines	0.08	0.04	1.62	14.19	0.03	0.77	5.32E-02	403,103
Tanks ¹	--	--	--	--	--	5.70E-03	--	--
Project Total	10.58	2.39	1.73	16.68	0.03	0.78	0.05	403,103
Modeling Limit ²	5	--	40	100	40	--	10/25	--
Modeling Required?	Yes	No	No	No	No	No	No	No
Major Source Thresholds ^{3,4,5}	250	70	70	250	70	70	10/25	100,000
Exceeding Major Source Thresholds?	No	No	No	No	No	No	No	No

1. HAPs from the storage tank were considered, but are below the reasonable reporting threshold suggested by UDAQ (i.e., <1.00E-03 tpy), and are therefore considered negligible.

2. Modeling Limit is stated in UDAQ Emissions Impact Assessment Guidelines under Table 1: Total Controlled Emission Rates for New Sources.

3. Major source thresholds defined by 40 CFR section 51.165(a)(1)(iv)(A).

4. Total HAP Threshold is stated in 40 CFR Section 63.2 under definition of a Major Source.

5. 100,000 tons CO₂e threshold is for "anyways" sources that are already major source for another pollutant in this table.

Table B-1. Operating Parameters

Description	Value	Unit
Potential Daily Operating Hours	24	(hr/day)
Annual Operating Days for Max Day Calculation*	365	(day/yr)
Maximum Hourly Throughput	225	(tph)
Haulage Hourly Throughput	225	(tph)
Project Throughput	1,000,000	(tpy)

*Represents number of days over which annual emissions will be divided in determination of the max day

Table B-2. Equipment List

Type of Equipment / Activities	Number of Units or Drop Points	Throughput Percent	Maximum Hourly Limit	Potential Annual Throughput	Potential Total Annual Throughput
		(%)	(tph)	(tpy/unit)	(tpy)
Primary Crusher (Jaw Crusher)	1	100.00%	225	1,000,000	1,000,000
Secondary Crusher (Cone Crusher)	1	100.00%	225	1,000,000	1,000,000
Tertiary Crusher (VSI)	1	100.00%	225	1,000,000	1,000,000
Loader to Jaw Crusher ¹	1	100.00%	225	1,100,000	1,100,000
Jaw Crusher to 3 Deck Screen Drop	1	100.00%	225	1,000,000	1,000,000
3 Deck Screen	1	100.00%	225	1,000,000	1,000,000
3 Deck Screen to Cone Crusher Drop	1	100.00%	225	1,000,000	1,000,000
3 Deck Screen to Conveyor Drop	1	100.00%	225	1,000,000	1,000,000
Cone Crusher to 3 Deck Screen Recycle Drop	1	100.00%	225	1,000,000	1,000,000
Conveyer to Pile Drop	1	100.00%	225	1,000,000	1,000,000
Loader to Haul Trucks (Product)	1	100.00%	225	1,000,000	1,000,000
Drilling Operations	1	100.00%	45000	540,000	540,000

¹ It is assumed that 10% of the aggregate loaded to the jaw crusher is lost through, mining, grizzly and/or particulate emissions.

Table B-3. Supporting Equipment

Type of Equipment	Quantity	Maximum Annual Operating Hours	Avg. Daily Operating Hours
		(hr/yr/unit)	(hr/day)
Bulldozers	1	3,000	8.22

Table B-4. Roads

Parameter ¹	Quantity	Unit
Unpaved Road through Stockpile Area	0.22	(miles)
Paved Road to Property Boundary	0.33	(miles)
Empty Aggregate Haul Trucks	20.00	(tons)
Loaded Aggregate Haul Trucks	65.00	(tons)

1. All haul and tram route distances are given as roundtrip distances.

Table B-5. Tanks

Type of Equipment	Configuration ¹	Capacity (gal)	Contents	Annual Throughput	Units
Fuel Storage Tank	HFR	10,000	No. 2 Fuel Oil	600,000	(gal/yr)

1. HFR = Horizontal Fixed Roof

**Density (lb/gal) of No. 2 fuel oil, per AP-42 Section 1.3: 7.05

Table B-6. Drilling and Blasting

Parameter	Blasting	Units	Drilling	Units
Daily Maximum Frequency	1	(blast/day)	48	(holes/blast)
Annual Frequency	12	(blasts/yr)	480	(holes/yr)
Annual Area	94,675	(ft ² /yr)	--	--
Daily Area	7,890	(ft ² /day)	--	--
ANFO Usage	20,455	(lbs/blast)	--	--
Annual ANFO Usage	123	(tpy)	--	--
ANFO Heat Content	912	(cal/g)	--	--
Roads ¹	Silt	4.80	%	

1. Per UDAQ Guidance in "Emission Factors for Paved and Unpaved Haul Roads", January 12, 2015.

Table B-8. Emission Factors for Crushing, Screening, & Material Handling (lb/ton)

Source ^{1,2}		PM ₁₀	PM _{2.5}
Primary Crushing	Controlled	5.40E-04	1.58E-04
Secondary Crushing	Controlled	5.40E-04	1.58E-04
Screening	Controlled	7.40E-04	5.00E-04
Conveyor Transfer	Controlled	4.60E-05	1.40E-05

Table B-8 Notes:

1. Emission factors per EPA Potential to Emit Calculator for Stone Quarrying, Crushing, and Screening Plants last updated November 2013 and AP-42 11.19.2, "controlled".
2. PM_{2.5} emission factors assumed to be 29.2% of PM₁₀ based on SCAQMD's Updated CEIDARS

Table B-9. Annual Aggregate Processed

Equipment / Activity	Source Description	Number of Units or Drop Points	Through put Percent (%)	Percent Recycled (%)	Potential Annual Throughput (tpy)	Control ¹	Emission Factor (lb/ton)		Daily PTE Emissions (lb/day)		Annual PTE Emissions (tpy) ¹	
							PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}
Primary Crushing	Primary Crusher (Jaw Crusher)	1	100%		1,000,000	ws	0.00054	0.00016	1.479	0.432	0.270	0.079
Secondary Crushing	Secondary Crusher (Cone Crusher)	1	100%	0%	1,000,000	ws	0.00054	0.00016	1.479	0.432	0.270	0.079
Conveyor Transfer	Jaw Crusher to 3 Deck Screen Drop	1	100%	0%	1,000,000	ws	0.00005	0.00001	0.126	0.038	0.023	0.007
Screening	3 Deck Screen	1	100%	0%	1,000,000	ws	0.00074	0.00050	2.027	1.370	0.370	0.250
Conveyor Transfer	3 Deck Screen to Cone Crusher Drop	1	100%	0%	1,000,000	ws	0.00005	0.00001	0.126	0.038	0.023	0.007
Conveyor Transfer	3 Deck Screen to Conveyor Drop	1	100%	0%	1,000,000	ws	0.00005	0.00001	0.126	0.038	0.023	0.007
Conveyor Transfer	Cone Crusher to 3 Deck Screen Recycle Drop	1	100%	0%	1,000,000	ws	0.00005	0.00001	0.126	0.038	0.023	0.007
Total Emissions:									5.49	2.39	1.00	0.44

¹ Water spray (ws) application will be used to control PM emissions on strategic transfer points throughout the crushing and screening operations.

Table B-10. Dozing and Loading Emissions

Source	Annual Emissions (tpy)	
	PM ₁₀	PM _{2.5}
Bulldozing Operations	1.70	0.97
Loading Operations	0.68	0.02
Total Loading and Drop Emissions	2.38	0.99

Table B-11. Dozing Emissions

Vehicle Type	Annual Operating (hr/yr)	Quantity	Emission Factor ¹ (lb/hr)		Control Efficiency (%)	Daily Emissions (lb/day)		Annual Emissions (tpy)	
			PM ₁₀	PM _{2.5}		PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}
Bulldozers	3,000	1	1.13	0.65	0%	9.31	5.33	1.70	0.97
Total Dozing Emissions:						9.31	5.33	1.70	0.97

1. Emissions for the bulldozer were characterized using AP-42, Section 11.9 (October 1998), Table 11.9-1 and Table 11.9-3

where:

$$TSP = \frac{5.7(s)^{1.2}}{(M)^{1.3}}$$

Sil content s = 4.8 Percent (%) per AP-42 11.9.

Moisture content M = 4 Material moisture content (%) per AP-42 11.9.

$$PM_{15} = \frac{1.0(s)^{1.5}}{(M)^{1.4}}$$

Aerodynamic fa TSP
0.74 PM₁₀ 0.36 PM_{2.5} 0.11

Scaling factors use Mojave Desert AQMD

Table B-12. Aggregate Handling and Storage Piles (stockpile erosion, loading and load out of aggregate)

Emission Activity	Potential Total Annual Throughput (tpy)	Uncontrolled Emission Factor ¹		Control Efficiency (%)	Daily Emissions (lb/day)		Annual Emissions (tpy)	
		PM ₁₀	PM _{2.5}		PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}
Loader to Jaw Crusher 1	1,100,000	1.36E-03	3.98E-05	0%	4.11	0.12	0.75	0.02
Loader to Haul Trucks (Product)	1,000,000	1.36E-03	3.98E-05	0%	3.73	0.11	0.68	0.02
Stockpile Wind Erosion 2	1,000,000			0%	6.30		1.15	
Total Loading Emissions					14.14	0.23	2.58	0.04

1. Uncontrolled emission factors using the "drop equation" contained in U.S. EPA AP-42, Section 13.2.4 (Aggregate Handling and Storage Piles), November 2006:

$$E = k(0.0032) \frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$

E = Emission factor
where:

k =	0.74	0.35	0.010	Particle size multiplier (dimensionless)
U =	9.00	Mean wind speed (mph) is given per UDAQ's Average Annual Wind Speed map, November 2000.		
M =	3.00	Material moisture content (%) previously recommended by UDAQ.		

2. Stockpile wind erosion emission factor from AP-42 4th Edition Table 8-19.1.1, which is 6.3lb/acre/day PM10. Equation--> Annual Stockpile Emissions (tpy) = Max. Pile Area (acre) X EF (lb/day*acre) X conversion (365 days x 1 ton / 1 year x 2,000 lb). Assumed 1 acre of stockpile area for phase 1.

Table B-13. Blasting and Drilling Area

Maximum Annual Blast Frequency (blasts/yr)	Maximum Annual Area Blasted (ft ² /yr)	Maximum Daily Blast Area (ft ² /blast)
12	94,675	7,890

Table B-14. Drilling, Blasting, and Disturbed Ground Emission Factors

Source Description	Source Activity	Throughput	Units	Emission Factor ^{1,2,3,4,5,6,7}											
				PM		PM ₁₀		PM _{2.5}		SO ₂		NO _x		CO	
				Value	Units	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
Blasting	ANFO	123	(tpy)	9.81	(lb/blast)	5.10	(lb/blast)	0.29	(lb/blast)	0.0036	(lb/ton)	1.80	(lb/ton)	40.64	(lb/ton)
Drilling	Annual # of Drill Holes	48	(holes/blast)	1.30	(lb/hole)	0.68	(lb/hole)	3.90E-02	(lb/hole)	-	(lb/ton)	-	(lb/ton)	-	(lb/ton)
Disturbed Ground	Mine Area	10	Acres	0.38	(tons/acre yr)	0.75	(lb PM10/lb PM)	1.05E-01	(lb PM2.5/lb PM)	N/A	N/A	N/A	N/A	N/A	N/A

¹Blasting PM emission factors retrieved from AP-42 11.9, Table 11.9-1. Using the equation below the horizontal area blasted (A) is assumed to be the average daily Blast Area.

A = horizontal area (ft²), with blasting depth ≤ 70 ft
 $0.000014(A)^{1.5}$

Scaling factors were applied to PM₁₅ and TSP emission factors to calculate PM₁₀ and PM_{2.5} emission factors respectively per Table 11.9-1:

PM₁₀: 0.52

PM_{2.5}: 0.03

As there is not data for the PM₁₅ emission factor equation, PM₁₅ is conservatively assumed to be equal to TSP.

²Drilling PM emission factor is retrieved from AP-42 11.9, Table 11.9-4, where the drilling PM emission factor is for overburden material for conservatism. The coal PM emission factor is lower and may be appropriate for some drilling operations.

Since no emission factors are provided for PM₁₀ and PM_{2.5} drilling operations, emission factors were calculated using the PM₁₀ and PM_{2.5} to TSP ratios for blasting overburden per AP-42 11.9, Table 11.9-1, where:

PM₁₀ = PM₁₅ * 0.52

PM_{2.5} = TSP * 0.03

³Blasting SO₂ emission factor developed using a mass balance assuming 6% fuel oil mixture with 500 ppm sulfur content, consistent with EPA non-road standards.

⁴Blasting NO_x and CO emission factors retrieved from ANFO blasting agent factor from AP-42 13.3-1.

⁵Blasting CO emission factor retrieved from ANFO blasting agent factor from AP-42 13.3-1.

⁶Blast and drilling quantities provided per design basis.

⁷Disturbed Ground Emissions Factor from "Wind Erosion of Exposed Areas" per AP-42 Table 11.9-4, with Scaling factors based on Bulldozing Overburden per Table 11.9-1

Table B-15. Drilling, Blasting, and Disturbed Ground Emissions

Source Description	Control Efficiency ¹ (%)	Max Daily Emissions (lbs/day) ^{2,3,6}						Annual Emissions (tpy) ^{5,6,7}					
		PM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	PM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO
Blasting	0%	9.81	5.10	0.29	0.04	18.41	415.64	0.06	0.03	1.77E-03	2.21E-04	0.11	2.49
Drilling	88.8%	6.99	3.63	0.21	--	--	--	0.04	0.02	1.26E-03	--	--	--
Disturbed Ground	0%	20.82	15.62	2.19	--	--	--	3.80	2.85	3.99E-01	--	--	--
Total Emissions:		37.62	24.35	2.69	0.04	18.41	415.64	3.90	2.90	4.02E-01	0.00	0.11	2.49

¹Drilling operations will be controlled through wet-drilling. NIOSH reports 86-97% control efficiency for controlling fugitive emissions via wet-drilling (per NIOSH's Dust Control Handbook for Industrial Minerals Mining and Processing, 2012). Granite contracts a drilling company that implements wet-drilling control technologies to reduce fugitive drilling emissions but used the an average control factor of 88.8%.

²Daily Blasting PM Emissions (lb/day) = Emission Factor (lbs/day) as only one blast is allowed per day.

³SO₂, NO_x, & CO Daily Blasting Emissions (lb/day) = Emission Factor (lb/ton) * Annual ANFO Throughput (tpy) / Annual Blasts (blasts/yr)

⁴Daily PM Drilling Emissions (lb/day) = Emission Factor (lb/hole) * Drill Holes/yr / Expected Working Days/Year

⁵SO₂, NO_x, & CO Annual Blasting Emissions (tpy) = Emission Factor (lbs/ton) * Annual ANFO Throughput (tpy) * 1 ton/2000 lbs

⁶Annual Blasting PM Emissions (tpy) = Emission Factor (lb/blast) * blasts/yr * 1 ton/2000 lbs

⁷Annual PM Drilling Emissions (tpy) = Emission Factor (lb/hole) * Drill Holes/yr * 1 ton/2000 lb

Table B-16. Roads Emissions - PTE Emissions

Road Source	Controlled Emissions			
	Daily Emissions (lb/day) ¹		Annual Emissions (tpy) ¹	
	PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}
Unpaved, Chemical Application (Trucks)	19.80	4.20	1.68	0.36
Paved, Watered, Vacuum Swept (Trucks)	7.42	1.57	0.63	0.13
Total	27.22	5.77	2.31	0.49

¹ Daily and annual controlled emissions are calculated by applying the controlled emission factor (per UDAQ's control efficiencies) to the vehicular miles traveled per day (paved and unpaved).

Daily Emissions (lb/day) = Miles Travelled per Day (VMT/day) * Uncontrolled Emission Factor (lb/VMT) * (1 - η)

Annual Emissions (tpy) = Miles Travelled per Day (VMT/yr) * Uncontrolled Emission Factor (lb/VMT) * (1 - η)

Table B-17. Roads Emissions - Traveling Parameters (Supporting Operations)

Road Source	Product Throughput		Mean Vehicle Weights (tons) ¹		Average Vehicle Weight	Hauls/Year	Hauls/Day	Total Travel Distance per Haul (miles/haul)		Total Vehicle Miles Traveled			
			Empty Vehicle	Loaded Vehicle				Daily (VMT/day)		Annual (VMT/yr)			
	(tpy)	(ton/hr)	(tons)	(tons)	(tons/haul)	Unpaved	Paved	Unpaved	Paved	Unpaved	Paved		
	Haul Trucks	1,100,000	225	20.00	65.00	42.5	24,445	144	0.22	0.33	31.68	47.52	5,378

¹ Vehicle weights provided by Granite Construction.

Annual Days Vehicles Operate: 365

Six trips per hour x 24 hours per day = 144 trips per day

Table B-18. Roads Emissions - Emission Factors

Road Surface	Controls ¹	Control Efficiency (%)	Vehicle Emission Factors ^{1,2} (lb/VMT)	
			PM ₁₀	PM _{2.5}
Unpaved	Granite I-80 Specific Factor	80%	0.62	0.13
Paved	Granite I-80 Specific Factor	95%	0.1562	0.0331

¹ Emission controls for vehicular traffic on paved and unpaved roads per UDAQ guidelines: Emission Factors for Paved and Unpaved Haul Roads, January 2015, in conjunction with U.S. EPA AP-42 Section 13.2.2, November 2006.

$$E = k (s/12)^a (W/3)^b$$

where

E = Size-specific emission factor (lb/VMT)
k, a, b = Constants for equation 1a

	PM	PM ₁₀	PM _{2.5}
k =	1.8	1.5	0.15
a =	0.7	0.9	0.9
b =	0.45	0.45	0.45

s = surface material silt content (%)

s = 4.8 Per UDAQ guidance given in Emission Factors for Paved and Unpaved Haul Roads, January 2015.

W_{HT} = 42.5 Mean weight of all haul trucks (tons), per UDAQ guidance given in Emission Factors for Paved and Unpaved Haul Roads, January 2015.

² PM_{2.5} emissions are 21.2% of PM₁₀ for unpaved roads (SCAQMD Updated CEIDARS Table)

Table B-19. Engine Parameters

Parameter	Jaw Crusher Generator	Screen Generator	Cone Crusher Generator
Engine Horsepower (hp)	260	175	440
Operating Hours per Day (hr/day)	24	24	24
Operating Hours per Year (hr/yr)	5631.4286	5631.4286	5631.4286
Annual Activity (hp-hr/yr)	1464171.4	985500	2477828.6
Max Hourly Fuel Use (gallon/hr)	14	9	23
Average Hourly Fuel Use (gallon/hr)	10	7	17
Max Annual Fuel Use (gallon/yr)	76220	51302	128988
Heating Value of Diesel (MMBtu/hr) ²	0.887	0.597	1.501
Fuel Type	Diesel	Diesel	Diesel
Fuel Sulfur Content (%) ³	0.0015	0.0015	0.0015

1. Per generator performance data sheets.

2. Per 40 CFR 98, Table C-1 to Subpart C for Distillate Fuel Oil No. 2

3. From EPA, "Diesel Fuel Standards and Rulemakings", <https://www.epa.gov/diesel-fuel-standards/diesel-fuel-standards-and-rulemakings>.

Assumes the following value for lb fuel/hp-hr: 0.367 per OFFROAD2011 Model

Assumes the following density for diesel in lb 7.05 per AP-42 Appendix A

Assumes the following engine load factor 0.74 per CalEEMod Appendix D Table 3.3

Table B-20. Criteria Pollutant and GHG Engine Emission Factors

Pollutant	Emission Factor	Emission Factor Units
CO ¹	5.76E-03	lb/hp-hr
NO _x ¹	6.58E-04	lb/hp-hr
PM ₁₀ ¹	3.29E-05	lb/hp-hr
PM _{2.5} ¹	1.76E-05	lb/hp-hr
VOC ¹	3.13E-04	lb/hp-hr
SO ₂ ²	1.21E-05	lb/hp-hr
CO ₂ ³	163.1	lb/MMBtu
CH ₄ ⁴	6.61E-03	lb/MMBtu
N ₂ O ⁴	1.32E-03	lb/MMBtu
CO ₂ e ⁵	1.64E+02	lb/MMBtu

1. EPA Tier 4 Final emission factors assuming NO_x = 0.4 g/kW-hr, CO = 3.5 g/Kw-hr, PM = 0.02 g/KW-hr, VOC = 0.19 g/Kw-hr

2. Per AP-42, Table 3.3-1, for Diesel Fuel 8.09E-3 x 0.0015% Sulfur

3. Per 40 CFR 98, Table C-1 to Subpart C for Distillate Fuel Oil No. 2

4. Per 40 CFR 98, Table C-2 to Subpart C for Petroleum Products CH₄ = 3.0E-3, NO₂ = 6.0E-4.

5. The CO₂ equivalent factor is the sum of the factors for CO₂, CH₄, and N₂O multiplied by their respective global warming potentials (GWPs), per 40 CFR 98,

Table B-21. Criteria Pollutant and GHG Max Potential to Emit

Pollutant	Jaw Crusher		Screen		Cone Crusher		Total	
	(lb/day)	(tpy)	(lb/day)	(tpy)	(lb/day)	(tpy)	(lb/day)	(tpy)
CO	35.93	4.22	24.19	2.84	60.81	7.13	120.93	14.19
NO _x	4.11	0.48	2.76	0.32	6.95	0.82	13.82	1.62
PM ₁₀	0.21	0.02	0.14	0.02	0.35	0.04	0.69	0.08
PM _{2.5}	0.11	0.01	0.07	0.01	0.19	0.02	0.37	0.04
VOC	1.95	0.23	1.31	0.15	3.30	0.39	6.56	0.77
SO ₂	0.08	0.01	0.05	0.01	0.13	0.02	0.25	0.03
CO ₂	1.02E+06	1.19E+05	6.85E+05	8.03E+04	1.72E+06	2.02E+05	3.42E+06	4.02E+05
CH ₄	41.27	4.84	27.78	3.26	69.84	8.19	138.89	16.29
N ₂ O	8.25	0.97	5.56	0.65	13.97	1.64	27.78	3.26
CO ₂ e	1.02E+06	1.20E+05	6.87E+05	8.06E+04	1.73E+06	2.03E+05	3.44E+06	4.03E+05

Table B-22 Engine HAPs Emissions

Pollutant	Emission Factor (lb/MMBtu)	Jaw Crusher		Screen		Cone Crusher	
		(lb/day) ²	(tpy) ³	(lb/day)	(tpy)	(lb/day)	(tpy)
Benzene	9.33E-04	1.99E-02	2.33E-03	1.34E-02	1.57E-03	3.36E-02	3.94E-03
Toluene	4.09E-04	8.71E-03	1.02E-03	5.86E-03	6.88E-04	1.47E-02	1.73E-03
Xylenes	2.85E-04	6.07E-03	7.12E-04	4.08E-03	4.79E-04	1.03E-02	1.20E-03
Propylene	2.58E-03	5.49E-02	6.44E-03	3.70E-02	4.34E-03	9.30E-02	1.09E-02
Formaldehyde	1.18E-03	2.51E-02	2.95E-03	1.69E-02	1.98E-03	4.25E-02	4.99E-03
Acetaldehyde	7.67E-04	1.63E-02	1.92E-03	1.10E-02	1.29E-03	2.76E-02	3.24E-03
Acrolein	9.25E-05	1.97E-03	2.31E-04	1.33E-03	1.56E-04	3.33E-03	3.91E-04
Naphthalene	8.48E-05	1.81E-03	2.12E-04	1.22E-03	1.43E-04	3.06E-03	3.58E-04
Max HAP (Propylene)		5.49E-02	6.44E-03	3.70E-02	4.34E-03	9.30E-02	1.09E-02
Total HAPs		1.35E-01	1.58E-02	9.07E-02	1.06E-02	2.28E-01	2.68E-02

1. Emission factors from AP-42 Section 3.3, Table 3.3-2.

2. Emission rate (lb/day) = (Fuel Consumption Rate (gal/hr) * Diesel Heating Value (MMBtu/gal) * Engine Load Factor) * Emission Factor (lb/MMBtu) * Operating

3. Emission rate (tpy) = (Fuel Consumption Rate (gal/hr) * Diesel Heating Value (MMBtu/gal) * Engine Load Factor) * Emission Factor (lb/MMBtu) * Operating

Table B-23. Storage Tanks

1	Configuration ¹	Quantity	Capacity (gal)	Contents	Annual Throughput (gal/yr)	Total VOC Emissions ² (tpy)
Fuel Storage Tank	HFR	1	10,000	No. 2 Fuel Oil	600,000	5.70E-03
Total VOC Emissions						5.70E-03

1. HFR = Horizontal Fixed Roof

VFR = Vertical Fixed Roof

2. Tank emissions calculated per AP-42 7.1 *Organic Liquid Storage Tanks*.

Source	Total Emissions lb/hr		
	PM10 (non-diesel)	PM10 (diesel)	PM10 (total)
Primary Crushing	0.062		
Secondary Crushing	0.062		
Screening	0.084		
Conveyor Transfer	0.005		
Conveyor Transfer	0.005		
Conveyor Transfer	0.005		
Conveyor Transfer	0.005		
Material Handling 1 (Loader to Jaw Crusher 1)	0.171		0.17
Material Handling 2 (Loader to Haul Truck)	0.156		
Stockpile Wind Erosion	0.394		
Aggregates Processing Plant Engine 1		0.009	0.009
Aggregates Processing Plant Engine 2		0.006	0.006
Aggregates Processing Plant Engine 3		0.014	0.014
Dozer	1.133		
Blasting/Drilling	0.364		0.4
Unpaved Road	0.825		0.8
Paved Road Aggregates Export	0.431		0.43
Disturbed Ground	0.651		0.65

Table B-7. Annual Potential Emissions Increase Summary

Process	Annual Emission Rates (tpy)							
	PM ₁₀ (fugitive)	PM _{2.5}	NO _x	CO	SO ₂	VOC	Total HAP	CO _{2e}
Crushing and Screening Operations	1.00	0.44	--	--	--	--	--	--
Bulldozing & Loading Operations	4.85	1.01	--	--	--	--	--	--
Drilling & Blasting	0.05	3.02E-03	0.11	2.49	2.21E-04	--	--	--
Disturbed Ground	2.85	0.40	--	--	--	--	--	--
Roads	2.56	0.54	--	--	--	--	--	--
Engines	0.08	0.04	1.62	14.19	0.03	0.77	5.32E-02	403,103
Tanks ¹	--	--	--	--	--	5.70E-03	--	--
Project Total	11.40	2.44	1.73	16.68	0.03	0.78	0.05	403,103
Modeling Limit ²	5	--	40	100	40	--	10/25	--
Modeling Required?	Yes	No	No	No	No	No	No	No
Major Source Thresholds ^{3,4,5}								
Major Source Thresholds ^{3,4,5}	250	70	70	250	70	70	10/25	100,000
Exceeding Major Source Thresholds?	No	No	No	No	No	No	No	No

1. HAPs from the storage tank were considered, but are below the reasonable reporting threshold suggested by UDAQ (i.e., <1.00E-03 tpy), and are therefore considered negligible.

2. Modeling Limit is stated in UDAQ Emissions Impact Assessment Guidelines under Table 1: Total Controlled Emission Rates for New Sources.

3. Major source thresholds defined by 40 CFR section 51.165(a)(1)(iv)(A).

4. Total HAP Threshold is stated in 40 CFR Section 63.2 under definition of a Major Source.

5. 100,000 tons CO_{2e} threshold is for "anyways" sources that are already major source for another pollutant in this table.

Table B-1. Operating Parameters

Description	Value	Unit
Potential Daily Operating Hours	24	(hr/day)
Annual Operating Days for Max Day Calculation*	365	(day/yr)
Maximum Hourly Throughput	225	(tph)
Haulage Hourly Throughput	225	(tph)
Project Throughput	1,000,000	(tpy)

*Represents number of days over which annual emissions will be divided in determination of the max day

Table B-2. Equipment List

Type of Equipment / Activities	Number of Units or Drop Points	Throughput Percent	Maximum Hourly Limit	Potential Annual Throughput	Potential Total Annual
		(%)	(tph)	(tpy/unit)	(tpy)
Primary Crusher (Jaw Crusher)	1	100.00%	225	1,000,000	1,000,000
Secondary Crusher (Cone Crusher)	1	100.00%	225	1,000,000	1,000,000
Tertiary Crusher (VSI)	1	100.00%	225	1,000,000	1,000,000
Loader to Jaw Crusher ¹	1	100.00%	225	1,100,000	1,100,000
Jaw Crusher to 3 Deck Screen Drop	1	100.00%	225	1,000,000	1,000,000
3 Deck Screen	1	100.00%	225	1,000,000	1,000,000
3 Deck Screen to Cone Crusher Drop	1	100.00%	225	1,000,000	1,000,000
3 Deck Screen to Conveyor Drop	1	100.00%	225	1,000,000	1,000,000
Cone Crusher to 3 Deck Screen Recycle Drop	1	100.00%	225	1,000,000	1,000,000
Conveyer to Pile Drop	1	100.00%	225	1,000,000	1,000,000
Loader to Haul Trucks (Product)	1	100.00%	225	1,000,000	1,000,000
Drilling Operations	1	100.00%	45000	540,000	540,000

¹ It is assumed that 10% of the aggregate loaded to the jaw crusher is lost through, mining, grizzly and/or particulate emissions.

Table B-3. Supporting Equipment

Type of Equipment	Quantity	Maximum Annual	Avg. Daily
		Operating Hours (hr/yr/unit)	Operating Hours (hr/day)
Bulldozers	1	3,000	8.22

Table B-4. Roads

Parameter ¹	Quantity	Unit
Unpaved Road through Stockpile Area	0.22	(miles)
Paved Road to Property Boundary	0.46	(miles)
Empty Aggregate Haul Trucks	20.00	(tons)
Loaded Aggregate Haul Trucks	65.00	(tons)

1. All haul and tram route distances are given as roundtrip distances.

Table B-5. Tanks

Type of Equipment	Configuration ¹	Capacity (gal)	Contents	Annual Throughput	Units
Fuel Storage Tank	HFR	10,000	No. 2 Fuel Oil	600,000	(gal/yr)

1. HFR = Horizontal Fixed Roof

**Density (lb/gal) of No. 2 fuel oil, per AP-42 Section 1.3: 7.05

Table B-6. Drilling and Blasting

Parameter	Blasting	Units	Drilling	Units
Daily Maximum Frequency	1	(blast/day)	48	(holes/blast)
Annual Frequency	12	(blasts/yr)	480	(holes/yr)
Annual Area	94,675	(ft ² /yr)	--	--
Daily Area	7,890	(ft ² /day)	--	--
ANFO Usage	20,455	(lbs/blast)	--	--
Annual ANFO Usage	123	(tpy)	--	--
ANFO Heat Content	912	(cal/g)	--	--
Roads ¹	Silt	4.80	%	

1. Per UDAQ Guidance in "Emission Factors for Paved and Unpaved Haul Roads", January 12, 2015.

Table B-8. Emission Factors for Crushing, Screening, & Material Handling (lb/ton)

Source ^{1,2}		PM ₁₀	PM _{2.5}
Primary Crushing	Controlled	5.40E-04	1.58E-04
Secondary Crushing	Controlled	5.40E-04	1.58E-04
Screening	Controlled	7.40E-04	5.00E-04
Conveyor Transfer	Controlled	4.60E-05	1.40E-05

Table B-8 Notes:

1. Emission factors per EPA Potential to Emit Calculator for Stone Quarrying, Crushing, and Screening Plants last updated November 2013 and AP-42 11.19.2, "controlled".

2. PM_{2.5} emission factors assumed to be 29.2% of PM₁₀ based on SCAQMD's Updated CEIDARS

Table B-9. Annual Aggregate Processed

Equipment / Activity	Source Description	Number of Units or Drop Points	Throughput Percent (%)	Percent Recycled (%)	Potential Annual Throughput (tpy)	Control ¹	Emission Factor (lb/ton)		Daily PTE Emissions (lb/day)		Annual Emission (tpy)
							PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}	PM ₁₀
Primary Crushing	Primary Crusher	1	100%		1,000,000	ws	0.00054	0.00016	1.479	0.432	0.270
Secondary Crushing	Secondary Jaw Crusher	1	100%	0%	1,000,000	ws	0.00054	0.00016	1.479	0.432	0.270
Conveyor Transfer	Jaw Crusher to Deck Screen	1	100%	0%	1,000,000	ws	0.00005	0.00001	0.126	0.038	0.023
Screening	3 Deck Screen	1	100%	0%	1,000,000	ws	0.00074	0.00050	2.027	1.370	0.370
Conveyor Transfer	3 Deck Screen to 3 Deck Screen	1	100%	0%	1,000,000	ws	0.00005	0.00001	0.126	0.038	0.023
Conveyor Transfer	3 Deck Screen to Cone Crusher	1	100%	0%	1,000,000	ws	0.00005	0.00001	0.126	0.038	0.023
Conveyor Transfer	Cone Crusher to Deck Screen	1	100%	0%	1,000,000	ws	0.00005	0.00001	0.126	0.038	0.023
Total Emissions:									5.49	2.39	1.00

¹ Water spray (ws) application will be used to control PM emissions on strategic transfer points throughout the crushing and screening operations.

1. Emission Factors for PM, PM10, and PM2.5				
Type of Operation	SCC	Emission Factors (lb/ton)		
		PM ^c	PM10	PM2.5 ^c
Primary Crushing ^a	3-05-020-01	1.4E-03	6.0E-04	
Primary Crushing (controlled) ^a	3-05-020-01	3.0E-04	1.4E-04	
Secondary Crushing ^a	3-05-020-02	2.7E-03	1.2E-03	
Secondary Crushing (controlled) ^a	3-05-020-02	6.0E-04	2.7E-04	
Tertiary Crushing	3-05-030-03	5.4E-03	2.4E-03	
Tertiary Crushing (controlled)	3-05-020-03	1.2E-03	5.4E-04	1.0E-04
Fines Crushing	3-05-020-05	3.9E-02	1.5E-02	
Fines Crushing (controlled)	3-05-020-05	3.0E-03	1.2E-03	7.0E-05
Screening of Primary Crusher Output ^b		6.3E-03	2.2E-03	
Screening of Primary Crusher (controlled) ^b		5.5E-04	1.9E-04	
Screening of Secondary Crusher Output ^b		1.3E-02	4.4E-03	
Screening of Secondary Crusher Output (controlled) ^b		1.1E-03	3.7E-04	
Screening (Tertiary Crushing)	3-05-020-02-03	2.5E-02	8.7E-03	
Screening (Tertiary Crushing) (controlled)	3-05-020-02-03	2.2E-03	7.4E-04	5.0E-05
Fines Screening	3-05-020-21	3.0E-01	7.2E-02	
Fines Screening (controlled)	3-05-020-21	3.6E-03	2.2E-03	
Conveyor Transfer Point	3-05-020-06	3.0E-03	1.1E-03	
Conveyor Transfer Point (controlled)	3-05-020-06	4.4E-04	1.8E-05	1.3E-05
Truck Unload			5	
Truck Load			4	

Table 11.19.2-2 (English Units). EMISSION FACTORS FOR CRUSHED STONE PROCESSING OPERATIONS (lb/Ton)^a

Source ^b	Total Particulate Matter ^{c,d}	EMISSION FACTOR RATING	Total PM-10	EMISSION FACTOR RATING	Total PM-2.5	EMISSION FACTOR RATING
Primary Crushing (SCC 3-05-020-01)	ND		ND ^e		ND ^e	
Primary Crushing (controlled) (SCC 3-05-020-01)	ND		ND ^e		ND ^e	
Secondary Crushing (SCC 3-05-020-02)	ND		ND ^e		ND ^e	
Secondary Crushing (controlled) (SCC 3-05-020-02)	ND		ND ^e		ND ^e	
Tertiary Crushing (SCC 3-05030-03)	0.0054 ^d	E	0.0024 ^e	C	ND ^e	
Tertiary Crushing (controlled) (SCC 3-05-020-03)	0.0012 ^d	E	0.00054 ^e	C	0.00010 ^e	E
Fines Crushing (SCC 3-05-020-05)	0.0390 ^d	E	0.0150 ^e	E	ND	
Fines Crushing (controlled) (SCC 3-05-020-05)	0.0030 ^d	E	0.0012 ^e	E	0.000070 ^e	E
Screening (SCC 3-05-020-03)	0.025 ^d	E	0.0087 ^e	C	ND	
Screening (controlled) (SCC 3-05-020-02_03)	0.0022 ^d	E	0.00074 ^e	C	0.000050 ^e	E
Fines Screening (SCC 3-05-020-21)	0.30 ^d	E	0.072 ^e	E	ND	

Total PTE Emissions (lb/day) ¹	PM _{2.5}
	0.079
	0.079
	0.007
	0.250
	0.007
	0.007
	0.007
	0.44

Fines Screening (controlled) (SCC 3-05-020-21)	0.0036 ^b	E	0.0022 ^b	E	ND	
Conveyor Transfer Point (SCC 3-05-020-06)	0.0030 ^b	E	0.00110 ^b	D	ND	
Conveyor Transfer Point (controlled) (SCC 3-05-020-06)	0.00014 ^d	E	4.6×10^{-32}	D	1.3×10^{-24}	E
Wet Drilling - Unfragmented Stone (SCC 3-05-020-10)	ND		8.0×10^{-32}	E	ND	
Truck Unloading - Fragmented Stone (SCC 3-05-020-31)	ND		1.6×10^{-32}	E	ND	
Truck Loading - Conveyor, crushed stone (SCC 3-05-020-32)	ND		0.00010 ^b	E	ND	

Table B-10. Dozing and Loading Emissions

Source	Annual Emissions (tpy)	
	PM ₁₀	PM _{2.5}
Bulldozing Operations	1.70	0.97
Loading Operations	0.68	0.02
Total Loading and Drop Emissions	2.38	0.99

Table B-11. Dozing Emissions

Vehicle Type	Annual Operating (hr/yr)	Quantity	Emission Factor ¹ (lb/hr)		Control Efficiency (%)	Daily Emissions (lb/day)		Annual Emissions (tpy)	
			PM ₁₀	PM _{2.5}		PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}
Bulldozers	3,000	1	1.13	0.65	0%	9.31	5.33	1.70	0.97
Total Dozing Emissions:						9.31	5.33	1.70	0.97

1. Emissions for the bulldozer were characterized using AP-42, Section 11.9 (October 1998), Table 11.9-1 and Table 11.9-3

where:

$$TSP = \frac{5.7(s)^{1.2}}{(M)^{1.3}}$$

Sil content s = 4.8 Percent (%) per AP-42 11.9.

Moisture content M = 4 Material moisture content (%) per AP-42 11.9.

$$PM_{15} = \frac{1.0(s)^{1.5}}{(M)^{1.4}}$$

Aerodynamic fa TSP PM₁₀ PM_{2.5}
0.74 0.36 0.11

Scaling factors use Mojave Desert AQMD

Table B-12. Aggregate Handling and Storage Piles (stockpile erosion, loading and load out of aggregate)

Emission Activity	Potential Total Annual Throughput (tpy)	Uncontrolled Emission Factor ¹		Control Efficiency (%)	Daily Emissions (lb/day)		Annual Emissions (tpy)	
		PM ₁₀	PM _{2.5}		PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}
Loader to Jaw Crusher 1	1,100,000	1.36E-03	3.98E-05	0%	4.11	0.12	0.75	0.02
Loader to Haul Trucks (Product)	1,000,000	1.36E-03	3.98E-05	0%	3.73	0.11	0.68	0.02
Stockpile Wind Erosion 2	1,000,000			0%	9.45		1.72	
Total Loading Emissions					17.29	0.23	3.16	0.04

1. Uncontrolled emission factors using the "drop equation" contained in U.S. EPA AP-42, Section 13.2.4 (Aggregate Handling and Storage Piles), November 2006:

$$E = k(0.0032) \frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$

E = Emission factor
where:

k =	PM	PM ₁₀	PM _{2.5}	Particle size multiplier (dimensionless)
	0.74	0.35	0.010	
U =	9.00	Mean wind speed (mph) is given per UDAQ's Average Annual Wind Speed map, November 2000.		
M =	3.00	Material moisture content (%) previously recommended by UDAQ.		

2. Stockpile wind erosion emission factor from AP-42 4th Edition Table 8-19.1.1, which is 6.3lb/acre/day PM10. Equation--> Annual Stockpile Emissions (tpy) = Max. Pile Area (acre) X EF (lb/day*acre) X conversion (365 days x 1 ton / 1 year x 2,000 lb). Assumed 1.5 acre of stockpile area for phase 2.

$$TSP = \frac{5.7(s)^{1.2}}{(M)^{1.3}}$$

$$PM_{15} = \frac{1.0(s)^{1.5}}{(M)^{1.4}}$$

Fugitive Dust Control Measures Applicable for the WRAP Region

Source Category	Control Measure	Published PM10 Control Efficiency
Agricultural Tilling	Reduce tilling during high winds	1 – 5%
	Roughen surface	15 – 64%
	Modify equipment	50%
	Employ sequential cropping	50%
	Increase soil moisture	90%
	Use other conservation management practices	25 - 100%
Agricultural Harvesting	Limited activity during high winds	5 – 70%
	Modify equipment	50%
	Night farming	10%
	New techniques for drying fruit	25 –60%
Construction/Demolition	Water unpaved surfaces	10 – 74%
	Limit on-site vehicle speed to 15 mph	57%
	Apply dust suppressant to unpaved areas	84%
	Prohibit activities during high winds	98%

	APPROXIMATE DUST SUPPRESSION EFFICIENCY	PERCENT
Materials Handling	Implement wet suppression	50 – 90%
	Erect 3-sided enclosure around storage piles	75%
	Cover storage pile with a tarp during high winds	90%

Table B-13. Blasting and Drilling Area

Maximum Annual Blast Frequency (blasts/yr)	Maximum Annual Area Blasted (ft ² /yr)	Maximum Daily Blast Area (ft ² /blast)
12	94,675	7,890

Table B-14. Drilling, Blasting, and Disturbed Ground Emission Factors

Source Description	Source Activity	Throughput	Units	Emission Factor ¹					
				PM		PM ₁₀		PM _{2.5}	
				Value	Units	Value	Units	Value	Units
Blasting	ANFO	123	(tpy)	9.81	(lb/blast)	5.10	(lb/blast)	0.29	(lb/blast)
Drilling	Annual # of Drill Holes	48	(holes/blast)	1.30	(lb/hole)	0.68	(lb/hole)	3.90E-02	(lb/hole)
Disturbed Ground	Mine Area	10	Acres	0.38	(tons/acre yr)	0.75	(lb PM ₁₀ /lb PM)	1.05E-01	(lb PM _{2.5} / lb PM)

¹Blasting PM emission factors retrieved from AP-42 11.9, Table 11.9-1. Using the equation below the horizontal area blasted (A) is assumed to be the average daily Blast Area.

A = horizontal area (ft²), with blasting depth ≤ 70 ft

$$0.000014(A)^{1.5}$$

Scaling factors were applied to PM₁₅ and TSP emission factors to calculate PM₁₀ and PM_{2.5} emission factors respectively per Table 11.9-1:

$$PM_{10}: 0.52$$

$$PM_{2.5}: 0.03$$

As there is not data for the PM₁₅ emission factor equation, PM₁₅ is conservatively assumed to be equal to TSP.

²Drilling PM emission factor is retrieved from AP-42 11.9, Table 11.9-4, where the drilling PM emission factor is for overburden material for conservatism. The coal PM emission factor is 1.30. Since no emission factors are provided for PM₁₀ and PM_{2.5} drilling operations, emission factors were calculated using the PM₁₀ and PM_{2.5} to TSP ratios for blasting overburden per AP-42 :

$$PM_{10} = PM_{15} * 0.52$$

$$PM_{2.5} = TSP * 0.03$$

³Blasting SO₂ emission factor developed using a mass balance assuming 6% fuel oil mixture with 500 ppm sulfur content, consistent with EPA non-road standards.

⁴Blasting NO_x and CO emission factors retrieved from ANFO blasting agent factor from AP-42 13.3-1.

⁵Blasting CO emission factor retrieved from ANFO blasting agent factor from AP-42 13.3-1.

⁶Blast and drilling quantities provided per design basis.

⁷Disturbed Ground Emissions Factor from "Wind Erosion of Exposed Areas" per AP-42 Table 11.9-4, with Scaling factors based on Bulldozing Overburden per Table 11.9-1

Table B-15. Drilling, Blasting, and Disturbed Ground Emissions

Source Description	Control Efficiency ¹ (%)	Max Daily Emissions (lbs/day) ^{2,3,6}						Annual Emissions (tpy) ^{4,5,7}	
		PM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	PM	PM ₁₀
Blasting	0%	9.81	5.10	0.29	0.04	18.41	415.64	0.06	0.03
Drilling	88.8%	6.99	3.63	0.21	--	--	--	0.04	0.02
Disturbed Ground	0%	20.82	15.62	2.19	--	--	--	3.80	2.85
Total Emissions:		37.62	24.35	2.69	0.04	18.41	415.64	3.90	2.90

¹Drilling operations will be controlled through wet-drilling. NIOSH reports 86-97% control efficiency for controlling fugitive emissions via wet-drilling (per NIOSH's Dust Control Handbook 1998). Granite contracts a drilling company that implements wet-drilling control technologies to reduce fugitive drilling emissions but used the an average control factor of 88.8%.

²Daily Blasting PM Emissions (lb/day) = Emission Factor (lbs/day) as only one blast is allowed per day.

³SO₂, NO_x, & CO Daily Blasting Emissions (lb/day) = Emission Factor (lb/ton) * Annual ANFO Throughput (tpy) / Annual Blasts (blasts/yr)

⁴Daily PM Drilling Emissions (lb/day) = Emission Factor (lb/hole) * Drill Holes/yr / Expected Working Days/Year

⁵SO₂, NO_x, & CO Annual Blasting Emissions (tpy) = Emission Factor (lbs/ton) * Annual ANFO Throughput (tpy) * 1 ton/2000 lbs

⁶Annual Blasting PM Emissions (tpy) = Emission Factor (lb/blast) * blasts/yr * 1 ton/2000 lbs

⁷Annual PM Drilling Emissions (tpy) = Emission Factor (lb/hole) * Drill Holes/yr * 1 ton/2000 lb

1,2,3,4,5,6,7

SO ₂		NO _x		CO	
Value	Units	Value	Units	Value	Units
0.0036	(lb/ton)	1.80	(lb/ton)	40.64	(lb/ton)
-	(lb/ton)	-	(lb/ton)	-	(lb/ton)
N/A	N/A	N/A	N/A	N/A	N/A

ower and may be appropriate for some drilling operations.

11.9, Table 11.9-1, where:

Annual Emissions (tpy) ^{5,6,7}			
PM _{2.5}	SO ₂	NO _x	CO
1.77E-03	2.21E-04	0.11	2.49
1.26E-03	--	--	--
3.99E-01	--	--	--
4.02E-01	0.00	0.11	2.49

for Industrial Minerals Mining and Processing, 2012).

EXAMPLE

Average Daily Blast Area (ft ² /blast) ¹					
	# of blast	Area of blast	Total area blasted	PM	
7,890	Scenario 1	50	10	500	0.0221359
	Scenario 2	10	50	500	0.0494975

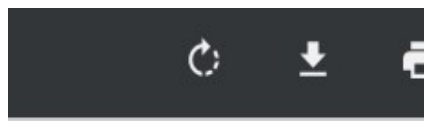
AP-42, CH 13.3: Explosives Detonation 3 / 5

(Reformatted 1/95)

Miscellaneous Sources

Explosive	Composition	Uses	Carbon Monoxide ^a		Nitrogen Oxides ^a		Methane ^b		1
			kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton	
ANFO ^{4,5}	Ammonium nitrate with 5.8-8% fuel oil	Construction work, blasting in mines	34	67	8	17	ND	ND	
TNT ²	Trinitrotoluene	Main charge in artillery projectiles, mortar rounds, etc.	398 (324-472)	796 (647-944)	ND	ND	7.2 (6.6-7.7)	14.3 (13.2-15.4)	
RDX ³	(CH ₂) ₃ N ₃ (NO ₂) ₃ Cyclotri-methylene-trinitroamine	Booster	98 ^d (2.8-277)	196 ^d (5.6-554)	ND	ND	ND	ND	
PETN ²	C(CH ₂ ONO ₂) ₄ Pentaerythritol tetranitrate	Booster	149 (138-160)	297 (276-319)	ND	ND	ND	ND	

-
- ^a Based on experiments carried out prior to 1930 except in the case of ANFO, TNT, and PETN. ND = no data
- ^b The factors apply to the chemical species, methane. They do not represent total volatile organic compounds. Studies were carried out more than 40 years ago.
- ^c Greater than 6 mg per 158 grain projectile (0.6 kg/Mg, 1.2 lb/ton).
- ^d These factors are derived from theoretical calculations, not from experimental data.



Other		
Pollutant	kg/Mg	lb/ton
SO ₂	1 (0-2)	2 (1-3)
NH ₃	14 (14-15)	29 (27-30)
HCN	13 (11-16)	27 (22-32)
C ₂ H ₂	61	121
C ₂ H ₆	0.5	1.1
NH ₃	22 ^d (12-61)	44 ^d (24-122)
NH ₃	1.3 (0-25)	2.5 (0-5)

ta.
(VOC) expressed as methane.

Table B-16. Roads Emissions - PTE Emissions

Road Source	Controlled Emissions			
	Daily Emissions (lb/day) ¹		Annual Emissions (tpy) ¹	
	PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}
Unpaved, Chemical Application	19.80	4.20	1.68	0.36
Paved, watered, vacuum swept (Trucks)	10.35	2.19	0.88	0.19
Total	30.15	6.39	2.56	0.54

¹ Daily and annual controlled emissions are calculated by applying the controlled emission factor (per UDAQ's control efficiencies) to the vehicular miles traveled per day (paved and unpaved).

Daily Emissions (lb/day) = Miles Travelled per Day (VMT/day) * Uncontrolled Emission Factor (lb/VMT) * (1 - η)

Annual Emissions (tpy) = Miles Travelled per Day (VMT/yr) * Uncontrolled Emission Factor (lb/VMT) * (1 - η)

Table B-17. Roads Emissions - Traveling Parameters (Supporting Operations)

Road Source	Product Throughput		Mean Vehicle Weights (tons) ¹		Average Vehicle Weight	Hauls/Year	Hauls/Day	Total Travel Distance per Haul (miles/haul)	
			Empty Vehicle	Loaded Vehicle				Unpaved	Paved
	(tpy)	(ton/hr)	(tons)	(tons)	(tons/haul)				
Haul Trucks	1,100,000	225	20.00	65.00	42.5	24,445	144	0.22	0.46

¹ Vehicle weights provided by Granite Construction.

Annual Days Vehicles Operate: 365

Six trips per hour x 24 hours per day = 144 trips per day

Table B-18. Roads Emissions - Emission Factors

Road Surface	Controls ¹	Control Efficiency (%)	Vehicle Emission Factors ^{1,2} (lb/VMT)	
			PM ₁₀	PM _{2.5}
Unpaved	Granite Factor	80%	0.62	0.13
Paved	Granite Factor	95%	0.1562	0.0331

¹ Emission controls for vehicular traffic on paved and unpaved roads per UDAQ guidelines: Emission Factors for Paved and Unpaved Haul Roads, January 2015, in conjunction with U.S. EPA AP-42 Section 13.2.2, November 2006.

$$E = k (s/12)^a (W/3)^b$$

where

E = Size-specific emission factor (lb/VMT)

k, a, b = Constants for equation 1a

	PM	PM ₁₀	PM _{2.5}
k =	1.8	1.5	0.15
a =	0.7	0.9	0.9
b =	0.45	0.45	0.45

s = surface material silt content (%)

s = 4.8 Per UDAQ guidance given in Emission Factors for Paved and Unpaved Haul Roads, January 2015.

W_{HT} = 42.5 Mean weight of all haul trucks (tons), per UDAQ guidance given in Emission Factors for Paved and Unpaved Haul

² PM_{2.5} emissions are 21.2% of PM₁₀ for unpaved roads (SCAQMD Updated CEIDARS Table)

Total Vehicle Miles Traveled			
Daily (VMT/day)		Annual (VMT/yr)	
Unpaved	Paved	Unpaved	Paved
31.68	66.24	5,378	11,245

- II.B.3.f** **The owner/ operator shall sw
maintain the listed opacity re**
- II.B.3.g** **The owner/operator shall use
roads to maintain the opacity**

Roads, January 2015.

keep and apply
requirements
a chemical
limits list

ply water to the on-site paved roads as necessary to
[R307-401-8]

l suppressant and water application on unpaved haul
d in this AO. [R307-401-8]

Table B-19. Engine Parameters

Parameter	Jaw Crusher Generator	Screen Generator	Cone Crusher Generator
Engine Horsepower (hp)	260	175	440
Operating Hours per Day (hr/day)	24	24	24
Operating Hours per Year (hr/yr)	5631.4286	5631.4286	5631.4286
Annual Activity (hp-hr/yr)	1464171.4	985500	2477828.6
Max Hourly Fuel Use (gallon/hr)	14	9	23
Average Hourly Fuel Use (gallon/hr)	10	7	17
Max Annual Fuel Use (gallon/yr)	76220	51302	128988
Heating Value of Diesel (MMBtu/hr) ²	0.887	0.597	1.501
Fuel Type	Diesel	Diesel	Diesel
Fuel Sulfur Content (%) ³	0.0015	0.0015	0.0015

1. Per generator performance data sheets.

2. Per 40 CFR 98, Table C-1 to Subpart C for Distillate Fuel Oil No. 2

3. From EPA, "Diesel Fuel Standards and Rulemakings", <https://www.epa.gov/diesel-fuel-standards/diesel-fuel-standards-and-rulemakings>.

Assumes the following value for lb fuel/hp-hr: 0.367 per OFFROAD2011 Model

Assumes the following density for diesel in lb 7.05 per AP-42 Appendix A

Assumes the following engine load factor 0.74 per CalEEMod Appendix D Table 3.3

Table B-20. Criteria Pollutant and GHG Engine Emission Factors

Pollutant	Emission Factor	Emission Factor
CO ¹	5.76E-03	lb/hp-hr
NO _x ¹	6.58E-04	lb/hp-hr
PM ₁₀ ¹	3.29E-05	lb/hp-hr
PM _{2.5} ¹	1.76E-05	lb/hp-hr
VOC ¹	3.13E-04	lb/hp-hr
SO ₂ ²	1.21E-05	lb/hp-hr
CO ₂ ³	163.1	lb/MMBtu
CH ₄ ⁴	6.61E-03	lb/MMBtu
N ₂ O ⁴	1.32E-03	lb/MMBtu
CO ₂ e ⁵	1.64E+02	lb/MMBtu

1. EPA Tier 4 Final emission factors assuming NO_x = 0.4 g/kW-hr, CO = 3.5 g/Kw-hr, PM = 0.02 g/KW-hr, VOC = 0.19 g/Kw-hr

2. Per AP-42, Table 3.3-1, for Diesel Fuel 8.09E-3 x 0.0015% Sulfur

3. Per 40 CFR 98, Table C-1 to Subpart C for Distillate Fuel Oil No. 2

4. Per 40 CFR 98, Table C-2 to Subpart C for Petroleum Products CH₄ = 3.0E-3, NO₂ = 6.0E-4.

5. The CO₂ equivalent factor is the sum of the factors for CO₂, CH₄, and N₂O multiplied by their respective global warming potentials (GWPs), per 40 CFR 98,

Table B-21. Criteria Pollutant and GHG Max Potential to Emit

Pollutant	Jaw Crusher		Screen		Cone Crusher		Total	
	(lb/day)	(tpy)	(lb/day)	(tpy)	(lb/day)	(tpy)	(lb/day)	(tpy)
CO	35.93	4.22	24.19	2.84	60.81	7.13	120.93	14.19
NO _x	4.11	0.48	2.76	0.32	6.95	0.82	13.82	1.62
PM ₁₀	0.21	0.02	0.14	0.02	0.35	0.04	0.69	0.08
PM _{2.5}	0.11	0.01	0.07	0.01	0.19	0.02	0.37	0.04
VOC	1.95	0.23	1.31	0.15	3.30	0.39	6.56	0.77
SO ₂	0.08	0.01	0.05	0.01	0.13	0.02	0.25	0.03
CO ₂	1.02E+06	1.19E+05	6.85E+05	8.03E+04	1.72E+06	2.02E+05	3.42E+06	4.02E+05
CH ₄	41.27	4.84	27.78	3.26	69.84	8.19	138.89	16.29
N ₂ O	8.25	0.97	5.56	0.65	13.97	1.64	27.78	3.26
CO ₂ e	1.02E+06	1.20E+05	6.87E+05	8.06E+04	1.73E+06	2.03E+05	3.44E+06	4.03E+05

Table B-22 Engine HAPs Emissions

Pollutant	Emission Factor (lb/MMBtu)	Jaw Crusher		Screen		Cone Crusher	
		(lb/day) ²	(tpy) ³	(lb/day)	(tpy)	(lb/day)	(tpy)
Benzene	9.33E-04	1.99E-02	2.33E-03	1.34E-02	1.57E-03	3.36E-02	3.94E-03
Toluene	4.09E-04	8.71E-03	1.02E-03	5.86E-03	6.88E-04	1.47E-02	1.73E-03
Xylenes	2.85E-04	6.07E-03	7.12E-04	4.08E-03	4.79E-04	1.03E-02	1.20E-03
Propylene	2.58E-03	5.49E-02	6.44E-03	3.70E-02	4.34E-03	9.30E-02	1.09E-02
Formaldehyde	1.18E-03	2.51E-02	2.95E-03	1.69E-02	1.98E-03	4.25E-02	4.99E-03
Acetaldehyde	7.67E-04	1.63E-02	1.92E-03	1.10E-02	1.29E-03	2.76E-02	3.24E-03
Acrolein	9.25E-05	1.97E-03	2.31E-04	1.33E-03	1.56E-04	3.33E-03	3.91E-04
Naphthalene	8.48E-05	1.81E-03	2.12E-04	1.22E-03	1.43E-04	3.06E-03	3.58E-04
Max HAP (Propylene)		5.49E-02	6.44E-03	3.70E-02	4.34E-03	9.30E-02	1.09E-02
Total HAPs		1.35E-01	1.58E-02	9.07E-02	1.06E-02	2.28E-01	2.68E-02

1. Emission factors from AP-42 Section 3.3, Table 3.3-2.

2. Emission rate (lb/day) = (Fuel Consumption Rate (gal/hr) * Diesel Heating Value (MMBtu/gal) * Engine Load Factor) * Emission Factor (lb/MMBtu) * Operating

3. Emission rate (tpy) = (Fuel Consumption Rate (gal/hr) * Diesel Heating Value (MMBtu/gal) * Engine Load Factor) * Emission Factor (lb/MMBtu) * Operating

	Rated Power (kW)	Tier	Model Year	NMHC (g/kW-hr)	NMHC + NOx (g/kW-hr)	NOx (g/kW-hr)	PM (g/kW-hr)	CO (g/kW-hr)	Smoke ^a (Percentage)	Useful Life (hours /years) ^b	Warranty Period (hours /years) ^b
	130 ≤ kW < 225	1	1996-2002	1.3 ^j	-	9.2	0.54	11.4			
		2	2003-2005	-	6.6	-	0.20	3.5			
		3	2006-2010	-	4.0	-	0.20	3.5			
		4	2011-2013 ^h	-	4.0	-	0.02	3.5			
			2014+ ⁱ	0.19	-	0.40	0.02	3.5			
	225 ≤ kW < 450	1	1996-2000	1.3 ^j	-	9.2	0.54	11.4			
		2	2001-2005	-	6.4	-	0.20	3.5			
		3	2006-2010	-	4.0	-	0.20	3.5			
		4	2011-2013 ^h	-	4.0	-	0.02	3.5			
			2014+ ⁱ	0.19	-	0.40	0.02	3.5			

Federal	450 ≤ kW < 560	1	1996-2001	1.3 ^j	-	9.2	0.54	11.4	20/15/50	8,000/10	3,000/5
		2	2002-2005	-	6.4	-	0.20	3.5			
		3	2006-2010	-	4.0	-	0.20	3.5			
		4	2011-2013 ^h	-	4.0	-	0.02	3.5			
			2014+ ⁱ	0.19	-	0.40	0.02	3.5			
	560 ≤ kW < 900	1	2000-2005	1.3 ^j	-	9.2	0.54	11.4			
		2	2006-2010	-	6.4	-	0.20	3.5			
		4	2011-2014	0.40	-	3.5	0.10	3.5			
			2015+ ⁱ	0.19	-	3.5 ^k	0.04 ^l	3.5			
	kW > 900	1	2000-2005	1.3 ^j	-	9.2	0.54	11.4			
		2	2006-2010	-	6.4	-	0.20	3.5			
		4	2011-2014	0.40	-	3.5 ^k	0.10	3.5			

			2015+ ⁱ	0.19	-	3.5 ^k	0.04 ^l	3.5		
--	--	--	--------------------	------	---	------------------	-------------------	-----	--	--

Table B-23. Storage Tanks

1	Configuration ¹	Quantity	Capacity (gal)	Contents	Annual Throughput (gal/yr)	Total VOC Emissions ² (tpy)
Fuel Storage Tank	HFR	1	10,000	No. 2 Fuel Oil	600,000	5.70E-03
Total VOC Emissions						5.70E-03

1. HFR = Horizontal Fixed Roof

VFR = Vertical Fixed Roof

2. Tank emissions calculated per AP-42 7.1 *Organic Liquid Storage Tanks*.



John Persons <jpersons@utah.gov>

Granite Construction I-80 South Quarry Questions

6 messages

John Persons <jpersons@utah.gov>

Thu, Sep 29, 2022 at 3:01 PM

To: Scohen@sespeconsulting.com

Cc: brad.sweet@gcinc.com, "Bingham, Quin" <quin.bingham@gcinc.com>

Scott,

My name is John Persons and I am the Utah Division of Air Quality (UDAQ) Engineer that is working on the AO for Granite Construction's I-80 Quarry. Quin told me that you would be the best person to reach out to about NOI questions. I just had a couple of quick questions. Do you know the size in acres of the disturbed area? Also, would it be possible for you to send over the excel file for the emissions calculations? Let me know if you have any questions. Thanks.

- Best Regards
John Persons

--



John Persons

Environmental Engineer | Minor NSR Section

M: (385) 306-6503

airquality.utah.gov



Andre Almeida <aalmeida@sespeconsulting.com>

Thu, Sep 29, 2022 at 5:47 PM

To: "jpersons@utah.gov" <jpersons@utah.gov>

Cc: Scott Cohen <scohen@sespeconsulting.com>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Bingham, Quin" <Quin.Bingham@gcinc.com>

Hello John,

I've attached the emissions calculations for the I80 South Quarry. There are two excel workbooks, one for each phase of operation.

Cheers,

Andre Almeida, P.E.

Engineer II

Sespe Consulting, Inc.

A Trinity Consultants Company

Cell: (650) 336-5587

www.sespeconsulting.com

From: Bingham, Quin <Quin.Bingham@gcinc.com>
Sent: Thursday, September 29, 2022 2:12 PM
To: Andre Almeida <aalmeida@sespeconsulting.com>
Cc: Scott Cohen <scohen@sespeconsulting.com>; Sweet, Brad <Brad.Sweet@gcinc.com>
Subject: FW: Granite Construction I-80 South Quarry Questions

Hi Andre,

I hope you are doing well.

I assume you might be the one with the most recent version of the small mine emissions calculation. If so, will you please forward the excel spreadsheets for both Phase 1 and 2 of the small mine operation to John Persons (UDAQ). His email is below.

Thanks,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Thursday, September 29, 2022 3:01 PM
To: Scohen@sespeconsulting.com
Cc: Sweet, Brad <Brad.Sweet@gcinc.com>; Bingham, Quin <Quin.Bingham@gcinc.com>
Subject: Granite Construction I-80 South Quarry Questions

CAUTION: This email originated from outside of Granite

Scott,

My name is John Persons and I am the Utah Division of Air Quality (UDAQ) Engineer that is working on the AO for Granite Construction's I-80 Quarry. Quin told me that you would be the best person to reach out to about NOI questions. I just had a couple of quick questions. Do you know the size in acres of the disturbed area? Also, would it be possible for you to send over the excel file for the emissions calculations? Let me know if you have any questions. Thanks.

- Best Regards

John Persons

--

John Persons

Environmental Engineer | Minor NSR Section

M: (385) 306-6503

airquality.utah.gov



 **Permitting_emissions_calcs_v1.4.zip**
1292K

Bingham, Quin <Quin.Bingham@gcinc.com> Thu, Sep 29, 2022 at 5:55 PM
To: Andre Almeida <aalmeida@sespeconsulting.com>, "jpersons@utah.gov" <jpersons@utah.gov>
Cc: Scott Cohen <scohen@sespeconsulting.com>, "Sweet, Brad" <Brad.Sweet@gcinc.com>

Thanks, Andre.

Get [Outlook for iOS](#)

From: Andre Almeida <aalmeida@sespeconsulting.com>
Sent: Thursday, September 29, 2022 6:47:28 PM
To: 'jpersons@utah.gov' <jpersons@utah.gov>
Cc: Scott Cohen <scohen@sespeconsulting.com>; Sweet, Brad <Brad.Sweet@gcinc.com>; Bingham, Quin <Quin.Bingham@gcinc.com>
Subject: RE: Granite Construction I-80 South Quarry Questions

[Quoted text hidden]

Bingham, Quin <Quin.Bingham@gcinc.com> Fri, Sep 30, 2022 at 9:38 AM
To: Andre Almeida <aalmeida@sespeconsulting.com>
Cc: Scott Cohen <scohen@sespeconsulting.com>, "jpersons@utah.gov" <jpersons@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>

Andre,

Did we us a total disturbed acreage is up to 20 acres for the ADM?

Thanks,
Quin

From: Bingham, Quin <Quin.Bingham@gcinc.com>
Sent: Thursday, September 29, 2022 5:55:31 PM
To: Andre Almeida <aalmeida@sespeconsulting.com>; 'jpersons@utah.gov' <jpersons@utah.gov>
Cc: Scott Cohen <scohen@sespeconsulting.com>; Sweet, Brad <Brad.Sweet@gcinc.com>
Subject: Re: Granite Construction I-80 South Quarry Questions

[Quoted text hidden]

Scott Cohen <scohen@sespeconsulting.com>

Tue, Oct 4, 2022 at 10:28 AM

To: John Persons <jpersons@utah.gov>

Cc: "brad.sweet@gcinc.com" <brad.sweet@gcinc.com>, "Bingham, Quin" <quin.bingham@gcinc.com>

Hi John,

Thanks for the email. I just wanted to reply and let you know that I have received your email and should have a response for you this week.

Sincerely,

Scott D. Cohen, P.E., C.I.H.

Principal Engineer

Sespe Consulting – a Trinity Consultants Company

619.894.8670 – Direct

619.894.8669 – Receptionist

619.300.1880 – Google Voice/cell phone

www.sespe.com

From: John Persons <jpersons@utah.gov>
Sent: Thursday, September 29, 2022 2:01 PM
To: Scott Cohen <scohen@sespeconsulting.com>
Cc: brad.sweet@gcinc.com; Bingham, Quin <quin.bingham@gcinc.com>
Subject: Granite Construction I-80 South Quarry Questions

Scott,

[Quoted text hidden]

John Persons <jpersons@utah.gov>

Tue, Oct 4, 2022 at 10:32 AM

To: Scott Cohen <scohen@sespeconsulting.com>

Cc: "brad.sweet@gcinc.com" <brad.sweet@gcinc.com>, "Bingham, Quin" <quin.bingham@gcinc.com>

Great, thanks for the update.

[Quoted text hidden]



State of Utah

SPENCER J. COX
Governor

DEIDRE HENDERSON
Lieutenant Governor



Department of
Environmental Quality

Kimberly D. Shelley
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

DAQE-MN161200001A-23

MEMORANDUM

TO: John Persons, NSR Engineer 
FROM: Jason Krebs, Air Quality Modeler 
DATE: March 16, 2023
SUBJECT: Modeling Analysis Review for the Notice of Intent for Granite Construction Company – I-80 South Quarry, Salt Lake County, Utah

This is not a Major Prevention of Significant Deterioration (PSD) Source.

I. OBJECTIVE

Granite Construction Company (Applicant) is seeking an approval order for their I-80 South Quarry located in Salt Lake County, Utah.

This report, prepared by the Staff of the New Source Review Section (NSR), contains a review of the air quality impact analysis (AQIA) including the information, data, assumptions and modeling results used to determine if the facility will be in compliance with applicable State and Federal concentration standards.

II. APPLICABLE RULE(S)

Utah Air Quality Rules:

R307-401-6	Condition for Issuing an Approval Order
R307-410-3	Use of Dispersion Models
R307-410-4	Modeling of Criteria Pollutants in Attainment Areas

III. MODELING METHODOLOGY

A. Applicability

Emissions from the facility include PM₁₀, NO_x, CO, SO₂, and HAPs. This modeling is part of a new approval order. The emission rates for PM₁₀ triggered the requirement to model under R307-410. Modeling was performed by the Applicant.

B. Assumptions

1. Topography/Terrain

The Plant is at an elevation 5530 feet with terrain features that have an affect on concentration predictions.

a. Zone: 12

b. Approximate Location:

UTM (NAD83): 437048 meters East
4509436 meters North

2. Urban or Rural Area Designation

After a review of the appropriate 7.5-minute quadrangles, it was concluded the area is “rural” for air modeling purposes.

3. Ambient Air

It was determined the Plant boundary used in the AQIA meets the State’s definition of ambient air.

4. Building Downwash

The source was modeled with the AERMOD model. All structures at the plant were used in the model to account for their influence on downwash.

5. Meteorology

Five (5) years of off-site surface and upper air data were used in the analysis consisting of the following:

Surface – Salt Lake Airport, UT NWS: 2016-2020

Upper Air – Salt Lake Airport, UT NWS: 2016-2020

6. Background

The background concentrations were based on concentrations measured in Salt Lake City, Utah.

7. Receptor and Terrain Elevations

The modeling domain used by the Applicant consisted of receptors including property boundary receptors. This area of the state contains mountainous terrain and the modeling domain has simple and complex terrain features in the near and far fields. Therefore, receptor points representing actual terrain elevations from the area were used in the analysis.

8. Model and Options

The State-accepted AERMOD model was used to predict air pollutant concentrations under a simple/complex terrain/wake effect situation. In quantifying concentrations, the regulatory default option was selected.

9. Air Pollutant Emission Rates

PHASE 1 EMISSIONS

Granite Construction I-80 South Quarry

Source	UTM Coordinates		Modeled Emission Rates		
	Easting (m)	Northing (m)	PM10		
			(lb/hr)	(tons/yr)	hrs/year
DRBL	437109	4509317	8.70	7.94	1825
DOZER	437226	4509285	1.13	4.48	7903
JAW	437065	4509391	0.07	0.27	7903
CONE	437065	4509391	0.07	0.27	7903
SCREEN	437065	4509391	0.09	0.37	7903
DROP1	437065	4509391	0.01	0.02	7903
DROP2	437065	4509391	0.01	0.02	7903
DROP3	437065	4509391	0.01	0.02	7903
DROP4	437065	4509391	0.01	0.02	7903
STCK1	437059	4509392	0.01	0.04	7903
STCK2	437064	4509395	0.01	0.02	7903
STCK3	437064	4509387	0.01	0.06	7903
PVROAD	437004	4509510	0.31	1.35	8760
UNROAD	436998	4509512	0.83	3.62	8760
MHANDLE2	437028	4509391	0.16	0.68	8760
MHANDLE1	437081	4509363	0.19	0.74	7903
DG	436965	4509465	0.65	2.85	8760
STCKPL1	437018	4509291	0.27	1.16	8760

Total 12.51 23.95

Harper-Kilgore Pit 16

Source	UTM Coordinates		Modeled Emission Rates		
	Easting (m)	Northing (m)	PM10		
			(lb/hr)	(tons/yr)	hrs/year
UPHAUL	435374	4508955	4.38	8.00	3650
CRUSHER1	434817	4508697	0.15	0.28	3650
CRUSHER2	434801	4508683	0.15	0.28	3650

SCREEN1	434819	4508692	0.26	0.47	3650
SCREEN2	434795	4508680	0.26	0.47	3650
SCREEN3	434763	4508666	0.26	0.47	3650
LOADERS	434811	4508629	2.94	5.37	3650
DRILLBLAST	434592	4508675	0.31	0.57	3650
LOADSTACK	434757	4508636	0.42	0.77	3650
BULLDOZING	434905	4508836	1.78	3.24	3650
PILES	434721	4508658	0.36	1.56	8760
DISTAREA	434901	4508655	0.35	1.52	8760
GENSET	434766	4508684	0.58	1.05	3650

Total 12.20 24.07

PHASE 2 EMISSIONS

Granite Construction I-80 South Quarry

Source	UTM Coordinates		Modeled Emission Rates		
	Easting (m)	Northing (m)	PM10		
			(lb/hr)	(tons/yr)	hrs/year
DRBL	437185	4509314	8.70	7.94	1825
DOZER	437226	4509285	1.13	4.56	8052
JAW	437120	4509300	0.07	0.28	8052
CONE	437120	4509300	0.07	0.28	8052
SCREEN	437120	4509300	0.09	0.38	8052
DROP1	437120	4509300	0.01	0.02	8052
DROP2	437120	4509300	0.01	0.02	8052
DROP3	437120	4509300	0.01	0.02	8052
DROP4	437120	4509300	0.01	0.02	8052
STCK1	437113	4509300	0.01	0.04	8052
STCK2	437119	4509304	0.01	0.02	8052
STCK3	437118	4509296	0.01	0.06	8052
MHANDLE1	437142	4509304	0.31	1.24	8052
MHANDLE2	437093	4509321	0.16	0.68	8760
PVROAD	437004	4509510	0.43	1.89	8760
UNROAD	436998	4509512	0.83	3.62	8760
DG	436965	4509465	0.65	2.85	8760
STCKPL1	436992	4509291	0.39	1.73	8760

Total 12.88 25.65

Harper-Kilgore Pit 16

Source	UTM Coordinates		Modeled Emission Rates		
	Easting (m)	Northing (m)	PM10		
			(lb/hr)	(tons/yr)	hrs/year
UPHAUL	435374	4508955	4.38	8.00	3650
CRUSHER1	434817	4508697	0.15	0.28	3650
CRUSHER2	434801	4508683	0.15	0.28	3650
SCREEN1	434819	4508692	0.26	0.47	3650
SCREEN2	434795	4508680	0.26	0.47	3650
SCREEN3	434763	4508666	0.26	0.47	3650
LOADERS	434811	4508629	2.94	5.37	3650
DRILLBLAST	434592	4508675	0.31	0.57	3650
LOADSTACK	434757	4508636	0.42	0.77	3650
BULLDOZING	434905	4508836	1.78	3.24	3650
PILES	434721	4508658	0.36	1.56	8760
DISTAREA	434901	4508655	0.35	1.52	8760
GENSET	434766	4508684	0.58	1.05	3650

Total 12.20 24.07

10. Source Location and Parameters

PHASE 1 PARAMETERS

Source	Type	Source Parameters										
		Elev, (ft)	Ht (m)		Temp (K)	Flow (m/s)	Dia (ft)	Sigma-Y (m)	Sigma-Z (m)	X-Dim (m)	Y-Dim (m)	Area (m ²)
DRBL	VOLUME	5758.5	27.2	89.2				12.64	12.65	54.361		1
DOZER	AREA_POLY	5584.5	0.0	0.0								15950.4
JAW	VOLUME	5640.6	3.5	11.3				1.42	0.85	6.0974		1
CONE	VOLUME	5640.6	4.5	14.7				0.64	0.43	2.7434		1
SCREEN	VOLUME	5640.6	4.5	14.7				1.42	0.43	6.0974		1
DROP1	VOLUME	5640.6	3.5	11.3				0.14	0.14	0.6106		1
DROP2	VOLUME	5640.6	4.5	14.7				0.14	0.14	0.6106		1
DROP3	VOLUME	5640.6	1.4	4.5				0.14	0.14	0.6106		1
DROP4	VOLUME	5640.6	4.5	14.7				0.14	0.14	0.6106		1
STCK1	POINT	5630.5	3.0	9.8	739	90.80	0.13					1
STCK2	POINT	5632.4	3.0	9.8	739	90.80	0.13					1
STCK3	POINT	5646.3	3.0	9.8	739	90.80	0.13					1

PVROAD	LINE_VOLUME											1
UNROAD	LINE_VOLUME											1
MHANDLE2	VOLUME	5585.5	3.0	9.8				6.98	2.79	30.001		1
MHANDLE1	VOLUME	5709.7	3.0	9.8				6.98	0.70	30.001		1
DG	AREA_POLY	5405.2	0.0	0.0								40019
STCKPL1	AREA	5687.9	0.0	0.0						63.703	63.703	1
UPHAUL	LINE_VOLUME											1
CRUSHER1	VOLUME	5136.5	3.7	12.0				1.29	1.70	5.5599		1
CRUSHER2	VOLUME	5136.5	3.7	12.0				1.29	1.70	5.5599		1
SCREEN1	VOLUME	5135.8	3.7	12.0				0.95	1.70	4.0893		1
SCREEN2	VOLUME	5136.7	3.7	12.0				0.95	1.70	4.0893		1
SCREEN3	VOLUME	5137.5	3.7	12.0				0.95	1.70	4.0893		1
LOADERS	LINE_VOLUME											1
DRILLBLAST	AREA	5329.6	3.0	10.0					1.52	126.12	118.88	1
LOADSTACK	AREA_POLY	5132.6	3.7	12.0					0.61			4359.8
BULLDOZING	LINE_VOLUME											1
PILES	AREA_POLY	5139.4	0.3	1.0								6580
DISTAREA	AREA_POLY	5161.4	0.3	1.0								84374
GENSET	POINT	5138.8	4.6	15.0	773	126.93	0.06					1

PHASE 2 PARAMETERS

Source	Type	Source Parameters										
		Elev, (ft)	Ht (m) (ft)		Temp (K)	Flow (m/s)	Dia (ft)	Sigma-Y (m)	Sigma-Z (m)	X-Dim (m)	Y-Dim (m)	Area (m^2)
DRBL	VOLUME	5641.4	27.2	89.2				12.64	12.65	54.361		1
DOZER	AREA_POLY	5584.5	0.0	0.0								15950.4
JAW	VOLUME	5772.1	3.5	11.3				1.42	0.85	6.0974		1
CONE	VOLUME	5772.1	4.5	14.7				0.64	0.43	2.7434		1
SCREEN	VOLUME	5772.1	4.5	14.7				1.42	0.43	6.0974		1
DROP1	VOLUME	5772.1	3.5	11.3				0.14	0.14	0.6106		1
DROP2	VOLUME	5772.1	4.5	14.7				0.14	0.14	0.6106		1
DROP3	VOLUME	5772.1	1.4	4.5				0.14	0.14	0.6106		1
DROP4	VOLUME	5772.1	4.5	14.7				0.14	0.14	0.6106		1
STCK1	POINT	5781.6	3.0	9.8	739	90.80	0.13					1
STCK2	POINT	5767.6	3.0	9.8	739	90.80	0.13					1
STCK3	POINT	5781.0	3.0	9.8	739	90.80	0.13					1
MHANDLE1	VOLUME	5727.9	3.0	9.8				6.98	0.70	30.001		1

MHANDLE2	VOLUME	5775.7	3.0	9.8				6.98	2.79	30.001		1
PVROAD	LINE_VOLUME											1
UNROAD	LINE_VOLUME											1
DG	AREA_POLY	5405.2	0.0	0.0								40019
STCKPL1	AREA	5632.2	0.0	0.0						94.488	94.488	1
UPHAUL	LINE_VOLUME											1
CRUSHER1	VOLUME	5136.5	3.7	12.0				1.29	1.70	5.5599		1
CRUSHER2	VOLUME	5136.5	3.7	12.0				1.29	1.70	5.5599		1
SCREEN1	VOLUME	5135.8	3.7	12.0				0.95	1.70	4.0893		1
SCREEN2	VOLUME	5136.7	3.7	12.0				0.95	1.70	4.0893		1
SCREEN3	VOLUME	5137.5	3.7	12.0				0.95	1.70	4.0893		1
LOADERS	LINE_VOLUME											1
DRILLBLAST	AREA	5329.6	3.0	10.0					1.52	126.12	118.88	1
LOADSTACK	AREA_POLY	5132.6	3.7	12.0					0.61			4359.8
BULLDOZING	LINE_VOLUME											1
PILES	AREA_POLY	5139.4	0.3	1.0								6580
DISTAREA	AREA_POLY	5161.4	0.3	1.0								84374
GENSET	POINT	5138.8	4.6	15.0	773	126.93	0.06					1

IV. RESULTS AND CONCLUSIONS

A. National Ambient Air Quality Standards

The below table provides a comparison of the predicted total air quality concentrations with the NAAQS. The predicted total concentrations are less than the NAAQS.

PHASE 1 RESULTS

Air Pollutant	Period	Prediction	Class II Significant Impact Level	Background	Nearby Sources*	Total	NAAQS	Percent
		(µg/m ³)	(µg/m ³)	(µg/m ³)	(µg/m ³)	(µg/m ³)	(µg/m ³)	NAAQS
PM ₁₀	24-Hour	77.20	5	66.6	0.6	144.4	150	96.3%

PHASE 2 RESULTS

Air Pollutant	Period	Prediction	Class II Significant Impact Level	Background	Nearby Sources*	Total	NAAQS	Percent
		(µg/m ³)	(µg/m ³)	(µg/m ³)	(µg/m ³)	(µg/m ³)	(µg/m ³)	NAAQS

PM ₁₀	24-Hour	76.70	5	63.6	0.6	140.9	150	93.9%
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V. PERMIT CONDITIONS

The following suggested permit language should be included under the Terms and Conditions in the AO:

- The owner/operator shall not operate the aggregate processing equipment and generator engines at the I80 South Quarry for more than 12 hours per day from January 1st through the end of February.
- The owner/operator shall not conduct drilling or blasting operations at the I80 South Quarry before 9:00 am or after 2:00 pm.

JK:jg



John Persons <jpersons@utah.gov>

FW: Aggregate Stockpile Wind Erosion Emission Factor

16 messages

Bingham, Quin <Quin.Bingham@gcinc.com>

Tue, Jan 24, 2023 at 8:13 AM

To: John Persons <jpersons@utah.gov>

Cc: Dave Prey <dprey@utah.gov>, Jason Krebs <jkrebs@utah.gov>, Alan Humpherys <ahumpherys@utah.gov>, Enqiang He <ehe@utah.gov>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

John, et al.,

Thank you again for taking the time last week to hear our perspective on how to model stockpile wind erosion. We appreciate your responsiveness to us on this project. As a recap on how we concluded the call, we concluded that we would drafted an email outlining our interpretation of how stockpile wind erosion emission factors have been derived and how we have previously been instructed to modeled stockpile wind erosion, so you could review and discuss with Alan and EQ. Following your internal review and discussion of this email we will set up another call to discuss.

The following outlines what we discussed on the call last week (our interpretation of how stockpile wind erosion emission factors have been derived and how they have previously been modeled).

Brief Project Background:

In our current submitted model, we model wind erosion based on (1) disturbed area using the EF in 5th Edition AP-42, Table 11.9-4 (see attached screenshot) and (2) stockpile wind erosion is included in the material handling equation of 5th Edition AP-42 Section 13.2.4.3 (see attached screenshot). However, John has instructed that we use the 4th Edition AP-42 Table 8.19.1-1 "inactive stockpile" EF.

On previous projects we were directed by DAQ to not use the 4th edition of AP-42; specifically, Table 8.19.1-1 (attached screenshot). Historically, we have used the 4th edition AP-42, Table 8.19.1-1 EF and were told not to use the 4th edition and to use EFs from the 5th edition only. Specifically, we were instructed to use values in Table 11.9-4 (Western Coal Mines) (see attached screenshot).

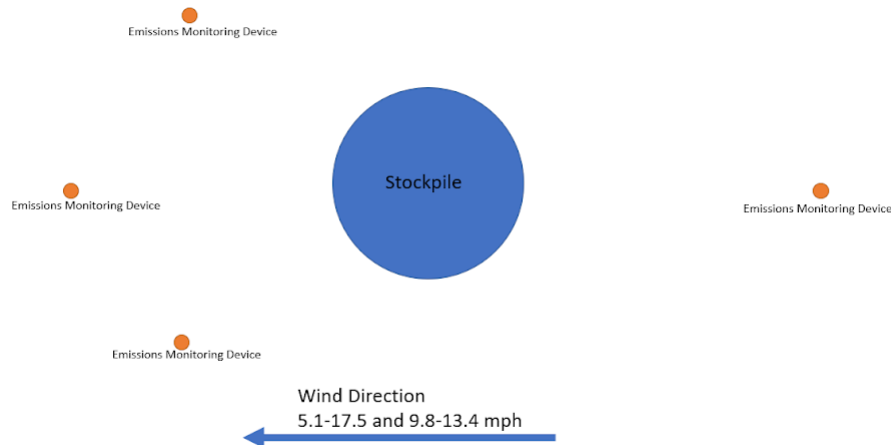
We reviewed the test reports used to create the emission factors for the material handling (Section 13.2-4), storage pile erosion (Section 13.2-5) and the western coal mining disturbed area factor (Section 11.9). The following is summary of our findings.

Material Handling (13.2-4)

The test report used to create the emission factor equation in this section was done at a Prilled Sulfur stockpile at a mine site in California in 1984 (Report 5 in attached doc Section 13.2-4 Supporting Information [pdf page 81]). The test was designed specifically to determine this emission factor and not to measure site specific emissions (this is actually very important). The test was conducted outside in conditions with wind ranging from 5.1 to 17.5 mph for one test set and 9.8 to 13.4 mph for another test set. Since the test was conducted in a windy environment, the samplers used during the study would inherently collect dust generated from wind erosion along with dust generated from stockpile loading and

loadout (see example image of study setup below). That means the emission factor includes wind erosion because it is based on this data that generated the equation. Additionally, the wind ranges that occurred during the test are within the same wind speeds that DAQ requires to be used for different parts of the state, which are 6-10 mph (See attached Wind Map).

Additionally, there were three other studies completed to determine the emissions from stockpiles and two of those (Test Report 4 and 9) were excluded in part because they were in an enclosed environment and not representative of an aggregate stockpile (i.e. needs to include wind erosion). The other test (Report 6) was excluded because of data quality issues.



Storage Pile Erosion (13.2-5)

This section of AP-42 looks at just wind erosion of storage piles but is based on wind tunnel experiments. This essentially means it only applies to instances between disturbances, or in other words, worst case scenarios. It states in the Section that these values should not be used for dispersion models. I have never seen this in estimating PTE at any aggregate site anywhere in our national operations. I think we all are on the same page on this.

Western Coal Mining (11.9)

We also looked at this document because the disturbed area emission factor(s) from the fourth edition that was referenced by DAQ in a previous email pertaining to this project was replaced by the values listed in the Western Coal Mining Section 11.9 (fifth edition). As mentioned above, historically we have been directed by DAQ staff to not use the 4th edition emission factors and only use the 5th edition. The other interesting part about Section 11.9 is that it defines an active storage pile emission factor to include wind erosion and maintenance in Table 11.9-1 (small screen shot below). We also looked at the test reports used to create the storage pile emission factor (listed in Appendix H of the Supporting Docs on the AP-42 website, [link here](#)). The test reports (5 and 6 stand out) used in the study were conducted in similar circumstances as the material handling test report, that is, outside and under windy conditions. The western coal mine documents were created in the late 90s and seem to be more clearly written in that they call out that the storage pile emissions include both emissions from wind erosion and pile maintenance (loading and loadout). See foot note C of table 27 of Appendix H (page H-10 of the report or pg 259 of the pdf). To be clear, we are not recommending we use the stockpile emission factors listed in this section since the nature of the stockpiles are different. Coal piles are long rows of material.

Active storage pile^h
(wind erosion and
maintenance)

(Screen shot from Table 11.9-1)

The material handling report was created in the 80s and is not as clearly defined as the western coal mine section, which we think is ultimately the issue we are running into here.

In summary, we believe:

- The use of the 4th Edition AP-42 inactive stockpile EF isn't representative as we assume our stockpiles will not be inactive,
- The 4th Edition AP-42 active stockpile EF is an overestimation,
- Historically, the used of 4th Edition EF has been discouraged and there is a more recent Edition,
- The 5th Edition Material Handling EF not only accounts for loading and loadout of stockpiles but wind erosion as well based on the EF development studies; therefore, if we use the 5th edition material handling EF and the 4th edition inactive stockpile EF, as directed, we are "double" counting wind erosion from stockpiles

Once you have had a chance to review this email with your team, please let us know and we will set up a call to discuss how UDAQ would like us to proceed with modeling of stockpile emissions.

Regards,

Quin

Quinten G. Bingham

Utah Region Environmental Manager
1000 N Warm Springs Rd
Salt Lake City, UT 84116

Direct: [801-526-6050](tel:801-526-6050)

Mobile: [435-770-4319](tel:435-770-4319)

Email: quin.bingham@gcinc.com
www.graniteconstruction.com

GRANITE[®]



5 attachments

TABLE 8.19.1-1. UNCONTROLLED PARTICULATE EMISSION FACTORS FOR SAND AND GRAVEL PROCESSING PLANTS*

Processing Operation	Emission to Ambient from Single Facilities (lb/ton)*			Emission Factor Rating
	Wet	Wet	Dry	
Process material? (batch or continuous loading/unloading)	NA	0.009 (0.008)	NA	NA/No (12/No)
Process material? (continuous) (dry material)	NA	0.00 (0.00)	0.00 (0.00)	NA/No (12/No)
Transfer drop? (transfer station) (fill, transfer + stack)	0.009 (0.008)	NA	NA	NA/No (12/No)
Transfer drop? (fill, transfer + stack)	NA	0.009 (0.008)	0.009 (0.008)	NA/No (12/No)
Batch drop? (batch loading)	0.02 (0.04)	0.009 (0.008)	0.002 (0.004)	NA/No (12/No)
Aggregate storage pile (fill, storage)	NA	0.00 (0.00)	0.0 (0.00)	NA/No (12/No)
Aggregate storage pile (transfer)	NA	0.0 (0.00)	0.0 (0.00)	NA/No (12/No)
Aggregate storage pile (transfer)	NA	0.0 (0.00)	0.0 (0.00)	NA/No (12/No)

Storage Pile Wind Erosion Emission Factor (AP-42 Fourth Edition Table 8.19.1-1).PNG
137K

Table 11.9-4 (cont.)

Name	Method	Wet	Dry	Rating	Specific Emission Factor
Non-deep track activity, track edge	Fixed	0	0.00	NA	B
Responsibility track edge	Fixed	0	0.00	NA	B
Wind erosion of gravel road	Fixed and variable	NA	0.00	NA	C

Disturbed Area Wind Erosion_EF_(AP-42_5th Edition_Tbl_11.9-4).PNG
56K

13.2.4.3 Predictive Emission Factor Equations

Total dust emissions from aggregate storage piles result from several distinct source activities within the storage cycle:

1. Loading of aggregate onto storage piles (batch or continuous drop operations).
2. Equipment traffic on storage area.
3. Wind erosion of pile surfaces and ground areas around piles.
4. Erosion of aggregate for shipment or for return to the process stream (batch or continuous drop operations).

Either adding aggregate material to a storage pile or removing it usually involves dropping the material onto a receiving surface. Trench dumping on the pile or loading out from the pile to a truck with a front-end loader are examples of batch drop operations. Adding material to the pile by a conveyor stacker is an example of a continuous drop operation.

Material Handling_EF_(AP-42_5th Edition_13.2.4.3).PNG
45K

 **Section 13.2-4 Supporting Information.pdf**
3924K

 **Wind Speed Map.pdf**
3311K

Dave Prey <dprey@utah.gov>
To: John Persons <jpersons@utah.gov>
Cc: Jason Krebs <jkrebs@utah.gov>

Tue, Jan 24, 2023 at 10:48 AM

John

They stated that the wind speed ranges that occurred during the test are within the same wind speeds that DAQ requires to be used for different parts of the state, which are 6-10 mph.

Note that wind speeds for wind erosion are thought to start at 12 MPH, so the 6-10 mph range is not expected to cause windblown dust.

The wind speeds are only used in the Q/U calculation to back calculate the emission rates based on the measured concentrations.

[Quoted text hidden]

Enqiang He <ehe@utah.gov>
To: John Persons <jpersons@utah.gov>, Alan Humpherys <ahumpherys@utah.gov>

Wed, Jan 25, 2023 at 11:59 AM

John,

AP-42 Section 13.2.4, Aggregate handling and storage piles, includes loading in/out and wind erosion emissions. This is what we have used to estimate fugitive dust emissions from storage piles.

As for other emissions, such as disturbed areas, loader operating areas, and haul road emissions, we have different ways to estimate emissions. For disturbed areas, we usually allow sources to use Table 11.9-4 in AP-42 Section 11.9. Western Surface Coal Mining. This method is quick but may be not very accurate (overestimated?) (C rating).

For emissions over a long period of time (for our purposes - annual emissions), this is an okay method to use.

Section 13.2.5, Industrial Wind Erosion, is a new way (as of 5th edition) to estimate emissions from surfaces such as disturbed areas and storage piles. Because of many factors involved in the process of estimation, and because of its short term nature, not many sources use this method. The method would generate lower emissions based on my observations.

For haul road emissions including loader operating areas, use our own haul road guidance. Sources could also choose to use AP-42 Sections 13.2.1 for paved haul roads, or 13.2.2 for unpaved haul roads.

Let me know if there are any questions, or if we need to meet before we respond to the source. Thanks,



EQ He, CPM
Permitting Engineer, Minor NSR Section, Permitting Branch |
Division of Air Quality

1950 West 195 North, Salt Lake City, UT 84116

Phone: (801) 556-1580

ehe@utah.gov



On Tue, Jan 24, 2023 at 8:13 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

[Quoted text hidden]

John Persons <jpersons@utah.gov>
To: Enqiang He <ehe@utah.gov>
Cc: Alan Humpherys <ahumpherys@utah.gov>

Wed, Jan 25, 2023 at 1:04 PM

Eq and Alan,

Want to have a quick meeting about this after coffee break today?

- John

[Quoted text hidden]

--



John Persons

Environmental Engineer | Minor NSR Section

M: (385) 306-6503

airquality.utah.gov



Enqiang He <ehe@utah.gov>

Wed, Jan 25, 2023 at 2:20 PM



To: John Persons <jpersons@utah.gov>
Cc: Alan Humpherys <ahumpherys@utah.gov>

Sure. See you then.



EQ He, CPM
Permitting Engineer, Minor NSR Section, Permitting Branch |
Division of Air Quality

1950 West 195 North, Salt Lake City, UT 84116
Phone: (801) 556-1580

ehe@utah.gov
 

[Quoted text hidden]

Alan Humpherys <ahumpherys@utah.gov>
To: Enqiang He <ehe@utah.gov>
Cc: John Persons <jpersons@utah.gov>

Wed, Jan 25, 2023 at 2:55 PM

I'm in a meeting, and I have something right after. I should be open around 3:30 if you still need me.

[Quoted text hidden]

--



Alan Humpherys
Manager | Minor NSR Section

P: (385) 306-6520
F: (801) 536-4099

airquality.utah.gov
 

Emails to and from this email address may be considered public records and thus subject to Utah GRAMA requirements.

John Persons <jpersons@utah.gov>
To: Alan Humpherys <ahumpherys@utah.gov>, Enqiang He <ehe@utah.gov>

Wed, Jan 25, 2023 at 3:01 PM

Alan,

Let's have a quick meeting at 3:00. I'll send out an invite. Thanks.

- John

[Quoted text hidden]

Enqiang He <ehe@utah.gov>
To: John Persons <jpersons@utah.gov>
Cc: Alan Humpherys <ahumpherys@utah.gov>

Wed, Jan 25, 2023 at 3:13 PM

I think John meant 3:30.



EQ He, CPM

Permitting Engineer, Minor NSR Section, Permitting Branch |
Division of Air Quality

1950 West 195 North, Salt Lake City, UT 84116

Phone: (801) 556-1580

ehe@utah.gov



[Quoted text hidden]

Alan Humpherys <ahumpherys@utah.gov>

Wed, Jan 25, 2023 at 3:17 PM

To: Enqiang He <ehe@utah.gov>

Cc: John Persons <jpersons@utah.gov>

Send me an invite when you are ready.

[Quoted text hidden]

John Persons <jpersons@utah.gov>

Wed, Jan 25, 2023 at 3:19 PM

To: Alan Humpherys <ahumpherys@utah.gov>

Cc: Enqiang He <ehe@utah.gov>

Ya, I meant 3:30. My bad.

- John

[Quoted text hidden]

John Persons <jpersons@utah.gov>

Fri, Jan 27, 2023 at 10:01 AM

To: "Bingham, Quin" <Quin.Bingham@gcinc.com>

Cc: Dave Prey <dprey@utah.gov>, Jason Krebs <jkrebs@utah.gov>, Alan Humpherys <ahumpherys@utah.gov>, Enqiang He <ehe@utah.gov>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Quin,

After conversing with Eq and Alan, the DAQ has decided that Granite will have to add emissions from wind erosion from its storage piles. It is the DAQ's understanding that the equations used to calculate loading/unloading emissions from storage piles (AP-42 13.2.4) do not include emissions from wind erosion. DAQ recommends that granite use the emissions factor for active storage piles listed in AP-42 Forth edition Table 8-19.1.1 (6.3 lb/acre/day PM10). DAQ has used this emissions factor as standard practice for estimating wind erosion from storage piles at aggregate facilities.

Let us know if you have any further questions or would like to set up a meeting to discuss this further.

- Best Regards

John Persons

On Tue, Jan 24, 2023 at 8:13 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

[Quoted text hidden]

[Quoted text hidden]

Bingham, Quin <Quin.Bingham@gcinc.com>

Fri, Jan 27, 2023 at 3:26 PM

To: John Persons <jpersons@utah.gov>

Cc: Dave Prey <dprey@utah.gov>, Jason Krebs <jkrebs@utah.gov>, Alan Humpherys <ahumpherys@utah.gov>, Enqiang He <ehe@utah.gov>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

John,

Thanks for the timely response. We will discuss your response internally and reach out with any additional questions we may have.

Have a great weekend.

Best,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Friday, January 27, 2023 10:02 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Dave Prey <dprey@utah.gov>; Jason Krebs <jkrebs@utah.gov>; Alan Humpherys <ahumpherys@utah.gov>; Enqiang He <ehe@utah.gov>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: FW: Aggregate Stockpile Wind Erosion Emission Factor

CAUTION: This email originated from outside of Granite

[Quoted text hidden]

John Persons <jpersons@utah.gov> Mon, Jan 30, 2023 at 1:19 PM
To: "Bingham, Quin" <Quin.Bingham@gcinc.com>
Cc: Dave Prey <dprey@utah.gov>, Jason Krebs <jkrebs@utah.gov>, Alan Humpherys <ahumpherys@utah.gov>, Enqiang He <ehe@utah.gov>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Sounds good.
[Quoted text hidden]

John Persons <jpersons@utah.gov> Wed, Feb 22, 2023 at 2:28 PM
To: "Bingham, Quin" <Quin.Bingham@gcinc.com>
Cc: Dave Prey <dprey@utah.gov>, Jason Krebs <jkrebs@utah.gov>, Alan Humpherys <ahumpherys@utah.gov>, Enqiang He <ehe@utah.gov>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Quin,

Any update on how your emissions calculations are going? Thanks.

- Best Regards
John Persons
[Quoted text hidden]

Bingham, Quin <Quin.Bingham@gcinc.com> Wed, Feb 22, 2023 at 2:33 PM
To: John Persons <jpersons@utah.gov>
Cc: Dave Prey <dprey@utah.gov>, Jason Krebs <jkrebs@utah.gov>, Alan Humpherys <ahumpherys@utah.gov>, Enqiang He <ehe@utah.gov>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Jon,

Thanks for following up. Our model has been updated based on our last call and we are doing one finally internal QC check for resubmitting. You should see the updated model sometime next week.

Best,

Quin

From: John Persons <jpersons@utah.gov>

Sent: Wednesday, February 22, 2023 2:28:27 PM

[Quoted text hidden]

[Quoted text hidden]

John Persons <jpersons@utah.gov>

Wed, Feb 22, 2023 at 2:43 PM

To: "Bingham, Quin" <Quin.Bingham@gcinc.com>

Cc: Dave Prey <dprey@utah.gov>, Jason Krebs <jkrebs@utah.gov>, Alan Humpherys <ahumpherys@utah.gov>, Enqiang He <ehe@utah.gov>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Great, thanks for the update!

[Quoted text hidden]

BACT for Granite Construction Company's I-80 South (Tree Farm) Aggregate Operation

Granite Construction Company (GCC) has researched the best available control technology (BACT) for the emissions from their new aggregate processing plant located near I-80 in Salt Lake County. This facility will emit Particulate Matter (PM), NO_x, CO, SO₂, VOCs, and HAPs. This BACT analysis will discuss emissions from the processing of aggregate, disturbed and exposed areas, haul roads, drilling and blasting, fuel storage tanks, and the diesel generator engine.

PM Emissions from the Processing of Aggregate

Fugitive particulate matter in the form of PM₁₀ and PM_{2.5} is emitted during the processing of aggregates. Processing of aggregate consists of mining, crushing, screening, conveying, and transferring material. The crushing, screening, and conveying are subject to 40 CFR 60 (NSPS) Subpart OOO. There are several options for controlling these types of emissions. These options include Baghouses/Fabric Filters, Cyclones, Electrostatic Precipitators (ESPs), Wet scrubbers, enclosures, Watering, and Best Management Practices.

The use of baghouses/fabric filters, cyclones, ESPs, wet scrubbers, and enclosures are not technically feasible. GCC will be moving the processing equipment around to various locations on site as different areas of the site are processed. This mobile work makes setting up an enclosure to capture PM emissions infeasible. The use of baghouses/fabric filters, cyclones, ESPs, and wet scrubbers all rely on an enclosure to capture the PM emissions so that the emissions can be routed to them. Because enclosures are infeasible, all of these options are infeasible as well. The use of watering and best management practices is feasible. Watering is between 50-90% effective at controlling PM emissions from the processing of aggregate. Best management practices consist of minimizing drop heights and regular inspection and maintenance.

The use of watering and best management practices is financially feasible.

The Selected BACT is as follows:

The source will operate water sprayers to apply water on all crushers, screens, and conveyor transfer points throughout the facility.

The source will operate all crushers, screens, and conveyors using best management practices.

The source will minimize conveyor drop heights where possible.

The use of water sprayers will be used to meet the visible emission limitations outlined in Utah's Administrative Code.

The source will not allow visible emissions from all screens and conveyor transfer points to exceed 7% opacity.

The source will not allow visible emissions from all crushers to exceed 12% opacity.

The source will not allow visible emissions from any fugitive dust source (including but not limited to haul roads, loader operation areas, stockpiles, and exposed areas) to exceed 20% opacity on-site and 10% at the property boundary.

Fugitive PM Emissions from Haul Roads

Truck and Loader traffic on haul roads creates significant PM emissions. There are several options for controlling these emissions. These options include: road paving, road sweeping, chemical treatment, watering, reduced speeds, and silt content reduction.

The use of road paving is feasible for the entrance road to the quarry but infeasible for the interior roads in the quarry due to the dynamic nature of the work. Road sweeping is technically feasible on paved roads but infeasible on unpaved roads. The use of chemical suppressants is feasible on roads that are used by haul trucks but not on roads used exclusively by loaders. Using chemical suppressants on loader interior mine roads could contaminate the aggregate being moved around by the loaders. The use of reduced speeds and road watering is feasible on all roads. The use of silt reduction is feasible on unpaved haul roads.

The control options are listed below in order of effectiveness (1 - most effective):

1. Road Paving with Street Sweeping (95% effective)
2. Chemical Suppressants and Watering (88% effective)
3. Basic Watering and Silt Reduction (75% effective)
4. Basic Watering (70% effective)
5. Reduced Speeds (44% effective)

It is technically feasible to pave the entrance road to the quarry. Therefore, this road should be paved and controlled with street sweeping. The use of chemical suppressants is feasible on all unpaved haul roads. The use of watering, silt reduction, and reduced speeds is feasible on all unpaved haul roads. Reduced speeds can be used alongside the other controls listed and therefore should be used as well

The Selected BACT is as follows:

The source will pave the entrance road to the quarry.

The source will use road sweeping to minimize fugitive dust on all paved haul roads.

The source will use chemical suppressants, watering, silt reduction, and reduced speeds to minimize fugitive dust on all unpaved roads.

The source shall use watering and silt reduction to minimize fugitive dust on all non-permanent roads and unpaved surfaces (ex. Roads in proximity to the mining face)

The source will not allow visible emissions from any fugitive dust source (including but not limited to haul roads, loader operation areas, stockpiles, and exposed areas) to exceed 20% opacity on-site and 10% at the property boundary.

PM Emissions from Drilling and Blasting

Drilling and Blasting have the potential to emit PM emissions. There are several options for controlling these emissions. These options include: dust collection systems, wet drilling and blasting, drilling shrouds, and best management practices.

The use of a dust collection system is up to 99% effective at controlling PM emissions from drilling. The use of wet drilling or drilling shrouds is around 88% effective at controlling PM emissions. Dust collection systems, wet drilling, and drilling shrouds are all technically feasible. The use of wet blasting and best management practices are both technically feasible.

For controlling the PM emissions from drilling the control options are listed below in order of effectiveness (1 - most effective):

1. Dust Collection Systems (95 - 99% effective)
2. Wet drilling (88% effective)
3. Drilling Shrouds (88% effective)
4. Best Management Practices

The use of a dust collection system is the most effective control option and it is both technically and economically feasible. Therefore, a dust collection system should be used to control PM emissions from drilling. The use of wet blasting is both technically and economically feasible. Therefore, wet blasting should be used to control PM emissions from blasting.

The Selected BACT is as follows:

The source shall use a dust collection system to control all emissions from drilling.

The source will apply water to any drilling or blasting area before blasting or drilling when the area is not already naturally wet.

The source will not allow visible emissions from any fugitive dust source (including but not limited to haul roads, loader operation areas, stockpiles, and exposed areas) to exceed 20% opacity on-site and 10% at the property boundary.

PM Emissions from Disturbed and Exposed Areas

Disturbed and exposed areas generate fugitive emissions by wind and continued activity on the disturbed soil. There are two different controls for controlling these emissions: water sprayers and minimum disturbance.

Both the use of water sprayers and minimum disturbance are technologically feasible. Water sprayers are 70-95% effective at reducing PM10 and PM2.5 emissions. Using a minimum disturbance strategy is up to 50% effective at reducing PM10 and PM2.5 emissions. The use of water sprayers is not economically feasible because of the large volume of water that would be needed to keep the entire area wet during operation. This is also not an environmentally friendly option due to the large amount of water consumption in an already drought-stricken area.

The NSR selects the following as BACT:

The source will operate using a minimal disturbance strategy. This will include leaving natural vegetation in for as long as possible and allowing natural vegetation to grow back as soon as possible.

The source will not allow visible emissions from any fugitive dust source (including but not limited to haul roads, loader operation areas, stockpiles, and exposed areas) to exceed 20% opacity on-site and 10% at the property boundary.

BACT Regarding Generator Engines

GCC will install and operate three (3) diesel fired generator engines (440 hp, 260 hp, and 175 hp). These engines will have the potential to emit NOx, CO, PM, SO2, and VOCs. These engines will be evaluated by pollutant below.

NOx emissions from Diesel Generator Engines

The three (3) generator engines have the potential to emit a significant amount of NOx. There are several options for controlling these NOx emissions. These options include

Tier 4 engines, Selective Catalytic Reduction (SCR), limited hours of operation, and Exhaust Gas Recirculation (EGR).

The selected engines will be Tier 4 engines. These engines will also be equipped with EGR systems and be limited to 2,200 hours of operation per year (each). The only further control that could be used to further limit NO_x emissions is an SCR system. However, the use of SCR on the engines is infeasible because retrofitting the relatively small engines with an SCR system would create back pressure causing a reduction in power. Furthermore, because the engines are already Tier 4 the cost analysis of retrofitting the engines with SCR systems would probably not be cost effective.

The Selected BACT is as follows:

The source shall install diesel engines that meet the Tier 4 certification.

The source shall install Exhaust Gas Recirculation (EGR) systems on all engines.

The source shall limit each diesel engine to 2,200 hours of operation per year.

The source will not allow the opacity of the emissions from the emergency generator engines to exceed 20%.

PM, CO, SO₂, and VOC Emissions from Diesel Generator Engines

The diesel generator engines will also emit PM, CO, SO₂, and VOCs. There are various control technologies that could be used to limit these pollutants. These technologies include: Tier 4 engines, diesel particulate filters (DPF), ultra-low sulfur diesel, a diesel oxidation catalyst, and exhaust gas recirculation (EGR).

The engines being installed are Tier 4 engines with EGR systems. Each engine will also have a limited run time of 2,200 hours per year. The use of diesel particulate filters and a diesel oxidation catalyst are both technically infeasible options due to the back pressure and reduced power they would have on the relatively small engines. The use of ultra-low sulfur diesel is feasible and required under MACT Subpart ZZZZ.

The Selected BACT is as Follows:

The source shall only use ultra-low sulfur diesel (<15 ppm) in all generator engines.

The source shall install diesel engines that meet the Tier 4 certification.

The source shall install Exhaust Gas Recirculation (EGR) systems on all engines.

The source shall limit each diesel engine to 2,200 hours of operation per year.

The source will not allow the opacity of the emissions from the emergency generator engines to exceed 20%.

VOC and HAP Emissions from Storage Tanks

GCC will have three 250 gallon diesel storage tanks onsite. These tanks will throughput a maximum of 10,000 gallons of diesel per year. These tanks have the potential to emit a very small amount of HAPs (1.5 lbs per year). Due to the very small size of these tanks, the only control option available is the use of best management practices. Best management practices consist of minimizing working and breathing losses.

The Selected BACT is as follows:

The source will operate the diesel storage tanks in a way to minimize working and breathing losses from the tanks.

SUMMARY OF EMISSIONS

The emissions listed below are an estimate of the total potential emissions from the source. Some rounding of emissions is possible.

Criteria Pollutant	Change (TPY)	Total (TPY)
CO2 Equivalent	268735.00	268735.00
Carbon Monoxide	11.95	11.95
Nitrogen Oxides	1.19	1.19
Particulate Matter - PM10 (Fugitives)	4.97	4.97
Particulate Matter - PM2.5	1.16	1.16
Sulfur Dioxide	0.02	0.02
Volatile Organic Compounds	0.52	0.52

+

Hazardous Air Pollutant	Change (lbs/yr)	Total (lbs/yr)
Total HAPs (CAS #THAPS)	71	71
	Change (TPY)	Total (TPY)
Total HAPs	0.04	0.04

Note: Change in emissions indicates the difference between previous AO and proposed modification.



John Persons <jpersons@utah.gov>

Updated I-80 South Quarry ADM

51 messages


Bingham, Quin <Quin.Bingham@gcinc.com>

Tue, Feb 28, 2023 at 2:08 PM

To: John Persons <jpersons@utah.gov>, Dave Prey <dprey@utah.gov>, Jason Krebs <jkrebs@utah.gov>

Cc: "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Good afternoon, John,

I have updated the I-80 South Quarry ADM based on our last discussion. I sent you all access to a One Drive Folder  [02282023_ADM](#) that has the most recent model files for both phase 1 and phase 2 along with the emission calculation spreadsheets. Please confirm you can access this shared OneDrive folder.

Please reach out with any questions.

Best,

Quin

Quinten G. Bingham

Utah Region Environmental Manager
1000 N Warm Springs Rd
Salt Lake City, UT 84116

Direct: [801-526-6050](tel:801-526-6050)

Mobile: [435-770-4319](tel:435-770-4319)

Email: quin.bingham@gcinc.com
www.graniteconstruction.com



Jason Krebs <jkrebs@utah.gov>

Tue, Feb 28, 2023 at 3:55 PM

To: "Bingham, Quin" <Quin.Bingham@gcinc.com>

Cc: John Persons <jpersons@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Thanks for sharing these files Quin. I was able to download them.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

195 North 1950 West, Salt Lake City, UT 84116

Emails to and from this email address may be considered public records and thus subject to Utah GRAMA requirements.

[Quoted text hidden]

Bingham, Quin <Quin.Bingham@gcinc.com> Tue, Feb 28, 2023 at 3:55 PM
 To: Jason Krebs <jkrebs@utah.gov>
 Cc: John Persons <jpersons@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Great. Thanks for letting me know. Please don't hesitate to reach out with any questions.

From: Jason Krebs <jkrebs@utah.gov>
Sent: Tuesday, February 28, 2023 3:55 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: John Persons <jpersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

[Quoted text hidden]

John Persons <jpersons@utah.gov> Tue, Mar 7, 2023 at 10:48 AM
 To: "Bingham, Quin" <Quin.Bingham@gcinc.com>
 Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Jason and Dave,

Let me know how the model is looking once you get a chance to review it. Thanks.

- Best Regards
John Persons

[Quoted text hidden]

--



John Persons

Environmental Engineer | Minor NSR Section

M: (385) 306-6503

airquality.utah.gov



Jason Krebs <jkrebs@utah.gov> Tue, Mar 7, 2023 at 11:13 AM
 To: John Persons <jpersons@utah.gov>
 Cc: "Bingham, Quin" <Quin.Bingham@gcinc.com>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Will do. I'm in the middle of reviewing a very large modeling project that will likely require a couple more days. I've got Granite I80 next in line and will reach out with any questions or concerns.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

Emails to and from this email address may be considered public records and thus subject to Utah GRAMA requirements.

[Quoted text hidden]

Bingham, Quin <Quin.Bingham@gcinc.com>

Tue, Mar 7, 2023 at 11:16 AM

To: Jason Krebs <jkrebs@utah.gov>, John Persons <jpersons@utah.gov>

Cc: Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Jason,

Thank you for the update. Please don't hesitate to call me with any questions.

Regards,
Quin

From: Jason Krebs <jkrebs@utah.gov>

Sent: Tuesday, March 7, 2023 11:13:41 AM

To: John Persons <jpersons@utah.gov>

Cc: Bingham, Quin <Quin.Bingham@gcinc.com>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

[Quoted text hidden]

[Quoted text hidden]

John Persons <jpersons@utah.gov>

Tue, Mar 7, 2023 at 11:19 AM

To: "Bingham, Quin" <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Jason,

Thanks for the update. Also, I'm out of the office for the rest of the week. Just wanted to give everybody a heads-up.

- Best Regards
John Persons

[Quoted text hidden]

Jason Krebs <jkrebs@utah.gov>

Mon, Mar 13, 2023 at 2:06 PM

To: John Persons <jpersons@utah.gov>

Hey John - I'm getting started on this review today. Did they happen to submit an updated NOI, or do you happen to have an updated spreadsheet that I can compare their latest figures with? It appears that most of the information I find in the google drives shared with me is outdated.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

Emails to and from this email address may be considered public records and thus subject to Utah GRAMA requirements.

[Quoted text hidden]

John Persons <jpersons@utah.gov>

Wed, Mar 15, 2023 at 11:38 AM

To: Jason Krebs <jkrebs@utah.gov>


Jason,

I just uploaded the most recent copy of the emissions spreadsheets to the google drive folder. I have also attached them to this email. Let me know if you need anything else from me. Thanks.

- Best Regards
John Persons

[Quoted text hidden]

2 attachments

 **Permitting_emissions_calcs_Phase_2_NOI_02282023.xlsx**
823K

 **Permitting_emissions_calcs_Phase_1 NOI_02282023.xlsx**
825K

Jason Krebs <jkrebs@utah.gov>
To: John Persons <jpersons@utah.gov>

Wed, Mar 15, 2023 at 11:57 AM

Thanks John. I think I might already have copies of these, but I'll check them to make sure. I hope to have things wrapped up this week.

[Quoted text hidden]

Bingham, Quin <Quin.Bingham@gcinc.com>
To: John Persons <jpersons@utah.gov>, Jason Krebs <jkrebs@utah.gov>
Cc: Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Thu, Mar 16, 2023 at 10:12 AM

Jason,

I hope you are doing well.

I am reaching to get an update on your review of our latest ADM submittal.

Also, do you have an estimate as to when your review may be completed?

Is there any additional information you need from me?

John,

Can you please provide an outline along with estimated timeframe of how the AO process looks from this point moving forward for our NOI?

My understanding is that once UDAQ has approved our ADM:

- Our NOI goes out for 30-day public comment period,
- UDAQ then responds to public comments,
 - How long does UDAQ have to respond to public comment?
- Once public comments have been addressed, an AO is drafted by UDAQ.

Thanks,

Quin

[Quoted text hidden]

Jason Krebs <jkrebs@utah.gov> Thu, Mar 16, 2023 at 10:28 AM
 To: "Bingham, Quin" <Quin.Bingham@gcinc.com>
 Cc: John Persons <jpersons@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

I've been able to work on this project this week, and expect to have my review wrapped up very soon. I don't expect a need any additional information.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

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[Quoted text hidden]

Bingham, Quin <Quin.Bingham@gcinc.com> Thu, Mar 16, 2023 at 10:31 AM
 To: Jason Krebs <jkrebs@utah.gov>
 Cc: John Persons <jpersons@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Jason,

Thanks for the rapid response.

Based on your review to this point, should we anticipate UDAQ requesting another iteration of the model, or no?

Regards,

Quin

[Quoted text hidden]

[Quoted text hidden]

[Quoted text hidden]

[Quoted text hidden]

[Quoted text hidden]

[Quoted text hidden]

[Quoted text hidden]

[Quoted text hidden]

[Quoted text hidden]

[Quoted text hidden]

[Quoted text hidden]

[Quoted text hidden]

John Persons

Environmental Engineer | Minor NSR Section

M: (385) 306-6503

airquality.utah.gov

--

[Quoted text hidden]

Jason Krebs <jkrebs@utah.gov>

Thu, Mar 16, 2023 at 10:52 AM

To: "Bingham, Quin" <Quin.Bingham@gcinc.com>

Cc: John Persons <jpersons@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

No. I don't anticipate a need for that.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

Emails to and from this email address may be considered public records and thus subject to Utah GRAMA requirements.

[Quoted text hidden]

Bingham, Quin <Quin.Bingham@gcinc.com>

Thu, Mar 16, 2023 at 10:55 AM

To: Jason Krebs <jkrebs@utah.gov>

Cc: John Persons <jpersons@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Ok, thanks.

[Quoted text hidden]

John Persons <jpersons@utah.gov>

Mon, Mar 20, 2023 at 8:27 AM

To: "Bingham, Quin" <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Quin,

Once modeling approves the model, I will send the draft permit through the DAQ's peer review process. During this process three different parties have to review it, I expect this to take about a month but it all depends on how fast and how many questions each party has. From there, the timeline you listed in the previous email is correct.

I don't think there is a time deadline for when DAQ has to respond to public comments. So the timeline for this is really going to depend on how many comments are received. Let me know if you have any additional questions. Thanks.

- Best Regards
John Persons

[Quoted text hidden]

--



John Persons

Environmental Engineer | Minor NSR Section

M: (385) 306-6503

airquality.utah.gov



Bingham, Quin <Quin.Bingham@gcinc.com>

Mon, Mar 20, 2023 at 12:33 PM

To: John Persons <jpersons@utah.gov>, Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>

Cc: "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

John,

Thank you for the additional information. It is constructive.

Dave and Jason,

As of last week, Jason was close to finalizing his review of our updated ADM. Dave, the model then goes to you for review, correct? Based on your current workload, do you have a rough estimate, as to when you anticipate completing your review of our model?

Thanks,

Quin

[Quoted text hidden]

Bingham, Quin <Quin.Bingham@gcinc.com>

Fri, Mar 24, 2023 at 10:23 AM

To: John Persons <jpersons@utah.gov>, Jason Krebs <jkrebs@utah.gov>

Cc: Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Hi John,

Can you please elucidate the process of this NOI/permit going out for public comment?

I am curious to better understand what this process looks like (i.e., what steps are involved)?

Hi Jason,

Any updates on your review of our ADM? Has it gone to Dave Prey for final review?

Thank you both for you communication.

Best,

Quin

[Quoted text hidden]

Dave Prey <dprey@utah.gov>

Fri, Mar 24, 2023 at 11:59 AM

To: "Bingham, Quin" <Quin.Bingham@gcinc.com>

Cc: John Persons <jpersons@utah.gov>, Jason Krebs <jkrebs@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Quin,

Jason and I have completed the review, John should be able to assist with the remaining part of the permitting process.

Thanks,
-Dave

[Quoted text hidden]

Bingham, Quin <Quin.Bingham@gcinc.com>

Fri, Mar 24, 2023 at 12:56 PM

To: Dave Prey <dprey@utah.gov>

Cc: John Persons <jpersons@utah.gov>, Jason Krebs <jkrebs@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Dave,

Thank you for the update.

Is it safe to assume you and Jason do not have any additional model change requests for us?

-Quin

[Quoted text hidden]

Bingham, Quin <Quin.Bingham@gcinc.com>

Mon, Mar 27, 2023 at 1:00 PM

To: John Persons <jpersons@utah.gov>, Jason Krebs <jkrebs@utah.gov>

Cc: Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Hi John,

Following up on my email below.

Can you please provide additional details on the NOI/permit going to public comment process?

Thanks,
Quin

From: Bingham, Quin <Quin.Bingham@gcinc.com>

Sent: Friday, March 24, 2023 10:23 AM

To: John Persons <jpersons@utah.gov>; Jason Krebs <jkrebs@utah.gov>

Cc: Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: RE: Updated I-80 South Quarry ADM

[Quoted text hidden]

John Persons <jpersons@utah.gov>

Tue, Mar 28, 2023 at 8:16 AM

To: "Bingham, Quin" <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Quin,

Of course. So once Granite approves the draft permit the DAQ will send it out for a 30-day public comment period. The comment period will start when the proposed project is published in the county's newspaper. For this project, the DAQ will also hold a public hearing to let members of the public voice their concerns in person. Once the 30-day public comment period is over, the DAQ will read through and respond to every comment. Provided that no new changes come as a result of the comments, the DAQ will publish its responses and then send the permit through for signing.

Additional things that could lengthen this timeline include if the public comment period is extended due to public request (I have never seen this done but I am pretty sure that there is a way that members of the public can do this.) and if significant changes come as a result of public comments made. Let me know if you have any other questions.

- Best Regards
John Persons

[Quoted text hidden]

Dave Prey <dprey@utah.gov>

Tue, Mar 28, 2023 at 8:16 AM

To: "Bingham, Quin" <Quin.Bingham@gcinc.com>

Cc: John Persons <jpersons@utah.gov>, Jason Krebs <jkrebs@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Quin,

We do not have any more modeling related questions at this time, thanks.

[Quoted text hidden]

Bingham, Quin <Quin.Bingham@gcinc.com>

Tue, Mar 28, 2023 at 8:17 AM

To: Dave Prey <dprey@utah.gov>

Cc: John Persons <jpersons@utah.gov>, Jason Krebs <jkrebs@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Thank you, Dave.

[Quoted text hidden]

Bingham, Quin <Quin.Bingham@gcinc.com>

Tue, Mar 28, 2023 at 8:31 AM

To: John Persons <jpersons@utah.gov>

Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Thank you, John.

[Quoted text hidden]

Bingham, Quin <Quin.Bingham@gcinc.com>

Fri, Apr 7, 2023 at 3:23 PM

To: John Persons <jpersons@utah.gov>

Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Hi John,

I hope you are doing well. I tried contacting you via phone a few times with no success.

Can you please provide a status update on the permit? is the permit still in draft phase or is it in internal review?

Best,
Quin

From: John Persons <jpersons@utah.gov>

Sent: Tuesday, March 28, 2023 8:16:04 AM

[Quoted text hidden]

[Quoted text hidden]

John Persons <jpersons@utah.gov>

Mon, Apr 10, 2023 at 7:40 AM

To: "Bingham, Quin" <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Quin,

Sorry I missed your calls. The permit is already through peer review and is currently being reviewed by DAQ's compliance department. Once compliance finishes its review Alan will get a chance to review it. After Alan reviews it, I will send it to you for Granite to review before it goes to public comment. Let me know if you have any other questions. Thanks.

- Best Regards
John Persons

[Quoted text hidden]

Bingham, Quin <Quin.Bingham@gcinc.com>

Mon, Apr 10, 2023 at 10:06 AM

To: John Persons <jpersons@utah.gov>

Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

John,

Thank you for the update.

Do you have an estimate as to when I may expect to receive the permit for review prior to it going to public comment?

-Quin

[Quoted text hidden]

John Persons <jpersons@utah.gov>

Tue, Apr 11, 2023 at 9:25 AM

To: "Bingham, Quin" <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Quin,

It all depends on how long it takes for Chad and Alan to review it. I estimate 2-3 weeks but I could be wrong. I will keep you posted once Chad gets it back to me. Thanks.

- Best Regards
John Persons

[Quoted text hidden]

Bingham, Quin <Quin.Bingham@gcinc.com>

Tue, Apr 11, 2023 at 9:54 AM

To: John Persons <jpersons@utah.gov>

Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

John,

Thank you for the additional timeline information.

I will follow up with you late next week for an additional status update.

[Quoted text hidden]

John Persons <jpersons@utah.gov>

Wed, Apr 12, 2023 at 6:31 AM

To: "Bingham, Quin" <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Sounds good.

- John

[Quoted text hidden]

John Persons <jpersons@utah.gov>

Tue, Apr 18, 2023 at 2:27 PM

To: "Bingham, Quin" <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Quin,

I just have an update and a quick question. Compliance approved this project so I sent it to Alan for review. I also have a quick question. Have the generator engines for this site been purchased already? If so, what is the year of manufacture? Thanks.

- Best Regards

John Persons

[Quoted text hidden]

Bingham, Quin <Quin.Bingham@gcinc.com>

Tue, Apr 18, 2023 at 2:30 PM

To: John Persons <jpersons@utah.gov>

Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

John,

Thank you for the update.

In response to your question, the generators have not been purchased yet.

Do you have an estimate as to how long Alan's review will take?

Regards,

[Quoted text hidden]

John Persons <jpersons@utah.gov>

Tue, Apr 18, 2023 at 2:33 PM

To: "Bingham, Quin" <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Quin,

Thanks for the fast response. I imagine 1-2 weeks but I know that he has a lot on his plate right now so that timeline could change. I will keep you posted. Thanks.

- Best Regards

John Persons

[Quoted text hidden]

Bingham, Quin <Quin.Bingham@gcinc.com>

Tue, Apr 18, 2023 at 2:34 PM

To: John Persons <jpersons@utah.gov>

Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Understood. Thank you.

[Quoted text hidden]

Bingham, Quin <Quin.Bingham@gcinc.com>

Thu, Apr 27, 2023 at 12:53 PM

To: John Persons <jpersons@utah.gov>

Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Hello John,

I hope your week is going well.

I am reaching out to see if you have an update on Alan's review of our air permit.

Thanks,

Quin

From: John Persons <jpersons@utah.gov>

Sent: Tuesday, April 18, 2023 2:33 PM

[Quoted text hidden]

[Quoted text hidden]

John Persons <jpersons@utah.gov>

Thu, Apr 27, 2023 at 2:38 PM

To: "Bingham, Quin" <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Quin,

I have still not gotten it back from Alan. I know he has looked at it but I have not received it back yet. I'll keep you in the loop.

- Best Regards

John Persons

[Quoted text hidden]

Bingham, Quin <Quin.Bingham@gcinc.com>

Thu, Apr 27, 2023 at 2:46 PM

To: John Persons <jpersons@utah.gov>

Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Sounds good. Thank you, John.

From: John Persons <jpersons@utah.gov>

Sent: Thursday, April 27, 2023 2:38 PM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

I have still not gotten it back from Alan. I know he has looked at it but I have not received it back yet. I'll keep you in the loop.

- Best Regards

John Persons

On Thu, Apr 27, 2023 at 12:53 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hello John,

I hope your week is going well.

I am reaching out to see if you have an update on Alan's review of our air permit.

Thanks,

Quin

From: John Persons <jpgersons@utah.gov>
Sent: Tuesday, April 18, 2023 2:33 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

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Quin,

Thanks for the fast response. I imagine 1-2 weeks but I know that he has a lot on his plate right now so that timeline could change. I will keep you posted. Thanks.

- Best Regards

John Persons

On Tue, Apr 18, 2023 at 2:30 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the update.

In response to your question, the generators have not been purchased yet.

Do you have an estimate as to how long Alan's review will take?

Regards,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, April 18, 2023 2:27 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
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Quin,

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- Best Regards

John Persons

On Wed, Apr 12, 2023 at 6:31 AM John Persons <jpersons@utah.gov> wrote:

Sounds good.

- John

On Tue, Apr 11, 2023 at 9:54 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the additional timeline information.

I will follow up with you late next week for an additional status update.

Best,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, April 11, 2023 9:26 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

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Quin,

It all depends on how long it takes for Chad and Alan to review it. I estimate 2-3 weeks but I could be wrong. I will keep you posted once Chad gets it back to me. Thanks.

- Best Regards

John Persons

On Mon, Apr 10, 2023 at 10:06 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the update.

Do you have an estimate as to when I may expect to receive the permit for review prior to it going to public comment?

-Quin

From: John Persons <jpersons@utah.gov>

Sent: Monday, April 10, 2023 7:41 AM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

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Quin,

Sorry I missed your calls. The permit is already through peer review and is currently being reviewed by DAQ's compliance department. Once compliance finishes its review Alan will get a chance to review it. After Alan reviews it, I will send it to you for Granite to review before it goes to public comment. Let me know if you have any other questions. Thanks.

- Best Regards

John Persons

On Fri, Apr 7, 2023 at 3:23 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hi John,

I hope you are doing well. I tried contacting you via phone a few times with no success.

Can you please provide a status update on the permit? is the permit still in draft phase or is it in internal review?

Best,

Quin

From: John Persons <jpersons@utah.gov>

Sent: Tuesday, March 28, 2023 8:16:04 AM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

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Quin,

Of course. So once Granite approves the draft permit the DAQ will send it out for a 30-day public comment period. The comment period will start when the proposed project is published in the county's newspaper. For this project, the DAQ will also hold a public hearing to let members of the public voice their concerns in person. Once the 30-day public comment period is over, the DAQ will read through and respond to every comment. Provided that no new changes come as a result of the comments, the DAQ will publish its responses and then send the permit through for signing.

Additional things that could lengthen this timeline include if the public comment period is extended due to public request (I have never seen this done but I am pretty sure that there is a way that members of the public can do this.) and if significant changes come as a result of public comments made. Let me know if you have any other questions.

- Best Regards

John Persons

On Mon, Mar 27, 2023 at 1:00 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hi John,

Following up on my email below.

Can you please provide additional details on the NOI/permit going to public comment process?

Thanks,

Quin

From: Bingham, Quin <Quin.Bingham@gcinc.com>
Sent: Friday, March 24, 2023 10:23 AM
To: John Persons <jpersons@utah.gov>; Jason Krebs <jkrebs@utah.gov>
Cc: Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: RE: Updated I-80 South Quarry ADM

Hi John,

Can you please elucidate the process of this NOI/permit going out for public comment?

I am curious to better understand what this process looks like (i.e., what steps are involved)?

Hi Jason,

Any updates on your review of our ADM? Has it gone to Dave Prey for final review?

Thank you both for your communication.

Best,
Quin

From: John Persons <jpersons@utah.gov>
Sent: Monday, March 20, 2023 8:28 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Once modeling approves the model, I will send the draft permit through the DAQ's peer review process. During this process three different parties have to review it, I expect this to take about a month but it all depends on how fast and how many questions each party has. From there, the timeline you listed in the previous email is correct.

I don't think there is a time deadline for when DAQ has to respond to public comments. So the timeline for this is really going to depend on how many comments are received. Let me know if you have any additional questions. Thanks.

- Best Regards
John Persons

On Thu, Mar 16, 2023 at 10:55 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Ok, thanks.

From: Jason Krebs <jkrebs@utah.gov>
Sent: Thursday, March 16, 2023 10:53 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: John Persons <jpersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

No. I don't anticipate a need for that.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

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On Thu, Mar 16, 2023 at 10:31 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Jason,

Thanks for the rapid response.

Based on your review to this point, should we anticipate UDAQ requesting another iteration of the model, or no?

Regards,
Quin

From: Jason Krebs <jkrebs@utah.gov>
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To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: John Persons <jpersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

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I've been able to work on this project this week, and expect to have my review wrapped up very soon. I don't expect a need any additional information.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

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Jason,

I hope you are doing well.

I am reaching to get an update on your review of our latest ADM submittal.

Also, do you have an estimate as to when your review may be completed?

Is there any additional information you need from me?

John,

Can you please provide an outline along with estimated timeframe of how the AO process looks from this point moving forward for our NOI?

My understanding is that once UDAQ has approved our ADM:

- Our NOI goes out for 30-day public comment period,
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 - How long does UDAQ have to respond to public comment?
- Once public comments have been addressed, an AO is drafted by UDAQ.

Thanks,
Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, March 7, 2023 11:19:06 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

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Jason,

Thanks for the update. Also, I'm out of the office for the rest of the week. Just wanted to give everybody a heads-up.

- Best Regards
John Persons

On Tue, Mar 7, 2023 at 11:16 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Jason,

Thank you for the update. Please don't hesitate to call me with any questions.

Regards,
Quin

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Sent: Tuesday, March 7, 2023 11:13:41 AM
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Subject: Re: Updated I-80 South Quarry ADM

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Will do. I'm in the middle of reviewing a very large modeling project that will likely require a couple more days. I've got Granite I80 next in line and will reach out with any questions or concerns.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

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On Tue, Mar 7, 2023 at 10:49 AM John Persons <jpersons@utah.gov> wrote:

Jason and Dave,

Let me know how the model is looking once you get a chance to review it. Thanks.

- Best Regards
John Persons

On Tue, Feb 28, 2023 at 3:56 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Great. Thanks for letting me know. Please don't hesitate to reach out with any questions.

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Sent: Tuesday, February 28, 2023 3:55 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: John Persons <jpersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
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Thanks for sharing these files Quin. I was able to download them.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

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On Tue, Feb 28, 2023 at 2:08 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Good afternoon, John,

I have updated the I-80 South Quarry ADM based on our last discussion. I sent you all access to a One Drive Folder [02282023_ADM](#) that has the most recent model files for both phase 1 and phase 2 along with the emission calculation spreadsheets. Please confirm you can access this shared OneDrive folder.

Please reach out with any questions.

Best,

Quin

Quinten G. Bingham

Utah Region Environmental Manager
1000 N Warm Springs Rd
Salt Lake City, UT 84116

Direct: [801-526-6050](tel:801-526-6050)

Mobile: [435-770-4319](tel:435-770-4319)

Email: quin.bingham@gcinc.com
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John Persons <jpgersons@utah.gov>

Thu, May 4, 2023 at 10:13 AM

To: "Bingham, Quin" <Quin.Bingham@gcinc.com>


Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Quin,

This project has passed the DAQ's internal review process. I have attached a draft copy of the AO below. Please take your time and look it over. Let me know if you have any questions, concerns, or comments. If this document looks good to you please sign it and send it back to me. Once I have received your signed copy I will send it to public comment.

- Best Regards
John Persons

[Quoted text hidden]

 **RN161200001.rtf**
1658K

Bingham, Quin <Quin.Bingham@gcinc.com>

Thu, May 4, 2023 at 11:02 AM

To: John Persons <jpgersons@utah.gov>

Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

John,

We will review and reach out with any questions, comments, and/or concerns.

Best,

Quin

From: John Persons <jpgersons@utah.gov>

Sent: Thursday, May 4, 2023 10:13 AM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

This project has passed the DAQ's internal review process. I have attached a draft copy of the AO below. Please take your time and look it over. Let me know if you have any questions, concerns, or comments. If this document looks good to you please sign it and send it back to me. Once I have received your signed copy I will send it to public comment.

- Best Regards

John Persons

On Thu, Apr 27, 2023 at 2:46 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Sounds good. Thank you, John.

From: John Persons <jpersons@utah.gov>

Sent: Thursday, April 27, 2023 2:38 PM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

I have still not gotten it back from Alan. I know he has looked at it but I have not received it back yet. I'll keep you in the loop.

- Best Regards

John Persons

On Thu, Apr 27, 2023 at 12:53 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hello John,

I hope your week is going well.

I am reaching out to see if you have an update on Alan's review of our air permit.

Thanks,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, April 18, 2023 2:33 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Thanks for the fast response. I imagine 1-2 weeks but I know that he has a lot on his plate right now so that timeline could change. I will keep you posted. Thanks.

- Best Regards

John Persons

On Tue, Apr 18, 2023 at 2:30 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the update.

In response to your question, the generators have not been purchased yet.

Do you have an estimate as to how long Alan's review will take?

Regards,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, April 18, 2023 2:27 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

I just have an update and a quick question. Compliance approved this project so I sent it to Alan for review. I also have a quick question. Have the generator engines for this site been purchased already? If so, what is the year of manufacture? Thanks.

- Best Regards

John Persons

On Wed, Apr 12, 2023 at 6:31 AM John Persons <jpgersons@utah.gov> wrote:

Sounds good.

- John

On Tue, Apr 11, 2023 at 9:54 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the additional timeline information.

I will follow up with you late next week for an additional status update.

Best,

Quin

From: John Persons <jpgersons@utah.gov>
Sent: Tuesday, April 11, 2023 9:26 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

It all depends on how long it takes for Chad and Alan to review it. I estimate 2-3 weeks but I could be wrong. I will keep you posted once Chad gets it back to me. Thanks.

- Best Regards

John Persons

On Mon, Apr 10, 2023 at 10:06 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the update.

Do you have an estimate as to when I may expect to receive the permit for review prior to it going to public comment?

-Quin

From: John Persons <jpersons@utah.gov>

Sent: Monday, April 10, 2023 7:41 AM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Sorry I missed your calls. The permit is already through peer review and is currently being reviewed by DAQ's compliance department. Once compliance finishes its review Alan will get a chance to review it. After Alan reviews it, I will send it to you for Granite to review before it goes to public comment. Let me know if you have any other questions. Thanks.

- Best Regards

John Persons

On Fri, Apr 7, 2023 at 3:23 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hi John,

I hope you are doing well. I tried contacting you via phone a few times with no success.

Can you please provide a status update on the permit? is the permit still in draft phase or is it in internal review?

Best,

Quin

From: John Persons <jpersons@utah.gov>

Sent: Tuesday, March 28, 2023 8:16:04 AM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Of course. So once Granite approves the draft permit the DAQ will send it out for a 30-day public comment period. The comment period will start when the proposed project is published in the county's newspaper. For this project, the DAQ will also hold a public hearing to let members of the public voice their concerns in person. Once the 30-day public comment period is over, the DAQ will read through and respond to every comment. Provided that no new changes come as a result of the comments, the DAQ will publish its responses and then send the permit through for signing.

Additional things that could lengthen this timeline include if the public comment period is extended due to public request (I have never seen this done but I am pretty sure that there is a way that members of the public can do this.) and if significant changes come as a result of public comments made. Let me know if you have any other questions.

- Best Regards

John Persons

On Mon, Mar 27, 2023 at 1:00 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hi John,

Following up on my email below.

Can you please provide additional details on the NOI/permit going to public comment process?

Thanks,

Quin

From: Bingham, Quin <Quin.Bingham@gcinc.com>

Sent: Friday, March 24, 2023 10:23 AM

To: John Persons <jpersons@utah.gov>; Jason Krebs <jkrebs@utah.gov>

Cc: Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: RE: Updated I-80 South Quarry ADM

Hi John,

Can you please elucidate the process of this NOI/permit going out for public comment?

I am curious to better understand what this process looks like (i.e., what steps are involved)?

Hi Jason,

Any updates on your review of our ADM? Has it gone to Dave Prey for final review?

Thank you both for your communication.

Best,
Quin

From: John Persons <jpersons@utah.gov>
Sent: Monday, March 20, 2023 8:28 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Once modeling approves the model, I will send the draft permit through the DAQ's peer review process. During this process three different parties have to review it, I expect this to take about a month but it all depends on how fast and how many questions each party has. From there, the timeline you listed in the previous email is correct.

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- Best Regards
John Persons

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From: Jason Krebs <jkrebs@utah.gov>
Sent: Thursday, March 16, 2023 10:53 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: John Persons <jpersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

No. I don't anticipate a need for that.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

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Sent: Thursday, March 16, 2023 10:29 AM
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Subject: Re: Updated I-80 South Quarry ADM

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- Best Regards
John Persons

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Sent: Tuesday, February 28, 2023 3:55 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: John Persons <jpersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

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Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

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Please reach out with any questions.

Best,

Quin

Quinten G. Bingham

Utah Region Environmental Manager
[1000 N Warm Springs Rd](#)
[Salt Lake City, UT 84116](#)

Direct: [801-526-6050](tel:801-526-6050)

Mobile: [435-770-4319](tel:435-770-4319)

Email: quin.bingham@gcinc.com
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Bingham, Quin <Quin.Bingham@gcinc.com>

Mon, May 8, 2023 at 12:24 PM

To: John Persons <jpersons@utah.gov>

Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

John,

Can you please clarify whether the highlighted code reference should be R307-401-4 or R307-410-4? My assumption is that it should be the latter as it is referencing criteria pollutants.

If it should be R307-410-4, can you please send me a revised version of the text file?

Thanks,

Quin

**EMISSION IMPACT ANALYSIS**

The PM₁₀ emissions from Granite Construction Company's new I-80 South Quarry exceed the respective modeling threshold established in R307-410-4. Therefore, the PM₁₀ emissions were modeled. This resulted in operating conditions being added to this permit limiting the times at which the source can operate various parts of the facility. These conditions are listed in this permit as II.B.1.c and II.B.1.d. All other criteria pollutants were below their respective modeling thresholds listed in R307-401-4. All hazardous air pollutants are below their respective modeling thresholds listed in R307-410-5.

From: John Persons <jpersons@utah.gov>

Sent: Thursday, May 4, 2023 10:13 AM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

This project has passed the DAQ's internal review process. I have attached a draft copy of the AO below. Please take your time and look it over. Let me know if you have any questions, concerns, or comments. If this document looks good to you please sign it and send it back to me. Once I have received your signed copy I will send it to public comment.

- Best Regards

John Persons

On Thu, Apr 27, 2023 at 2:46 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Sounds good. Thank you, John.

From: John Persons <jpersons@utah.gov>

Sent: Thursday, April 27, 2023 2:38 PM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

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Quin,

I have still not gotten it back from Alan. I know he has looked at it but I have not received it back yet. I'll keep you in the loop.

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Hello John,

I hope your week is going well.

I am reaching out to see if you have an update on Alan's review of our air permit.

Thanks,

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Do you have an estimate as to how long Alan's review will take?

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- John

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I will follow up with you late next week for an additional status update.

Best,

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Subject: RE: Updated I-80 South Quarry ADM

Hi John,

Can you please elucidate the process of this NOI/permit going out for public comment?

I am curious to better understand what this process looks like (i.e., what steps are involved)?

Hi Jason,

Any updates on your review of our ADM? Has it gone to Dave Prey for final review?

Thank you both for your communication.

Best,
Quin

From: John Persons <jpersons@utah.gov>
Sent: Monday, March 20, 2023 8:28 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

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Quin,

Once modeling approves the model, I will send the draft permit through the DAQ's peer review process. During this process three different parties have to review it, I expect this to take about a month but it all depends on how fast and how many questions each party has. From there, the timeline you listed in the previous email is correct.

I don't think there is a time deadline for when DAQ has to respond to public comments. So the timeline for this is really going to depend on how many comments are received. Let me know if you have any additional questions. Thanks.

- Best Regards
John Persons

On Thu, Mar 16, 2023 at 10:55 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Ok, thanks.

From: Jason Krebs <jkrebs@utah.gov>
Sent: Thursday, March 16, 2023 10:53 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: John Persons <jpersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

No. I don't anticipate a need for that.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

Emails to and from this email address may be considered public records and thus subject to Utah GRAMA requirements.

On Thu, Mar 16, 2023 at 10:31 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Jason,

Thanks for the rapid response.

Based on your review to this point, should we anticipate UDAQ requesting another iteration of the model, or no?

Regards,
Quin

From: Jason Krebs <jkrebs@utah.gov>
Sent: Thursday, March 16, 2023 10:29 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: John Persons <jpersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

I've been able to work on this project this week, and expect to have my review wrapped up very soon. I don't expect a need any additional information.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

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On Thu, Mar 16, 2023 at 10:12 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Jason,

I hope you are doing well.

I am reaching to get an update on your review of our latest ADM submittal.

Also, do you have an estimate as to when your review may be completed?

Is there any additional information you need from me?

John,

Can you please provide an outline along with estimated timeframe of how the AO process looks from this point moving forward for our NOI?

My understanding is that once UDAQ has approved our ADM:

- Our NOI goes out for 30-day public comment period,

- UDAQ then responds to public comments,
 - How long does UDAQ have to respond to public comment?
- Once public comments have been addressed, an AO is drafted by UDAQ.

Thanks,
Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, March 7, 2023 11:19:06 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Jason,

Thanks for the update. Also, I'm out of the office for the rest of the week. Just wanted to give everybody a heads-up.

- Best Regards
John Persons

On Tue, Mar 7, 2023 at 11:16 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Jason,

Thank you for the update. Please don't hesitate to call me with any questions.

Regards,
Quin

From: Jason Krebs <jkrebs@utah.gov>
Sent: Tuesday, March 7, 2023 11:13:41 AM
To: John Persons <jpersons@utah.gov>
Cc: Bingham, Quin <Quin.Bingham@gcinc.com>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

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Will do. I'm in the middle of reviewing a very large modeling project that will likely require a couple more days. I've got Granite I80 next in line and will reach out with any questions or concerns.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

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On Tue, Mar 7, 2023 at 10:49 AM John Persons <jpersons@utah.gov> wrote:

Jason and Dave,

Let me know how the model is looking once you get a chance to review it. Thanks.

- Best Regards
John Persons

On Tue, Feb 28, 2023 at 3:56 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Great. Thanks for letting me know. Please don't hesitate to reach out with any questions.

From: Jason Krebs <jkrebs@utah.gov>
Sent: Tuesday, February 28, 2023 3:55 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: John Persons <jpgersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

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Thanks for sharing these files Quin. I was able to download them.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

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On Tue, Feb 28, 2023 at 2:08 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Good afternoon, John,

I have updated the I-80 South Quarry ADM based on our last discussion. I sent you all access to a One Drive Folder [02282023_ADM](#) that has the most recent model files for both phase 1 and phase 2 along with the emission calculation spreadsheets. Please confirm you can access this shared OneDrive folder.

Please reach out with any questions.

Best,

Quin

Quinten G. Bingham

Utah Region Environmental Manager
[1000 N Warm Springs Rd](#)
[Salt Lake City, UT 84116](#)

Direct: [801-526-6050](tel:801-526-6050)

Mobile: [435-770-4319](tel:435-770-4319)

Email: quin.bingham@gcinc.com
www.graniteconstruction.com

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John Persons

Environmental Engineer | Minor NSR Section

M: (385) 306-6503

airquality.utah.gov

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John Persons <jpersons@utah.gov>

Mon, May 8, 2023 at 1:23 PM

To: "Bingham, Quin" <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Quin,

Yes, it should be R307-410-4. Was this the only thing that needs to be changed in the permit? If there is anything else you guys would like to change/discuss I'll wait until after to make any and all changes at once. Thanks.

- Best Regards
John Persons

[Quoted text hidden]

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To: John Persons <jpersons@utah.gov>

Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

John,

We are still reviewing, so good call on waiting.

I will reach out if we have any other questions/comments.

-Quin

From: John Persons <jpersons@utah.gov>

Sent: Monday, May 8, 2023 1:24 PM

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Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

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On Mon, May 8, 2023 at 12:24 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Can you please clarify whether the highlighted code reference should be R307-401-4 or R307-410-4? My assumption is that it should be the latter as it is referencing criteria pollutants.

If it should be R307-410-4, can you please send me a revised version of the text file?

Thanks,

Quin



EMISSION IMPACT ANALYSIS

The PM₁₀ emissions from Granite Construction Company's new I-80 South Quarry exceed the respective modeling threshold established in R307-410-4. Therefore, the PM₁₀ emissions were modeled. This resulted in operating conditions being added to this permit limiting the times at which the source can operate various parts of the facility. These conditions are listed in this permit as II.B.1.c and II.B.1.d. All other criteria pollutants were below their respective modeling thresholds listed in R307-401-4. All hazardous air pollutants are below their respective modeling thresholds listed in R307-410-5.

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Hi Jason,

Any updates on your review of our ADM? Has it gone to Dave Prey for final review?

Thank you both for you communication.

Best,
Quin

From: John Persons <jpersons@utah.gov>
Sent: Monday, March 20, 2023 8:28 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Once modeling approves the model, I will send the draft permit through the DAQ's peer review process. During this process three different parties have to review it, I expect this to take about a month but it all depends on how fast and how many questions each party has. From there, the timeline you listed in the previous email is correct.

I don't think there is a time deadline for when DAQ has to respond to public comments. So the timeline for this is really going to depend on how many comments are received. Let me know if you have any additional questions. Thanks.

- Best Regards
John Persons

On Thu, Mar 16, 2023 at 10:55 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Ok, thanks.

From: Jason Krebs <jkrebs@utah.gov>
Sent: Thursday, March 16, 2023 10:53 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: John Persons <jpersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

No. I don't anticipate a need for that.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

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Thanks for the rapid response.

Based on your review to this point, should we anticipate UDAQ requesting another iteration of the model, or no?

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I've been able to work on this project this week, and expect to have my review wrapped up very soon. I don't expect a need any additional information.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

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I am reaching to get an update on your review of our latest ADM submittal.

Also, do you have an estimate as to when your review may be completed?

Is there any additional information you need from me?

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Can you please provide an outline along with estimated timeframe of how the AO process looks from this point moving forward for our NOI?

My understanding is that once UDAQ has approved our ADM:

- Our NOI goes out for 30-day public comment period,
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Jason,

Thanks for the update. Also, I'm out of the office for the rest of the week. Just wanted to give everybody a heads-up.

- Best Regards
John Persons

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Will do. I'm in the middle of reviewing a very large modeling project that will likely require a couple more days. I've got Granite I80 next in line and will reach out with any questions or concerns.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

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Thanks for sharing these files Quin. I was able to download them.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

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Please reach out with any questions.

Best,
Quin

Quinten G. Bingham

Utah Region Environmental Manager
1000 N Warm Springs Rd
Salt Lake City, UT 84116

Direct: [801-526-6050](tel:801-526-6050)

Mobile: [435-770-4319](tel:435-770-4319)

Email: quin.bingham@gcinc.com
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John Persons <jpersons@utah.gov>

Mon, May 8, 2023 at 2:18 PM

To: "Bingham, Quin" <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Sounds good.

On Mon, May 8, 2023 at 1:33 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

We are still reviewing, so good call on waiting.

I will reach out if we have any other questions/comments.

-Quin

From: John Persons <jpersons@utah.gov>

Sent: Monday, May 8, 2023 1:24 PM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Yes, it should be R307-410-4. Was this the only thing that needs to be changed in the permit? If there is anything else you guys would like to change/discuss I'll wait until after to make any and all changes at once. Thanks.

- Best Regards

John Persons

On Mon, May 8, 2023 at 12:24 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Can you please clarify whether the highlighted code reference should be R307-401-4 or R307-410-4? My assumption is that it should be the latter as it is referencing criteria pollutants.

If it should be R307-410-4, can you please send me a revised version of the text file?

Thanks,

Quin



EMISSION IMPACT ANALYSIS

The PM₁₀ emissions from Granite Construction Company's new I-80 South Quarry exceed the respective modeling threshold established in R307-410-4. Therefore, the PM₁₀ emissions were modeled. This resulted in operating conditions being added to this permit limiting the times at which the source can operate various parts of the facility. These conditions are listed in this permit as II.B.1.c and II.B.1.d. All other criteria pollutants were below their respective modeling thresholds listed in **R307-401-4**. All hazardous air pollutants are below their respective modeling thresholds listed in R307-410-5.

From: John Persons <jpersons@utah.gov>

Sent: Thursday, May 4, 2023 10:13 AM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

This project has passed the DAQ's internal review process. I have attached a draft copy of the AO below. Please take your time and look it over. Let me know if you have any questions, concerns, or comments. If this document looks good to you please sign it and send it back to me. Once I have received your signed copy I will send it to public comment.

- Best Regards

John Persons

On Thu, Apr 27, 2023 at 2:46 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Sounds good. Thank you, John.

From: John Persons <jpersons@utah.gov>
Sent: Thursday, April 27, 2023 2:38 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

I have still not gotten it back from Alan. I know he has looked at it but I have not received it back yet. I'll keep you in the loop.

- Best Regards

John Persons

On Thu, Apr 27, 2023 at 12:53 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hello John,

I hope your week is going well.

I am reaching out to see if you have an update on Alan's review of our air permit.

Thanks,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, April 18, 2023 2:33 PM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Thanks for the fast response. I imagine 1-2 weeks but I know that he has a lot on his plate right now so that timeline could change. I will keep you posted. Thanks.

- Best Regards

John Persons

On Tue, Apr 18, 2023 at 2:30 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the update.

In response to your question, the generators have not been purchased yet.

Do you have an estimate as to how long Alan's review will take?

Regards,

Quin

From: John Persons <jpersons@utah.gov>

Sent: Tuesday, April 18, 2023 2:27 PM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

I just have an update and a quick question. Compliance approved this project so I sent it to Alan for review. I also have a quick question. Have the generator engines for this site been purchased already? If so, what is the year of manufacture? Thanks.

- Best Regards

John Persons

On Wed, Apr 12, 2023 at 6:31 AM John Persons <jpersons@utah.gov> wrote:

Sounds good.

- John

On Tue, Apr 11, 2023 at 9:54 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the additional timeline information.

I will follow up with you late next week for an additional status update.

Best,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, April 11, 2023 9:26 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

It all depends on how long it takes for Chad and Alan to review it. I estimate 2-3 weeks but I could be wrong. I will keep you posted once Chad gets it back to me. Thanks.

- Best Regards

John Persons

On Mon, Apr 10, 2023 at 10:06 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the update.

Do you have an estimate as to when I may expect to receive the permit for review prior to it going to public comment?

-Quin

From: John Persons <jpersons@utah.gov>
Sent: Monday, April 10, 2023 7:41 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Sorry I missed your calls. The permit is already through peer review and is currently being reviewed by DAQ's compliance department. Once compliance finishes its review Alan will get a chance to review it. After Alan reviews it, I will send it to you for Granite to review before it goes to public comment. Let me know if you have any other questions. Thanks.

- Best Regards

John Persons

On Fri, Apr 7, 2023 at 3:23 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hi John,

I hope you are doing well. I tried contacting you via phone a few times with no success.

Can you please provide a status update on the permit? is the permit still in draft phase or is it in internal review?

Best,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, March 28, 2023 8:16:04 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad

<Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

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Quin,

Of course. So once Granite approves the draft permit the DAQ will send it out for a 30-day public comment period. The comment period will start when the proposed project is published in the county's newspaper. For this project, the DAQ will also hold a public hearing to let members of the public voice their concerns in person. Once the 30-day public comment period is over, the DAQ will read through and respond to every comment. Provided that no new changes come as a result of the comments, the DAQ will publish its responses and then send the permit through for signing.

Additional things that could lengthen this timeline include if the public comment period is extended due to public request (I have never seen this done but I am pretty sure that there is a way that members of the public can do this.) and if significant changes come as a result of public comments made. Let me know if you have any other questions.

- Best Regards

John Persons

On Mon, Mar 27, 2023 at 1:00 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hi John,

Following up on my email below.

Can you please provide additional details on the NOI/permit going to public comment process?

Thanks,

Quin

From: Bingham, Quin <Quin.Bingham@gcinc.com>
Sent: Friday, March 24, 2023 10:23 AM
To: John Persons <jpersons@utah.gov>; Jason Krebs <jkrebs@utah.gov>
Cc: Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: RE: Updated I-80 South Quarry ADM

Hi John,

Can you please elucidate the process of this NOI/permit going out for public comment?

I am curious to better understand what this process looks like (i.e., what steps are involved)?

Hi Jason,

Any updates on your review of our ADM? Has it gone to Dave Prey for final review?

Thank you both for your communication.

Best,
Quin

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No. I don't anticipate a need for that.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

195 North 1950 West, Salt Lake City, UT 84116

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Jason Krebs | Environmental Scientist | Utah Division of Air Quality

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Please reach out with any questions.

Best,

Quin

Quinten G. Bingham

Utah Region Environmental Manager
1000 N Warm Springs Rd
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Environmental Engineer | Minor NSR Section

M: (385) 306-6503

airquality.utah.gov



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**John Persons**

Environmental Engineer | Minor NSR Section

M: (385) 306-6503

airquality.utah.gov**Bingham, Quin** <Quin.Bingham@gcinc.com>

Mon, May 15, 2023 at 7:58 AM

To: John Persons <jpersons@utah.gov>Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Hi John,

We have no additional comments on the draft AO. Our only comment was the one provided in my earlier email below.

Can you please send an updated version based on the below comment?

Also, can you please confirm that 5/17 is the final due date to receive our signed approval on the draft AO? We received the draft AO on 5/4.

Thanks,

Quin

From: John Persons <jpersons@utah.gov>**Sent:** Monday, May 8, 2023 2:19 PM**To:** Bingham, Quin <Quin.Bingham@gcinc.com>**Cc:** Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>**Subject:** Re: Updated I-80 South Quarry ADM**CAUTION:** This email originated from outside of Granite

Sounds good.

On Mon, May 8, 2023 at 1:33 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

We are still reviewing, so good call on waiting.

I will reach out if we have any other questions/comments.

-Quin

From: John Persons <jpgersons@utah.gov>
Sent: Monday, May 8, 2023 1:24 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
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Quin,

Yes, it should be R307-410-4. Was this the only thing that needs to be changed in the permit? If there is anything else you guys would like to change/discuss I'll wait until after to make any and all changes at once. Thanks.

- Best Regards

John Persons

On Mon, May 8, 2023 at 12:24 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Can you please clarify whether the highlighted code reference should be R307-401-4 or R307-410-4? My assumption is that it should be the latter as it is referencing criteria pollutants.

If it should be R307-410-4, can you please send me a revised version of the text file?

Thanks,

Quin



EMISSION IMPACT ANALYSIS

The PM₁₀ emissions from Granite Construction Company's new I-80 South Quarry exceed the respective modeling threshold established in R307-410-4. Therefore, the PM₁₀ emissions were modeled. This resulted in operating conditions being added to this permit limiting the times at which the source can operate various parts of the facility. These conditions are listed in this permit as II.B.1.c and II.B.1.d. All other criteria pollutants were below their respective modeling thresholds listed in **R307-401-4**. All hazardous air pollutants are below their respective modeling thresholds listed in R307-410-5.

From: John Persons <jpgersons@utah.gov>
Sent: Thursday, May 4, 2023 10:13 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

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Quin,

This project has passed the DAQ's internal review process. I have attached a draft copy of the AO below. Please take your time and look it over. Let me know if you have any questions, concerns, or comments. If this document looks good to you please sign it and send it back to me. Once I have received your signed copy I will send it to public comment.

- Best Regards

John Persons

On Thu, Apr 27, 2023 at 2:46 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Sounds good. Thank you, John.

From: John Persons <jpgersons@utah.gov>
Sent: Thursday, April 27, 2023 2:38 PM
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Quin,

I have still not gotten it back from Alan. I know he has looked at it but I have not received it back yet. I'll keep you in the loop.

- Best Regards

John Persons

On Thu, Apr 27, 2023 at 12:53 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hello John,

I hope your week is going well.

I am reaching out to see if you have an update on Alan's review of our air permit.

Thanks,

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From: John Persons <jpersons@utah.gov>
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Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
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Quin,

Thanks for the fast response. I imagine 1-2 weeks but I know that he has a lot on his plate right now so that timeline could change. I will keep you posted. Thanks.

- Best Regards

John Persons

On Tue, Apr 18, 2023 at 2:30 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the update.

In response to your question, the generators have not been purchased yet.

Do you have an estimate as to how long Alan's review will take?

Regards,

Quin

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Quin,

I just have an update and a quick question. Compliance approved this project so I sent it to Alan for review. I also have a quick question. Have the generator engines for this site been purchased already? If so, what is the year of manufacture? Thanks.

- Best Regards

John Persons

On Wed, Apr 12, 2023 at 6:31 AM John Persons <jpersons@utah.gov> wrote:

Sounds good.

- John

On Tue, Apr 11, 2023 at 9:54 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the additional timeline information.

I will follow up with you late next week for an additional status update.

Best,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, April 11, 2023 9:26 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

It all depends on how long it takes for Chad and Alan to review it. I estimate 2-3 weeks but I could be wrong. I will keep you posted once Chad gets it back to me. Thanks.

- Best Regards

John Persons

On Mon, Apr 10, 2023 at 10:06 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the update.

Do you have an estimate as to when I may expect to receive the permit for review prior to it going to public comment?

-Quin

From: John Persons <jpersons@utah.gov>

Sent: Monday, April 10, 2023 7:41 AM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Sorry I missed your calls. The permit is already through peer review and is currently being reviewed by DAQ's compliance department. Once compliance finishes its review Alan will get a chance to review it. After Alan reviews it, I will send it to you for Granite to review before it goes to public comment. Let me know if you have any other questions. Thanks.

- Best Regards

John Persons

On Fri, Apr 7, 2023 at 3:23 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hi John,

I hope you are doing well. I tried contacting you via phone a few times with no success.

Can you please provide a status update on the permit? is the permit still in draft phase or is it in internal review?

Best,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, March 28, 2023 8:16:04 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Of course. So once Granite approves the draft permit the DAQ will send it out for a 30-day public comment period. The comment period will start when the proposed project is published in the county's newspaper. For this project, the DAQ will also hold a public hearing to let members of the public voice their concerns in person. Once the 30-day public comment period is over, the DAQ will read through and respond to every comment. Provided that no new changes come as a result of the comments, the DAQ will publish its responses and then send the permit through for signing.

Additional things that could lengthen this timeline include if the public comment period is extended due to public request (I have never seen this done but I am pretty sure that there is a way that members of the public can do this.) and if significant changes come as a result of public comments made. Let me know if you have any other questions.

- Best Regards

John Persons

On Mon, Mar 27, 2023 at 1:00 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hi John,

Following up on my email below.

Can you please provide additional details on the NOI/permit going to public comment process?

Thanks,

Quin

From: Bingham, Quin <Quin.Bingham@gcinc.com>
Sent: Friday, March 24, 2023 10:23 AM
To: John Persons <jpersons@utah.gov>; Jason Krebs <jkrebs@utah.gov>
Cc: Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: RE: Updated I-80 South Quarry ADM

Hi John,

Can you please elucidate the process of this NOI/permit going out for public comment?

I am curious to better understand what this process looks like (i.e., what steps are involved)?

Hi Jason,

Any updates on your review of our ADM? Has it gone to Dave Prey for final review?

Thank you both for you communication.

Best,
Quin

From: John Persons <jpersons@utah.gov>
Sent: Monday, March 20, 2023 8:28 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Once modeling approves the model, I will send the draft permit through the DAQ's peer review process. During this process three different parties have to review it, I expect this to take about a month but it all depends on how fast and how many questions each party has. From there, the timeline you listed in the previous email is correct.

I don't think there is a time deadline for when DAQ has to respond to public comments. So the timeline for this is really going to depend on how many comments are received. Let me know if you have any additional questions. Thanks.

- Best Regards
John Persons

On Thu, Mar 16, 2023 at 10:55 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Ok, thanks.

From: Jason Krebs <jkrebs@utah.gov>
Sent: Thursday, March 16, 2023 10:53 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: John Persons <jpersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

No. I don't anticipate a need for that.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

Emails to and from this email address may be considered public records and thus subject to Utah GRAMA requirements.

On Thu, Mar 16, 2023 at 10:31 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Jason,

Thanks for the rapid response.

Based on your review to this point, should we anticipate UDAQ requesting another iteration of the model, or no?

Regards,
Quin

From: Jason Krebs <jkrebs@utah.gov>
Sent: Thursday, March 16, 2023 10:29 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: John Persons <jpersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

I've been able to work on this project this week, and expect to have my review wrapped up very soon. I don't expect a need any additional information.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

Emails to and from this email address may be considered public records and thus subject to Utah GRAMA requirements.

On Thu, Mar 16, 2023 at 10:12 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Jason,

I hope you are doing well.

I am reaching to get an update on your review of our latest ADM submittal.

Also, do you have an estimate as to when your review may be completed?

Is there any additional information you need from me?

John,

Can you please provide an outline along with estimated timeframe of how the AO process looks from this point moving forward for our NOI?

My understanding is that once UDAQ has approved our ADM:

- Our NOI goes out for 30-day public comment period,
- UDAQ then responds to public comments,
 - How long does UDAQ have to respond to public comment?
- Once public comments have been addressed, an AO is drafted by UDAQ.

Thanks,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, March 7, 2023 11:19:06 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Jason,

Thanks for the update. Also, I'm out of the office for the rest of the week. Just wanted to give everybody a heads-up.

- Best Regards
John Persons

On Tue, Mar 7, 2023 at 11:16 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Jason,

Thank you for the update. Please don't hesitate to call me with any questions.

Regards,
Quin

From: Jason Krebs <jkrebs@utah.gov>
Sent: Tuesday, March 7, 2023 11:13:41 AM
To: John Persons <jpersons@utah.gov>
Cc: Bingham, Quin <Quin.Bingham@gcinc.com>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

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Will do. I'm in the middle of reviewing a very large modeling project that will likely require a couple more days. I've got Granite I80 next in line and will reach out with any questions or concerns.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

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On Tue, Mar 7, 2023 at 10:49 AM John Persons <jpersons@utah.gov> wrote:

Jason and Dave,

Let me know how the model is looking once you get a chance to review it. Thanks.

- Best Regards
John Persons

On Tue, Feb 28, 2023 at 3:56 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Great. Thanks for letting me know. Please don't hesitate to reach out with any questions.

From: Jason Krebs <jkrebs@utah.gov>
Sent: Tuesday, February 28, 2023 3:55 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: John Persons <jpersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

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Thanks for sharing these files Quin. I was able to download them.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality


Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

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On Tue, Feb 28, 2023 at 2:08 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Good afternoon, John,

I have updated the I-80 South Quarry ADM based on our last discussion. I sent you all access to a One Drive Folder  [02282023_ADM](#) that has the most recent model files for both phase 1 and phase 2 along with the emission calculation spreadsheets. Please confirm you can access this shared OneDrive folder.

Please reach out with any questions.

Best,

Quin

Quinten G. Bingham

Utah Region Environmental Manager
1000 N Warm Springs Rd
Salt Lake City, UT 84116

Direct: [801-526-6050](tel:801-526-6050)

Mobile: [435-770-4319](tel:435-770-4319)

Email: quin.bingham@gcinc.com
www.graniteconstruction.com

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John Persons <jpersons@utah.gov> Tue, May 16, 2023 at 11:04 AM
 To: "Bingham, Quin" <Quin.Bingham@gcinc.com>
 Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Quin,

Here is the updated version. Let me know if you have any additional questions. And yes I can confirm that that date is correct. Once I have your signed copy I will send it forward to public comment.

- Best Regards
John Persons

On Mon, May 15, 2023 at 7:59 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hi John,

We have no additional comments on the draft AO. Our only comment was the one provided in my earlier email below.

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Also, can you please confirm that 5/17 is the final due date to receive our signed approval on the draft AO? We received the draft AO on 5/4.

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Quin,

Yes, it should be R307-410-4. Was this the only thing that needs to be changed in the permit? If there is anything else you guys would like to change/discuss I'll wait until after to make any and all changes at once. Thanks.

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The PM₁₀ emissions from Granite Construction Company's new I-80 South Quarry exceed the respective modeling threshold established in R307-410-4. Therefore, the PM₁₀ emissions were modeled. This resulted in operating conditions being added to this permit limiting the times at which the source can operate various parts of the facility. These conditions are listed in this permit as II.B.1.c and II.B.1.d. All other criteria pollutants were below their respective modeling thresholds listed in **R307-401-4**. All hazardous air pollutants are below their respective modeling thresholds listed in R307-410-5.

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Sounds good.

- John

On Tue, Apr 11, 2023 at 9:54 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the additional timeline information.

I will follow up with you late next week for an additional status update.

Best,

Quin

From: John Persons <jpgersons@utah.gov>
Sent: Tuesday, April 11, 2023 9:26 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

It all depends on how long it takes for Chad and Alan to review it. I estimate 2-3 weeks but I could be wrong. I will keep you posted once Chad gets it back to me. Thanks.

- Best Regards

John Persons

On Mon, Apr 10, 2023 at 10:06 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the update.

Do you have an estimate as to when I may expect to receive the permit for review prior to it going to public comment?

-Quin

From: John Persons <jpersons@utah.gov>
Sent: Monday, April 10, 2023 7:41 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Sorry I missed your calls. The permit is already through peer review and is currently being reviewed by DAQ's compliance department. Once compliance finishes its review Alan will get a chance to review it. After Alan reviews it, I will send it to you for Granite to review before it goes to public comment. Let me know if you have any other questions. Thanks.

- Best Regards

John Persons

On Fri, Apr 7, 2023 at 3:23 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hi John,

I hope you are doing well. I tried contacting you via phone a few times with no success.

Can you please provide a status update on the permit? is the permit still in draft phase or is it in internal review?

Best,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, March 28, 2023 8:16:04 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Of course. So once Granite approves the draft permit the DAQ will send it out for a 30-day public comment period. The comment period will start when the proposed project is published in the county's newspaper. For this project, the DAQ will also hold a public hearing to let members of the public voice their concerns in person. Once the 30-day public comment period is over, the DAQ will read through and respond to every comment. Provided that no new changes come as a result of the comments, the DAQ will publish its responses and then send the permit through for signing.

Additional things that could lengthen this timeline include if the public comment period is extended due to public request (I have never seen this done but I am pretty sure that there is a way that members of the public can do this.) and if significant changes come as a result of public comments made. Let me know if you have any other questions.

- Best Regards

John Persons

On Mon, Mar 27, 2023 at 1:00 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hi John,

Following up on my email below.

Can you please provide additional details on the NOI/permit going to public comment process?

Thanks,

Quin

From: Bingham, Quin <Quin.Bingham@gcinc.com>
Sent: Friday, March 24, 2023 10:23 AM
To: John Persons <jp@utah.gov>; Jason Krebs <jk@utah.gov>
Cc: Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: RE: Updated I-80 South Quarry ADM

Hi John,

Can you please elucidate the process of this NOI/permit going out for public comment?

I am curious to better understand what this process looks like (i.e., what steps are involved)?

Hi Jason,

Any updates on your review of our ADM? Has it gone to Dave Prey for final review?

Thank you both for your communication.

Best,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Monday, March 20, 2023 8:28 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Once modeling approves the model, I will send the draft permit through the DAQ's peer review process. During this process three different parties have to review it, I expect this to take about a month but it all depends on how fast and how many questions each party has. From there, the timeline you listed in the previous email is correct.

I don't think there is a time deadline for when DAQ has to respond to public comments. So the timeline for this is really going to depend on how many comments are received. Let me know if you have any additional questions. Thanks.

- Best Regards
John Persons

On Thu, Mar 16, 2023 at 10:55 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Ok, thanks.

From: Jason Krebs <jkrebs@utah.gov>
Sent: Thursday, March 16, 2023 10:53 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: John Persons <jpersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

No. I don't anticipate a need for that.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

195 North 1950 West, Salt Lake City, UT 84116

Emails to and from this email address may be considered public records and thus subject to Utah GRAMA requirements.

On Thu, Mar 16, 2023 at 10:31 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Jason,

Thanks for the rapid response.

Based on your review to this point, should we anticipate UDAQ requesting another iteration of the model, or no?

Regards,
Quin

From: Jason Krebs <jkrebs@utah.gov>
Sent: Thursday, March 16, 2023 10:29 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: John Persons <jpersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

I've been able to work on this project this week, and expect to have my review wrapped up very soon. I don't expect a need any additional information.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

195 North 1950 West, Salt Lake City, UT 84116

Emails to and from this email address may be considered public records and thus subject to Utah GRAMA requirements.

On Thu, Mar 16, 2023 at 10:12 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Jason,

I hope you are doing well.

I am reaching to get an update on your review of our latest ADM submittal.

Also, do you have an estimate as to when your review may be completed?

Is there any additional information you need from me?

John,

Can you please provide an outline along with estimated timeframe of how the AO process looks from this point moving forward for our NOI?

My understanding is that once UDAQ has approved our ADM:

- Our NOI goes out for 30-day public comment period,
- UDAQ then responds to public comments,
 - How long does UDAQ have to respond to public comment?
- Once public comments have been addressed, an AO is drafted by UDAQ.

Thanks,
Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, March 7, 2023 11:19:06 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Jason,

Thanks for the update. Also, I'm out of the office for the rest of the week. Just wanted to give everybody a heads-up.

- Best Regards
John Persons

On Tue, Mar 7, 2023 at 11:16 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Jason,

Thank you for the update. Please don't hesitate to call me with any questions.

Regards,
Quin

From: Jason Krebs <jkrebs@utah.gov>
Sent: Tuesday, March 7, 2023 11:13:41 AM
To: John Persons <jpersons@utah.gov>
Cc: Bingham, Quin <Quin.Bingham@gcinc.com>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Will do. I'm in the middle of reviewing a very large modeling project that will likely require a couple more days. I've got Granite I80 next in line and will reach out with any questions or concerns.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

195 North 1950 West, Salt Lake City, UT 84116

Emails to and from this email address may be considered public records and thus subject to Utah GRAMA requirements.

On Tue, Mar 7, 2023 at 10:49 AM John Persons <jpersons@utah.gov> wrote:

Jason and Dave,

Let me know how the model is looking once you get a chance to review it. Thanks.

- Best Regards
John Persons

On Tue, Feb 28, 2023 at 3:56 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Great. Thanks for letting me know. Please don't hesitate to reach out with any questions.

From: Jason Krebs <jkrebs@utah.gov>
Sent: Tuesday, February 28, 2023 3:55 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: John Persons <jpersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Thanks for sharing these files Quin. I was able to download them.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

195 North 1950 West, Salt Lake City, UT 84116

Emails to and from this email address may be considered public records and thus subject to Utah GRAMA requirements.

On Tue, Feb 28, 2023 at 2:08 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Good afternoon, John,

I have updated the I-80 South Quarry ADM based on our last discussion. I sent you all access to a One Drive Folder [02282023_ADM](#) that has the most recent model files for both phase 1 and phase 2 along with the emission calculation spreadsheets. Please confirm you can access this shared OneDrive folder.

Please reach out with any questions.

Best,

Quin

Quinten G. Bingham

Utah Region Environmental Manager
1000 N Warm Springs Rd
Salt Lake City, UT 84116

Direct: [801-526-6050](tel:801-526-6050)

Mobile: [435-770-4319](tel:435-770-4319)

Email: quin.bingham@gcinc.com

www.graniteconstruction.com

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John Persons

Environmental Engineer | Minor NSR Section

M: (385) 306-6503

airquality.utah.gov

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 **RN161200001.rtf**
1658K

Bingham, Quin <Quin.Bingham@gcinc.com> Tue, May 16, 2023 at 4:39 PM
 To: John Persons <jpersons@utah.gov>
 Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>, "Klaumann, Jason" <Jason.Klaumann@gcinc.com>

John,

Thanks for providing the updated version.

Please find attached a signed copy.

Do you have an ETA as to when this will go out for public comment?

Thanks,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, May 16, 2023 11:04 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Here is the updated version. Let me know if you have any additional questions. And yes I can confirm that that date is correct. Once I have your signed copy I will send it forward to public comment.

- Best Regards

John Persons

On Mon, May 15, 2023 at 7:59 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hi John,

We have no additional comments on the draft AO. Our only comment was the one provided in my earlier email below.

Can you please send an updated version based on the below comment?

Also, can you please confirm that 5/17 is the final due date to receive our signed approval on the draft AO? We received the draft AO on 5/4.

Thanks,

Quin

From: John Persons <jpersons@utah.gov>

Sent: Monday, May 8, 2023 2:19 PM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Sounds good.

On Mon, May 8, 2023 at 1:33 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

We are still reviewing, so good call on waiting.

I will reach out if we have any other questions/comments.

-Quin

From: John Persons <jpersons@utah.gov>
Sent: Monday, May 8, 2023 1:24 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Yes, it should be R307-410-4. Was this the only thing that needs to be changed in the permit? If there is anything else you guys would like to change/discuss I'll wait until after to make any and all changes at once. Thanks.

- Best Regards

John Persons

On Mon, May 8, 2023 at 12:24 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Can you please clarify whether the highlighted code reference should be R307-401-4 or R307-410-4? My assumption is that it should be the latter as it is referencing criteria pollutants.

If it should be R307-410-4, can you please send me a revised version of the text file?

Thanks,

Quin

**EMISSION IMPACT ANALYSIS**

The PM₁₀ emissions from Granite Construction Company's new I-80 South Quarry exceed the respective modeling threshold established in R307-410-4. Therefore, the PM₁₀ emissions were modeled. This resulted in operating conditions being added to this permit limiting the times at which the source can operate various parts of the facility. These conditions are listed in this permit as II.B.1.c and II.B.1.d. All other criteria pollutants were below their respective modeling thresholds listed in R307-401-4. All hazardous air pollutants are below their respective modeling thresholds listed in R307-410-5.

From: John Persons <jpersons@utah.gov>

Sent: Thursday, May 4, 2023 10:13 AM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

This project has passed the DAQ's internal review process. I have attached a draft copy of the AO below. Please take your time and look it over. Let me know if you have any questions, concerns, or comments. If this document looks good to you please sign it and send it back to me. Once I have received your signed copy I will send it to public comment.

- Best Regards

John Persons

On Thu, Apr 27, 2023 at 2:46 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Sounds good. Thank you, John.

From: John Persons <jpersons@utah.gov>

Sent: Thursday, April 27, 2023 2:38 PM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

I have still not gotten it back from Alan. I know he has looked at it but I have not received it back yet. I'll keep you in the loop.

- Best Regards

John Persons

On Thu, Apr 27, 2023 at 12:53 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hello John,

I hope your week is going well.

I am reaching out to see if you have an update on Alan's review of our air permit.

Thanks,

Quin

From: John Persons <jpersons@utah.gov>

Sent: Tuesday, April 18, 2023 2:33 PM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Thanks for the fast response. I imagine 1-2 weeks but I know that he has a lot on his plate right now so that timeline could change. I will keep you posted. Thanks.

- Best Regards

John Persons

On Tue, Apr 18, 2023 at 2:30 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the update.

In response to your question, the generators have not been purchased yet.

Do you have an estimate as to how long Alan's review will take?

Regards,

Quin

From: John Persons <jpersons@utah.gov>

Sent: Tuesday, April 18, 2023 2:27 PM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

I just have an update and a quick question. Compliance approved this project so I sent it to Alan for review. I also have a quick question. Have the generator engines for this site been purchased already? If so, what is the year of manufacture? Thanks.

- Best Regards

John Persons

On Wed, Apr 12, 2023 at 6:31 AM John Persons <jpersons@utah.gov> wrote:

Sounds good.

- John

On Tue, Apr 11, 2023 at 9:54 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the additional timeline information.

I will follow up with you late next week for an additional status update.

Best,

Quin

From: John Persons <jpgersons@utah.gov>
Sent: Tuesday, April 11, 2023 9:26 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

It all depends on how long it takes for Chad and Alan to review it. I estimate 2-3 weeks but I could be wrong. I will keep you posted once Chad gets it back to me. Thanks.

- Best Regards

John Persons

On Mon, Apr 10, 2023 at 10:06 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the update.

Do you have an estimate as to when I may expect to receive the permit for review prior to it going to public comment?

-Quin

From: John Persons <jpgersons@utah.gov>
Sent: Monday, April 10, 2023 7:41 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Sorry I missed your calls. The permit is already through peer review and is currently being reviewed by DAQ's compliance department. Once compliance finishes its review Alan will get a chance to review it. After Alan

reviews it, I will send it to you for Granite to review before it goes to public comment. Let me know if you have any other questions. Thanks.

- Best Regards

John Persons

On Fri, Apr 7, 2023 at 3:23 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hi John,

I hope you are doing well. I tried contacting you via phone a few times with no success.

Can you please provide a status update on the permit? is the permit still in draft phase or is it in internal review?

Best,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, March 28, 2023 8:16:04 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Of course. So once Granite approves the draft permit the DAQ will send it out for a 30-day public comment period. The comment period will start when the proposed project is published in the county's newspaper. For this project, the DAQ will also hold a public hearing to let members of the public voice their concerns in person. Once the 30-day public comment period is over, the DAQ will read through and respond to every comment. Provided that no new changes come as a result of the comments, the DAQ will publish its responses and then send the permit through for signing.

Additional things that could lengthen this timeline include if the public comment period is extended due to public request (I have never seen this done but I am pretty sure that there is a way that members of the public can do this.) and if significant changes come as a result of public comments made. Let me know if you have any other questions.

- Best Regards

John Persons

On Mon, Mar 27, 2023 at 1:00 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hi John,

Following up on my email below.

Can you please provide additional details on the NOI/permit going to public comment process?

Thanks,

Quin

From: Bingham, Quin <Quin.Bingham@gcinc.com>
Sent: Friday, March 24, 2023 10:23 AM
To: John Persons <jpersons@utah.gov>; Jason Krebs <jkrebs@utah.gov>
Cc: Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: RE: Updated I-80 South Quarry ADM

Hi John,

Can you please elucidate the process of this NOI/permit going out for public comment?

I am curious to better understand what this process looks like (i.e., what steps are involved)?

Hi Jason,

Any updates on your review of our ADM? Has it gone to Dave Prey for final review?

Thank you both for you communication.

Best,
Quin

From: John Persons <jpersons@utah.gov>
Sent: Monday, March 20, 2023 8:28 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Once modeling approves the model, I will send the draft permit through the DAQ's peer review process. During this process three different parties have to review it, I expect this to take about a month but it all depends on how fast and how many questions each party has. From there, the timeline you listed in the previous email is correct.

I don't think there is a time deadline for when DAQ has to respond to public comments. So the timeline for this is really going to depend on how many comments are received. Let me know if you have any additional questions. Thanks.

- Best Regards
John Persons

On Thu, Mar 16, 2023 at 10:55 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Ok, thanks.

From: Jason Krebs <jkrebs@utah.gov>
Sent: Thursday, March 16, 2023 10:53 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: John Persons <jpersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

No. I don't anticipate a need for that.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

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On Thu, Mar 16, 2023 at 10:31 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Jason,

Thanks for the rapid response.

Based on your review to this point, should we anticipate UDAQ requesting another iteration of the model, or no?

Regards,
Quin

From: Jason Krebs <jkrebs@utah.gov>
Sent: Thursday, March 16, 2023 10:29 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: John Persons <jpersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

I've been able to work on this project this week, and expect to have my review wrapped up very soon. I don't expect a need any additional information.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

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Also, do you have an estimate as to when your review may be completed?

Is there any additional information you need from me?

John,

Can you please provide an outline along with estimated timeframe of how the AO process looks from this point moving forward for our NOI?

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- Our NOI goes out for 30-day public comment period,
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 - How long does UDAQ have to respond to public comment?
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Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

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Jason,

Thanks for the update. Also, I'm out of the office for the rest of the week. Just wanted to give everybody a heads-up.

- Best Regards
John Persons

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Jason,

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Will do. I'm in the middle of reviewing a very large modeling project that will likely require a couple more days. I've got Granite I80 next in line and will reach out with any questions or concerns.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

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- Best Regards
John Persons

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Thanks for sharing these files Quin. I was able to download them.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

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Good afternoon, John,

I have updated the I-80 South Quarry ADM based on our last discussion. I sent you all access to a One Drive Folder [02282023_ADM](#) that has the most recent model files for both phase 1 and phase 2 along with the emission calculation spreadsheets. Please confirm you can access this shared OneDrive folder.

Please reach out with any questions.

Best,

Quin

Quinten G. Bingham
Utah Region Environmental Manager

1000 N Warm Springs Rd
Salt Lake City, UT 84116

Direct: [801-526-6050](tel:801-526-6050)

Mobile: [435-770-4319](tel:435-770-4319)

Email: quin.bingham@gcinc.com
www.graniteconstruction.com

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 **RN161200001_Signed.pdf**
282K

John Persons <jpersons@utah.gov>

Wed, May 17, 2023 at 9:54 AM

To: "Bingham, Quin" <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>, "Klaumann, Jason" <Jason.Klaumann@gcinc.com>

Quin,

Thanks for sending this over. I will send it to our office tech and she will prepare it for public comment. It usually takes a few days to get it prepped and to coordinate with the newspaper. I'll keep you in the loop. Additionally, the DAQ is planning to host a public hearing to give people a chance to voice their comments in person.

- Best Regards
John Persons

On Tue, May 16, 2023 at 4:39 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thanks for providing the updated version.

Please find attached a signed copy.

Do you have an ETA as to when this will go out for public comment?

Thanks,

Quin

From: John Persons <jpersons@utah.gov>

Sent: Tuesday, May 16, 2023 11:04 AM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Here is the updated version. Let me know if you have any additional questions. And yes I can confirm that that date is correct. Once I have your signed copy I will send it forward to public comment.

- Best Regards

John Persons

On Mon, May 15, 2023 at 7:59 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hi John,

We have no additional comments on the draft AO. Our only comment was the one provided in my earlier email below.

Can you please send an updated version based on the below comment?

Also, can you please confirm that 5/17 is the final due date to receive our signed approval on the draft AO? We received the draft AO on 5/4.

Thanks,

Quin

From: John Persons <jpersons@utah.gov>

Sent: Monday, May 8, 2023 2:19 PM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Sounds good.

On Mon, May 8, 2023 at 1:33 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

We are still reviewing, so good call on waiting.

I will reach out if we have any other questions/comments.

-Quin

From: John Persons <jpersons@utah.gov>
Sent: Monday, May 8, 2023 1:24 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Yes, it should be R307-410-4. Was this the only thing that needs to be changed in the permit? If there is anything else you guys would like to change/discuss I'll wait until after to make any and all changes at once. Thanks.

- Best Regards

John Persons

On Mon, May 8, 2023 at 12:24 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Can you please clarify whether the highlighted code reference should be R307-401-4 or R307-410-4? My assumption is that it should be the latter as it is referencing criteria pollutants.

If it should be R307-410-4, can you please send me a revised version of the text file?

Thanks,

Quin

**EMISSION IMPACT ANALYSIS**

The PM₁₀ emissions from Granite Construction Company's new I-80 South Quarry exceed the respective modeling threshold established in R307-410-4. Therefore, the PM₁₀ emissions were modeled. This resulted in operating conditions being added to this permit limiting the times at which the source can operate various parts of the facility. These conditions are listed in this permit as II.B.1.c and II.B.1.d. All other criteria pollutants were below their respective modeling thresholds listed in R307-401-4. All hazardous air pollutants are below their respective modeling thresholds listed in R307-410-5.

From: John Persons <jpgersons@utah.gov>

Sent: Thursday, May 4, 2023 10:13 AM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

This project has passed the DAQ's internal review process. I have attached a draft copy of the AO below. Please take your time and look it over. Let me know if you have any questions, concerns, or comments. If this document looks good to you please sign it and send it back to me. Once I have received your signed copy I will send it to public comment.

- Best Regards

John Persons

On Thu, Apr 27, 2023 at 2:46 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Sounds good. Thank you, John.

From: John Persons <jpgersons@utah.gov>

Sent: Thursday, April 27, 2023 2:38 PM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

I have still not gotten it back from Alan. I know he has looked at it but I have not received it back yet. I'll keep you in the loop.

- Best Regards

John Persons

On Thu, Apr 27, 2023 at 12:53 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hello John,

I hope your week is going well.

I am reaching out to see if you have an update on Alan's review of our air permit.

Thanks,

Quin

From: John Persons <jpersons@utah.gov>

Sent: Tuesday, April 18, 2023 2:33 PM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Thanks for the fast response. I imagine 1-2 weeks but I know that he has a lot on his plate right now so that timeline could change. I will keep you posted. Thanks.

- Best Regards

John Persons

On Tue, Apr 18, 2023 at 2:30 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the update.

In response to your question, the generators have not been purchased yet.

Do you have an estimate as to how long Alan's review will take?

Regards,

Quin

From: John Persons <jpersons@utah.gov>

Sent: Tuesday, April 18, 2023 2:27 PM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

I just have an update and a quick question. Compliance approved this project so I sent it to Alan for review. I also have a quick question. Have the generator engines for this site been purchased already? If so, what is the year of manufacture? Thanks.

- Best Regards

John Persons

On Wed, Apr 12, 2023 at 6:31 AM John Persons <jpersons@utah.gov> wrote:

Sounds good.

- John

On Tue, Apr 11, 2023 at 9:54 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the additional timeline information.

I will follow up with you late next week for an additional status update.

Best,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, April 11, 2023 9:26 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

It all depends on how long it takes for Chad and Alan to review it. I estimate 2-3 weeks but I could be wrong. I will keep you posted once Chad gets it back to me. Thanks.

- Best Regards

John Persons

On Mon, Apr 10, 2023 at 10:06 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the update.

Do you have an estimate as to when I may expect to receive the permit for review prior to it going to public comment?

-Quin

From: John Persons <jpersons@utah.gov>
Sent: Monday, April 10, 2023 7:41 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Sorry I missed your calls. The permit is already through peer review and is currently being reviewed by DAQ's compliance department. Once compliance finishes its review Alan will get a chance to review it. After

Alan reviews it, I will send it to you for Granite to review before it goes to public comment. Let me know if you have any other questions. Thanks.

- Best Regards

John Persons

On Fri, Apr 7, 2023 at 3:23 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hi John,

I hope you are doing well. I tried contacting you via phone a few times with no success.

Can you please provide a status update on the permit? is the permit still in draft phase or is it in internal review?

Best,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, March 28, 2023 8:16:04 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

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Quin,

Of course. So once Granite approves the draft permit the DAQ will send it out for a 30-day public comment period. The comment period will start when the proposed project is published in the county's newspaper. For this project, the DAQ will also hold a public hearing to let members of the public voice their concerns in person. Once the 30-day public comment period is over, the DAQ will read through and respond to every comment. Provided that no new changes come as a result of the comments, the DAQ will publish its responses and then send the permit through for signing.

Additional things that could lengthen this timeline include if the public comment period is extended due to public request (I have never seen this done but I am pretty sure that there is a way that members of the public can do this.) and if significant changes come as a result of public comments made. Let me know if you have any other questions.

- Best Regards

John Persons

On Mon, Mar 27, 2023 at 1:00 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hi John,

Following up on my email below.

Can you please provide additional details on the NOI/permit going to public comment process?

Thanks,

Quin

From: Bingham, Quin <Quin.Bingham@gcinc.com>
Sent: Friday, March 24, 2023 10:23 AM
To: John Persons <jpersons@utah.gov>; Jason Krebs <jkrebs@utah.gov>
Cc: Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: RE: Updated I-80 South Quarry ADM

Hi John,

Can you please elucidate the process of this NOI/permit going out for public comment?

I am curious to better understand what this process looks like (i.e., what steps are involved)?

Hi Jason,

Any updates on your review of our ADM? Has it gone to Dave Prey for final review?

Thank you both for you communication.

Best,
Quin

From: John Persons <jpersons@utah.gov>
Sent: Monday, March 20, 2023 8:28 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

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Quin,

Once modeling approves the model, I will send the draft permit through the DAQ's peer review process. During this process three different parties have to review it, I expect this to take about a month but it all depends on how fast and how many questions each party has. From there, the timeline you listed in the previous email is correct.

I don't think there is a time deadline for when DAQ has to respond to public comments. So the timeline for this is really going to depend on how many comments are received. Let me know if you have any additional questions. Thanks.

- Best Regards
John Persons

On Thu, Mar 16, 2023 at 10:55 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Ok, thanks.

From: Jason Krebs <jkrebs@utah.gov>
Sent: Thursday, March 16, 2023 10:53 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: John Persons <jpgersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

No. I don't anticipate a need for that.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

195 North 1950 West, Salt Lake City, UT 84116

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Jason,

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Regards,
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Cc: John Persons <jpgersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

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I've been able to work on this project this week, and expect to have my review wrapped up very soon. I don't expect a need any additional information.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

195 North 1950 West, Salt Lake City, UT 84116

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Jason,

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Also, do you have an estimate as to when your review may be completed?

Is there any additional information you need from me?

John,

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- Our NOI goes out for 30-day public comment period,
- UDAQ then responds to public comments,
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Thanks,
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Subject: Re: Updated I-80 South Quarry ADM

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Jason,

Thanks for the update. Also, I'm out of the office for the rest of the week. Just wanted to give everybody a heads-up.

- Best Regards
John Persons

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Jason,

Thank you for the update. Please don't hesitate to call me with any questions.

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Quin

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To: John Persons <jpgersons@utah.gov>
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Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Will do. I'm in the middle of reviewing a very large modeling project that will likely require a couple more days. I've got Granite I80 next in line and will reach out with any questions or concerns.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

195 North 1950 West, Salt Lake City, UT 84116

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On Tue, Mar 7, 2023 at 10:49 AM John Persons <jpgersons@utah.gov> wrote:

Jason and Dave,

Let me know how the model is looking once you get a chance to review it. Thanks.

- Best Regards
John Persons

On Tue, Feb 28, 2023 at 3:56 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Great. Thanks for letting me know. Please don't hesitate to reach out with any questions.

From: Jason Krebs <jkrebs@utah.gov>
Sent: Tuesday, February 28, 2023 3:55 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: John Persons <jpersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
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Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

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Good afternoon, John,

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Please reach out with any questions.

Best,
Quin

Quinten G. Bingham
Utah Region Environmental Manager

1000 N Warm Springs Rd
Salt Lake City, UT 84116

Direct: [801-526-6050](tel:801-526-6050)

Mobile: [435-770-4319](tel:435-770-4319)

Email: quin.bingham@gcinc.com
www.graniteconstruction.com

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John Persons

Environmental Engineer | Minor NSR Section

M: (385) 306-6503

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Bingham, Quin <Quin.Bingham@gcinc.com>

Wed, May 17, 2023 at 10:04 AM

To: John Persons <jpersons@utah.gov>

Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>, "Klaumann, Jason" <Jason.Klaumann@gcinc.com>

John,

Thanks for the additional information.

Please keep me apprised as to when it will go out for public comment and when DAQ plans to host the public hearing.

Is the hosting of a public hearing by the DAQ a common practice for new minor source AOs? If not, can you help me understand the reasoning to hold one for this project?

Thanks for all your help in the process.

Regards,

Quin

From: John Persons <jpersons@utah.gov>

Sent: Wednesday, May 17, 2023 9:54 AM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>; Klaumann, Jason <Jason.Klaumann@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Thanks for sending this over. I will send it to our office tech and she will prepare it for public comment. It usually takes a few days to get it prepped and to coordinate with the newspaper. I'll keep you in the loop. Additionally, the DAQ is planning to host a public hearing to give people a chance to voice their comments in person.

- Best Regards

John Persons

On Tue, May 16, 2023 at 4:39 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thanks for providing the updated version.

Please find attached a signed copy.

Do you have an ETA as to when this will go out for public comment?

Thanks,

Quin

From: John Persons <jpersons@utah.gov>

Sent: Tuesday, May 16, 2023 11:04 AM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Here is the updated version. Let me know if you have any additional questions. And yes I can confirm that that date is correct. Once I have your signed copy I will send it forward to public comment.

- Best Regards

John Persons

On Mon, May 15, 2023 at 7:59 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hi John,

We have no additional comments on the draft AO. Our only comment was the one provided in my earlier email below.

Can you please send an updated version based on the below comment?

Also, can you please confirm that 5/17 is the final due date to receive our signed approval on the draft AO? We received the draft AO on 5/4.

Thanks,

Quin

From: John Persons <jpersons@utah.gov>

Sent: Monday, May 8, 2023 2:19 PM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Sounds good.

On Mon, May 8, 2023 at 1:33 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

We are still reviewing, so good call on waiting.

I will reach out if we have any other questions/comments.

-Quin

From: John Persons <jpersons@utah.gov>
Sent: Monday, May 8, 2023 1:24 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Yes, it should be R307-410-4. Was this the only thing that needs to be changed in the permit? If there is anything else you guys would like to change/discuss I'll wait until after to make any and all changes at once. Thanks.

- Best Regards

John Persons

On Mon, May 8, 2023 at 12:24 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Can you please clarify whether the highlighted code reference should be R307-401-4 or R307-410-4? My assumption is that it should be the latter as it is referencing criteria pollutants.

If it should be R307-410-4, can you please send me a revised version of the text file?

Thanks,

Quin



EMISSION IMPACT ANALYSIS

The PM₁₀ emissions from Granite Construction Company's new I-80 South Quarry exceed the respective modeling threshold established in R307-410-4. Therefore, the PM₁₀ emissions were modeled. This resulted in operating conditions being added to this permit limiting the times at which the source can operate various parts of the facility. These conditions are listed in this permit as II.B.1.c and II.B.1.d. All other criteria pollutants were below their respective modeling thresholds listed in R307-401-4. All hazardous air pollutants are below their respective modeling thresholds listed in R307-410-5.

From: John Persons <jpersons@utah.gov>
Sent: Thursday, May 4, 2023 10:13 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

This project has passed the DAQ's internal review process. I have attached a draft copy of the AO below. Please take your time and look it over. Let me know if you have any questions, concerns, or comments. If this document looks good to you please sign it and send it back to me. Once I have received your signed copy I will send it to public comment.

- Best Regards

John Persons

On Thu, Apr 27, 2023 at 2:46 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Sounds good. Thank you, John.

From: John Persons <jpersons@utah.gov>

Sent: Thursday, April 27, 2023 2:38 PM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

I have still not gotten it back from Alan. I know he has looked at it but I have not received it back yet. I'll keep you in the loop.

- Best Regards

John Persons

On Thu, Apr 27, 2023 at 12:53 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hello John,

I hope your week is going well.

I am reaching out to see if you have an update on Alan's review of our air permit.

Thanks,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, April 18, 2023 2:33 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Thanks for the fast response. I imagine 1-2 weeks but I know that he has a lot on his plate right now so that timeline could change. I will keep you posted. Thanks.

- Best Regards

John Persons

On Tue, Apr 18, 2023 at 2:30 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the update.

In response to your question, the generators have not been purchased yet.

Do you have an estimate as to how long Alan's review will take?

Regards,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, April 18, 2023 2:27 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

I just have an update and a quick question. Compliance approved this project so I sent it to Alan for review. I also have a quick question. Have the generator engines for this site been purchased already? If so, what is the year of manufacture? Thanks.

- Best Regards

John Persons

On Wed, Apr 12, 2023 at 6:31 AM John Persons <jpersons@utah.gov> wrote:

Sounds good.

- John

On Tue, Apr 11, 2023 at 9:54 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the additional timeline information.

I will follow up with you late next week for an additional status update.

Best,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, April 11, 2023 9:26 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

It all depends on how long it takes for Chad and Alan to review it. I estimate 2-3 weeks but I could be wrong. I will keep you posted once Chad gets it back to me. Thanks.

- Best Regards

John Persons

On Mon, Apr 10, 2023 at 10:06 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the update.

Do you have an estimate as to when I may expect to receive the permit for review prior to it going to public comment?

-Quin

From: John Persons <jpersons@utah.gov>
Sent: Monday, April 10, 2023 7:41 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Sorry I missed your calls. The permit is already through peer review and is currently being reviewed by DAQ's compliance department. Once compliance finishes its review Alan will get a chance to review it. After Alan reviews it, I will send it to you for Granite to review before it goes to public comment. Let me know if you have any other questions. Thanks.

- Best Regards

John Persons

On Fri, Apr 7, 2023 at 3:23 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hi John,

I hope you are doing well. I tried contacting you via phone a few times with no success.

Can you please provide a status update on the permit? is the permit still in draft phase or is it in internal review?

Best,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, March 28, 2023 8:16:04 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Of course. So once Granite approves the draft permit the DAQ will send it out for a 30-day public comment period. The comment period will start when the proposed project is published in the county's newspaper. For this project, the DAQ will also hold a public hearing to let members of the public voice their concerns in person. Once the 30-day public comment period is over, the DAQ will read through and respond to every comment. Provided that no new changes come as a result of the comments, the DAQ will publish its responses and then send the permit through for signing.

Additional things that could lengthen this timeline include if the public comment period is extended due to public request (I have never seen this done but I am pretty sure that there is a way that members of the public can do this.) and if significant changes come as a result of public comments made. Let me know if you have any other questions.

- Best Regards

John Persons

On Mon, Mar 27, 2023 at 1:00 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hi John,

Following up on my email below.

Can you please provide additional details on the NOI/permit going to public comment process?

Thanks,

Quin

From: Bingham, Quin <Quin.Bingham@gcinc.com>
Sent: Friday, March 24, 2023 10:23 AM
To: John Persons <jpersons@utah.gov>; Jason Krebs <jkrebs@utah.gov>
Cc: Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark

<Mark.Greenwood@gcinc.com>

Subject: RE: Updated I-80 South Quarry ADM

Hi John,

Can you please elucidate the process of this NOI/permit going out for public comment?

I am curious to better understand what this process looks like (i.e., what steps are involved)?

Hi Jason,

Any updates on your review of our ADM? Has it gone to Dave Prey for final review?

Thank you both for you communication.

Best,
Quin

From: John Persons <jpersons@utah.gov>

Sent: Monday, March 20, 2023 8:28 AM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Once modeling approves the model, I will send the draft permit through the DAQ's peer review process. During this process three different parties have to review it, I expect this to take about a month but it all depends on how fast and how many questions each party has. From there, the timeline you listed in the previous email is correct.

I don't think there is a time deadline for when DAQ has to respond to public comments. So the timeline for this is really going to depend on how many comments are received. Let me know if you have any additional questions. Thanks.

- Best Regards
John Persons

On Thu, Mar 16, 2023 at 10:55 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Ok, thanks.

From: Jason Krebs <jkrebs@utah.gov>

Sent: Thursday, March 16, 2023 10:53 AM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: John Persons <jpersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

No. I don't anticipate a need for that.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

Emails to and from this email address may be considered public records and thus subject to Utah GRAMA requirements.

On Thu, Mar 16, 2023 at 10:31 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Jason,

Thanks for the rapid response.

Based on your review to this point, should we anticipate UDAQ requesting another iteration of the model, or no?

Regards,
Quin

From: Jason Krebs <jkrebs@utah.gov>
Sent: Thursday, March 16, 2023 10:29 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: John Persons <jpersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

I've been able to work on this project this week, and expect to have my review wrapped up very soon. I don't expect a need any additional information.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

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On Thu, Mar 16, 2023 at 10:12 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Jason,

I hope you are doing well.

I am reaching to get an update on your review of our latest ADM submittal.

Also, do you have an estimate as to when your review may be completed?

Is there any additional information you need from me?

John,

Can you please provide an outline along with estimated timeframe of how the AO process looks from this point moving forward for our NOI?

My understanding is that once UDAQ has approved our ADM:

- Our NOI goes out for 30-day public comment period,
- UDAQ then responds to public comments,
 - How long does UDAQ have to respond to public comment?
- Once public comments have been addressed, an AO is drafted by UDAQ.

Thanks,
Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, March 7, 2023 11:19:06 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Jason,

Thanks for the update. Also, I'm out of the office for the rest of the week. Just wanted to give everybody a heads-up.

- Best Regards
John Persons

On Tue, Mar 7, 2023 at 11:16 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Jason,

Thank you for the update. Please don't hesitate to call me with any questions.

Regards,
Quin

From: Jason Krebs <jkrebs@utah.gov>
Sent: Tuesday, March 7, 2023 11:13:41 AM
To: John Persons <jpersons@utah.gov>
Cc: Bingham, Quin <Quin.Bingham@gcinc.com>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Will do. I'm in the middle of reviewing a very large modeling project that will likely require a couple more days. I've got Granite I80 next in line and will reach out with any questions or concerns.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

Emails to and from this email address may be considered public records and thus subject to Utah GRAMA requirements.

On Tue, Mar 7, 2023 at 10:49 AM John Persons <jpersons@utah.gov> wrote:

Jason and Dave,

Let me know how the model is looking once you get a chance to review it. Thanks.

- Best Regards
John Persons

On Tue, Feb 28, 2023 at 3:56 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Great. Thanks for letting me know. Please don't hesitate to reach out with any questions.

From: Jason Krebs <jkrebs@utah.gov>
Sent: Tuesday, February 28, 2023 3:55 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: John Persons <jpersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Thanks for sharing these files Quin. I was able to download them.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

Emails to and from this email address may be considered public records and thus subject to Utah GRAMA requirements.

On Tue, Feb 28, 2023 at 2:08 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Good afternoon, John,

I have updated the I-80 South Quarry ADM based on our last discussion. I sent you all access to a One Drive Folder [02282023_ADM](#) that has the most recent model files for both phase 1 and phase 2 along with the emission calculation spreadsheets. Please confirm you can access this shared OneDrive folder.

Please reach out with any questions.

Best,

Quin

Quinten G. Bingham

Utah Region Environmental Manager
[1000 N Warm Springs Rd](#)
Salt Lake City, UT 84116

Direct: [801-526-6050](tel:801-526-6050)

Mobile: [435-770-4319](tel:435-770-4319)

Email: quin.bingham@gcinc.com

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John Persons <jpgersons@utah.gov> Wed, May 17, 2023 at 11:09 AM
 To: "Bingham, Quin" <Quin.Bingham@gcinc.com>
 Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>, "Klaumann, Jason" <Jason.Klaumann@gcinc.com>

Quin,

Will do. And most minor source AOs do not have a public hearing. Actually, most minor AOs don't even get any public comments. However, due to the controversial nature of this project, we expect that the DAQ will receive a lot of comments. We have already had groups ask about a public hearing so we decided that we are going to schedule one even though it has not officially been requested yet. The goal is to allow everyone an opportunity to comment to show that DAQ did its due diligence and to prevent people from using the "I didn't get a chance to comment" complaint. Does this make sense?

- Best Regards
John Persons

On Wed, May 17, 2023 at 10:04 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thanks for the additional information.

Please keep me appraised as to when it will go out for public comment and when DAQ plans to host the public hearing.

Is the hosting of a public hearing by the DAQ a common practice for new minor source AOs? If not, can you help me understand the reasoning to hold one for this project?

Thanks for all your help in the process.

Regards,
Quin

From: John Persons <jpgersons@utah.gov>
Sent: Wednesday, May 17, 2023 9:54 AM

To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>; Klaumann, Jason <Jason.Klaumann@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Thanks for sending this over. I will send it to our office tech and she will prepare it for public comment. It usually takes a few days to get it prepped and to coordinate with the newspaper. I'll keep you in the loop. Additionally, the DAQ is planning to host a public hearing to give people a chance to voice their comments in person.

- Best Regards

John Persons

On Tue, May 16, 2023 at 4:39 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thanks for providing the updated version.

Please find attached a signed copy.

Do you have an ETA as to when this will go out for public comment?

Thanks,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, May 16, 2023 11:04 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Here is the updated version. Let me know if you have any additional questions. And yes I can confirm that that date is correct. Once I have your signed copy I will send it forward to public comment.

- Best Regards

John Persons

On Mon, May 15, 2023 at 7:59 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hi John,

We have no additional comments on the draft AO. Our only comment was the one provided in my earlier email below.

Can you please send an updated version based on the below comment?

Also, can you please confirm that 5/17 is the final due date to receive our signed approval on the draft AO? We received the draft AO on 5/4.

Thanks,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Monday, May 8, 2023 2:19 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Sounds good.

On Mon, May 8, 2023 at 1:33 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

We are still reviewing, so good call on waiting.

I will reach out if we have any other questions/comments.

-Quin

From: John Persons <jpersons@utah.gov>
Sent: Monday, May 8, 2023 1:24 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Yes, it should be R307-410-4. Was this the only thing that needs to be changed in the permit? If there is anything else you guys would like to change/discuss I'll wait until after to make any and all changes at once. Thanks.

- Best Regards

John Persons

On Mon, May 8, 2023 at 12:24 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Can you please clarify whether the highlighted code reference should be R307-401-4 or R307-410-4? My assumption is that it should be the latter as it is referencing criteria pollutants.

If it should be R307-410-4, can you please send me a revised version of the text file?

Thanks,

Quin



EMISSION IMPACT ANALYSIS

The PM₁₀ emissions from Granite Construction Company's new I-80 South Quarry exceed the respective modeling threshold established in R307-410-4. Therefore, the PM₁₀ emissions were modeled. This resulted in operating conditions being added to this permit limiting the times at which the source can operate various parts of the facility. These conditions are listed in this permit as II.B.1.c and II.B.1.d. All other criteria pollutants were below their respective modeling thresholds listed in R307-401-4. All hazardous air pollutants are below their respective modeling thresholds listed in R307-410-5.

From: John Persons <jpersons@utah.gov>
Sent: Thursday, May 4, 2023 10:13 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

This project has passed the DAQ's internal review process. I have attached a draft copy of the AO below. Please take your time and look it over. Let me know if you have any questions, concerns, or comments. If this document looks good to you please sign it and send it back to me. Once I have received your signed copy I will send it to public comment.

- Best Regards

John Persons

On Thu, Apr 27, 2023 at 2:46 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Sounds good. Thank you, John.

From: John Persons <jpersons@utah.gov>

Sent: Thursday, April 27, 2023 2:38 PM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

I have still not gotten it back from Alan. I know he has looked at it but I have not received it back yet. I'll keep you in the loop.

- Best Regards

John Persons

On Thu, Apr 27, 2023 at 12:53 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hello John,

I hope your week is going well.

I am reaching out to see if you have an update on Alan's review of our air permit.

Thanks,

Quin

From: John Persons <jpgersons@utah.gov>
Sent: Tuesday, April 18, 2023 2:33 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Thanks for the fast response. I imagine 1-2 weeks but I know that he has a lot on his plate right now so that timeline could change. I will keep you posted. Thanks.

- Best Regards

John Persons

On Tue, Apr 18, 2023 at 2:30 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the update.

In response to your question, the generators have not been purchased yet.

Do you have an estimate as to how long Alan's review will take?

Regards,

Quin

From: John Persons <jpgersons@utah.gov>
Sent: Tuesday, April 18, 2023 2:27 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

I just have an update and a quick question. Compliance approved this project so I sent it to Alan for review. I also have a quick question. Have the generator engines for this site been purchased already? If so, what is the year of manufacture? Thanks.

- Best Regards

John Persons

On Wed, Apr 12, 2023 at 6:31 AM John Persons <jpersons@utah.gov> wrote:

Sounds good.

- John

On Tue, Apr 11, 2023 at 9:54 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the additional timeline information.

I will follow up with you late next week for an additional status update.

Best,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, April 11, 2023 9:26 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

It all depends on how long it takes for Chad and Alan to review it. I estimate 2-3 weeks but I could be wrong. I will keep you posted once Chad gets it back to me. Thanks.

- Best Regards

John Persons

On Mon, Apr 10, 2023 at 10:06 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the update.

Do you have an estimate as to when I may expect to receive the permit for review prior to it going to public comment?

-Quin

From: John Persons <jpersons@utah.gov>
Sent: Monday, April 10, 2023 7:41 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Sorry I missed your calls. The permit is already through peer review and is currently being reviewed by DAQ's compliance department. Once compliance finishes its review Alan will get a chance to review it. After Alan reviews it, I will send it to you for Granite to review before it goes to public comment. Let me know if you have any other questions. Thanks.

- Best Regards

John Persons

On Fri, Apr 7, 2023 at 3:23 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hi John,

I hope you are doing well. I tried contacting you via phone a few times with no success.

Can you please provide a status update on the permit? is the permit still in draft phase or is it in internal review?

Best,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, March 28, 2023 8:16:04 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Of course. So once Granite approves the draft permit the DAQ will send it out for a 30-day public comment period. The comment period will start when the proposed project is published in the county's newspaper. For this project, the DAQ will also hold a public hearing to let members of the public voice their concerns in person. Once the 30-day public comment period is over, the DAQ will read through and respond to every comment. Provided that no new changes come as a result of the comments, the DAQ will publish its responses and then send the permit through for signing.

Additional things that could lengthen this timeline include if the public comment period is extended due to public request (I have never seen this done but I am pretty sure that there is a way that members of the public can do this.) and if significant changes come as a result of public comments made. Let me know if you have any other questions.

- Best Regards

John Persons

On Mon, Mar 27, 2023 at 1:00 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hi John,

Following up on my email below.

Can you please provide additional details on the NOI/permit going to public comment process?

Thanks,

Quin

From: Bingham, Quin <Quin.Bingham@gcinc.com>
Sent: Friday, March 24, 2023 10:23 AM
To: John Persons <jpersons@utah.gov>; Jason Krebs <jkrebs@utah.gov>
Cc: Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark

<Mark.Greenwood@gcinc.com>

Subject: RE: Updated I-80 South Quarry ADM

Hi John,

Can you please elucidate the process of this NOI/permit going out for public comment?

I am curious to better understand what this process looks like (i.e., what steps are involved)?

Hi Jason,

Any updates on your review of our ADM? Has it gone to Dave Prey for final review?

Thank you both for your communication.

Best,
Quin

From: John Persons <jpersons@utah.gov>

Sent: Monday, March 20, 2023 8:28 AM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Once modeling approves the model, I will send the draft permit through the DAQ's peer review process. During this process three different parties have to review it, I expect this to take about a month but it all depends on how fast and how many questions each party has. From there, the timeline you listed in the previous email is correct.

I don't think there is a time deadline for when DAQ has to respond to public comments. So the timeline for this is really going to depend on how many comments are received. Let me know if you have any additional questions. Thanks.

- Best Regards
John Persons

On Thu, Mar 16, 2023 at 10:55 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Ok, thanks.

From: Jason Krebs <jkrebs@utah.gov>

Sent: Thursday, March 16, 2023 10:53 AM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: John Persons <jpersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

No. I don't anticipate a need for that.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

195 North 1950 West, Salt Lake City, UT 84116

Emails to and from this email address may be considered public records and thus subject to Utah GRAMA requirements.

On Thu, Mar 16, 2023 at 10:31 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Jason,

Thanks for the rapid response.

Based on your review to this point, should we anticipate UDAQ requesting another iteration of the model, or no?

Regards,
Quin

From: Jason Krebs <jkrebs@utah.gov>
Sent: Thursday, March 16, 2023 10:29 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: John Persons <jpersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

I've been able to work on this project this week, and expect to have my review wrapped up very soon. I don't expect a need any additional information.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

195 North 1950 West, Salt Lake City, UT 84116

Emails to and from this email address may be considered public records and thus subject to Utah GRAMA requirements.

On Thu, Mar 16, 2023 at 10:12 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Jason,

I hope you are doing well.

I am reaching to get an update on your review of our latest ADM submittal.

Also, do you have an estimate as to when your review may be completed?

Is there any additional information you need from me?

John,

Can you please provide an outline along with estimated timeframe of how the AO process looks from this point moving forward for our NOI?

My understanding is that once UDAQ has approved our ADM:

- Our NOI goes out for 30-day public comment period,
- UDAQ then responds to public comments,
 - How long does UDAQ have to respond to public comment?
- Once public comments have been addressed, an AO is drafted by UDAQ.

Thanks,
Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, March 7, 2023 11:19:06 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Jason,

Thanks for the update. Also, I'm out of the office for the rest of the week. Just wanted to give everybody a heads-up.

- Best Regards
John Persons

On Tue, Mar 7, 2023 at 11:16 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Jason,

Thank you for the update. Please don't hesitate to call me with any questions.

Regards,
Quin

From: Jason Krebs <jkrebs@utah.gov>
Sent: Tuesday, March 7, 2023 11:13:41 AM
To: John Persons <jpersons@utah.gov>
Cc: Bingham, Quin <Quin.Bingham@gcinc.com>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Will do. I'm in the middle of reviewing a very large modeling project that will likely require a couple more days. I've got Granite I80 next in line and will reach out with any questions or concerns.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

195 North 1950 West, Salt Lake City, UT 84116

Emails to and from this email address may be considered public records and thus subject to Utah GRAMA requirements.

On Tue, Mar 7, 2023 at 10:49 AM John Persons <jpersons@utah.gov> wrote:

Jason and Dave,

Let me know how the model is looking once you get a chance to review it. Thanks.

- Best Regards
John Persons

On Tue, Feb 28, 2023 at 3:56 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Great. Thanks for letting me know. Please don't hesitate to reach out with any questions.

From: Jason Krebs <jkrebs@utah.gov>
Sent: Tuesday, February 28, 2023 3:55 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: John Persons <jpersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Thanks for sharing these files Quin. I was able to download them.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality


Phone: 385.306.6531

195 North 1950 West, Salt Lake City, UT 84116

Emails to and from this email address may be considered public records and thus subject to Utah GRAMA requirements.

On Tue, Feb 28, 2023 at 2:08 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Good afternoon, John,

I have updated the I-80 South Quarry ADM based on our last discussion. I sent you all access to a One Drive Folder  [02282023_ADM](#) that has the most recent model files for both phase 1 and phase 2 along with the emission calculation spreadsheets. Please confirm you can access this shared OneDrive folder.

Please reach out with any questions.

Best,

Quin

Quinten G. Bingham

Utah Region Environmental Manager
1000 N Warm Springs Rd
Salt Lake City, UT 84116

Direct: [801-526-6050](tel:801-526-6050)

Mobile: [435-770-4319](tel:435-770-4319)

Email: quin.bingham@gcinc.com
www.graniteconstruction.com

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John Persons

Environmental Engineer | Minor NSR Section

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Bingham, Quin <Quin.Bingham@gcinc.com>

Wed, May 17, 2023 at 11:15 AM

To: John Persons <jpersons@utah.gov>

Cc: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>, "Klaumann, Jason" <Jason.Klaumann@gcinc.com>

Thank you, John.

From: John Persons <jpersons@utah.gov>

Sent: Wednesday, May 17, 2023 11:09 AM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>; Klaumann, Jason <Jason.Klaumann@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Will do. And most minor source AOs do not have a public hearing. Actually, most minor AOs don't even get any public comments. However, due to the controversial nature of this project, we expect that the DAQ will receive a lot of comments. We have already had groups ask about a public hearing so we decided that we are going to schedule one even though it has not officially been requested

yet. The goal is to allow everyone an opportunity to comment to show that DAQ did its due diligence and to prevent people from using the "I didn't get a chance to comment" complaint. Does this make sense?

- Best Regards

John Persons

On Wed, May 17, 2023 at 10:04 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thanks for the additional information.

Please keep me apprised as to when it will go out for public comment and when DAQ plans to host the public hearing.

Is the hosting of a public hearing by the DAQ a common practice for new minor source AOs? If not, can you help me understand the reasoning to hold one for this project?

Thanks for all your help in the process.

Regards,

Quin

From: John Persons <jpgersons@utah.gov>

Sent: Wednesday, May 17, 2023 9:54 AM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>; Klaumann, Jason <Jason.Klaumann@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Thanks for sending this over. I will send it to our office tech and she will prepare it for public comment. It usually takes a few days to get it prepped and to coordinate with the newspaper. I'll keep you in the loop. Additionally, the DAQ is planning to host a public hearing to give people a chance to voice their comments in person.

- Best Regards

John Persons

On Tue, May 16, 2023 at 4:39 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thanks for providing the updated version.

Please find attached a signed copy.

Do you have an ETA as to when this will go out for public comment?

Thanks,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, May 16, 2023 11:04 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Here is the updated version. Let me know if you have any additional questions. And yes I can confirm that that date is correct. Once I have your signed copy I will send it forward to public comment.

- Best Regards

John Persons

On Mon, May 15, 2023 at 7:59 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hi John,

We have no additional comments on the draft AO. Our only comment was the one provided in my earlier email below.

Can you please send an updated version based on the below comment?

Also, can you please confirm that 5/17 is the final due date to receive our signed approval on the draft AO? We received the draft AO on 5/4.

Thanks,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Monday, May 8, 2023 2:19 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Sounds good.

On Mon, May 8, 2023 at 1:33 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

We are still reviewing, so good call on waiting.

I will reach out if we have any other questions/comments.

-Quin

From: John Persons <jpersons@utah.gov>
Sent: Monday, May 8, 2023 1:24 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Yes, it should be R307-410-4. Was this the only thing that needs to be changed in the permit? If there is anything else you guys would like to change/discuss I'll wait until after to make any and all changes at once. Thanks.

- Best Regards

John Persons

On Mon, May 8, 2023 at 12:24 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Can you please clarify whether the highlighted code reference should be R307-401-4 or R307-410-4? My assumption is that it should be the latter as it is referencing criteria pollutants.

If it should be R307-410-4, can you please send me a revised version of the text file?

Thanks,

Quin



EMISSION IMPACT ANALYSIS

The PM₁₀ emissions from Granite Construction Company's new I-80 South Quarry exceed the respective modeling threshold established in R307-410-4. Therefore, the PM₁₀ emissions were modeled. This resulted in operating conditions being added to this permit limiting the times at which the source can operate various parts of the facility. These conditions are listed in this permit as II.B.1.c and II.B.1.d. All other criteria pollutants were below their respective modeling thresholds listed in R307-401-4. All hazardous air pollutants are below their respective modeling thresholds listed in R307-410-5.

From: John Persons <jpersons@utah.gov>

Sent: Thursday, May 4, 2023 10:13 AM

To: Bingham, Quin <Quin.Bingham@gcinc.com>

Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>

Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

This project has passed the DAQ's internal review process. I have attached a draft copy of the AO below. Please take your time and look it over. Let me know if you have any questions, concerns, or comments. If this document looks good to you please sign it and send it back to me. Once I have received your signed copy I will send it to public comment.

- Best Regards

John Persons

On Thu, Apr 27, 2023 at 2:46 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Sounds good. Thank you, John.

From: John Persons <jpersons@utah.gov>

Sent: Thursday, April 27, 2023 2:38 PM

To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

I have still not gotten it back from Alan. I know he has looked at it but I have not received it back yet. I'll keep you in the loop.

- Best Regards

John Persons

On Thu, Apr 27, 2023 at 12:53 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hello John,

I hope your week is going well.

I am reaching out to see if you have an update on Alan's review of our air permit.

Thanks,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, April 18, 2023 2:33 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Thanks for the fast response. I imagine 1-2 weeks but I know that he has a lot on his plate right now so that timeline could change. I will keep you posted. Thanks.

- Best Regards

John Persons

On Tue, Apr 18, 2023 at 2:30 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the update.

In response to your question, the generators have not been purchased yet.

Do you have an estimate as to how long Alan's review will take?

Regards,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, April 18, 2023 2:27 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

I just have an update and a quick question. Compliance approved this project so I sent it to Alan for review. I also have a quick question. Have the generator engines for this site been purchased already? If so, what is the year of manufacture? Thanks.

- Best Regards

John Persons

On Wed, Apr 12, 2023 at 6:31 AM John Persons <jpersons@utah.gov> wrote:

Sounds good.

- John

On Tue, Apr 11, 2023 at 9:54 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the additional timeline information.

I will follow up with you late next week for an additional status update.

Best,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, April 11, 2023 9:26 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

It all depends on how long it takes for Chad and Alan to review it. I estimate 2-3 weeks but I could be wrong. I will keep you posted once Chad gets it back to me. Thanks.

- Best Regards

John Persons

On Mon, Apr 10, 2023 at 10:06 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

John,

Thank you for the update.

Do you have an estimate as to when I may expect to receive the permit for review prior to it going to public comment?

-Quin

From: John Persons <jpersons@utah.gov>
Sent: Monday, April 10, 2023 7:41 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Sorry I missed your calls. The permit is already through peer review and is currently being reviewed by DAQ's compliance department. Once compliance finishes its review Alan will get a chance to review it. After Alan reviews it, I will send it to you for Granite to review before it goes to public comment. Let me know if you have any other questions. Thanks.

- Best Regards

John Persons

On Fri, Apr 7, 2023 at 3:23 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hi John,

I hope you are doing well. I tried contacting you via phone a few times with no success.

Can you please provide a status update on the permit? is the permit still in draft phase or is it in internal review?

Best,

Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, March 28, 2023 8:16:04 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Of course. So once Granite approves the draft permit the DAQ will send it out for a 30-day public comment period. The comment period will start when the proposed project is published in the county's newspaper. For this project, the DAQ will also hold a public hearing to let members of the public voice their concerns in person. Once the 30-day public comment period is over, the DAQ will read through and respond to every comment. Provided that no new changes come as a result of the comments, the DAQ will publish its responses and then send the permit through for signing.

Additional things that could lengthen this timeline include if the public comment period is extended due to public request (I have never seen this done but I am pretty sure that there is a way that members of the public can do this.) and if significant changes come as a result of public comments made. Let me know if you have any other questions.

- Best Regards

John Persons

On Mon, Mar 27, 2023 at 1:00 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Hi John,

Following up on my email below.

Can you please provide additional details on the NOI/permit going to public comment process?

Thanks,

Quin

From: Bingham, Quin <Quin.Bingham@gcinc.com>
Sent: Friday, March 24, 2023 10:23 AM
To: John Persons <jpersons@utah.gov>; Jason Krebs <jkrebs@utah.gov>
Cc: Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: RE: Updated I-80 South Quarry ADM

Hi John,

Can you please elucidate the process of this NOI/permit going out for public comment?

I am curious to better understand what this process looks like (i.e., what steps are involved)?

Hi Jason,

Any updates on your review of our ADM? Has it gone to Dave Prey for final review?

Thank you both for you communication.

Best,
Quin

From: John Persons <jpersons@utah.gov>
Sent: Monday, March 20, 2023 8:28 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Quin,

Once modeling approves the model, I will send the draft permit through the DAQ's peer review process. During this process three different parties have to review it, I expect this to take about a month but it all depends on how fast and how many questions each party has. From there, the timeline you listed in the previous email is correct.

I don't think there is a time deadline for when DAQ has to respond to public comments. So the timeline for this is really going to depend on how many comments are received. Let me know if you have any additional questions. Thanks.

- Best Regards
John Persons

On Thu, Mar 16, 2023 at 10:55 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Ok, thanks.

From: Jason Krebs <jkrebs@utah.gov>
Sent: Thursday, March 16, 2023 10:53 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: John Persons <jpersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

No. I don't anticipate a need for that.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

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On Thu, Mar 16, 2023 at 10:31 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Jason,

Thanks for the rapid response.

Based on your review to this point, should we anticipate UDAQ requesting another iteration of the model, or no?

Regards,
Quin

From: Jason Krebs <jkrebs@utah.gov>
Sent: Thursday, March 16, 2023 10:29 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: John Persons <jpersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

I've been able to work on this project this week, and expect to have my review wrapped up very soon. I don't expect a need any additional information.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

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On Thu, Mar 16, 2023 at 10:12 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Jason,

I hope you are doing well.

I am reaching to get an update on your review of our latest ADM submittal.

Also, do you have an estimate as to when your review may be completed?

Is there any additional information you need from me?

John,

Can you please provide an outline along with estimated timeframe of how the AO process looks from this point moving forward for our NOI?

My understanding is that once UDAQ has approved our ADM:

- Our NOI goes out for 30-day public comment period,
- UDAQ then responds to public comments,
 - How long does UDAQ have to respond to public comment?
- Once public comments have been addressed, an AO is drafted by UDAQ.

Thanks,
Quin

From: John Persons <jpersons@utah.gov>
Sent: Tuesday, March 7, 2023 11:19:06 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: Jason Krebs <jkrebs@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Jason,

Thanks for the update. Also, I'm out of the office for the rest of the week. Just wanted to give everybody a heads-up.

- Best Regards
John Persons

On Tue, Mar 7, 2023 at 11:16 AM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Jason,

Thank you for the update. Please don't hesitate to call me with any questions.

Regards,
Quin

From: Jason Krebs <jkrebs@utah.gov>
Sent: Tuesday, March 7, 2023 11:13:41 AM
To: John Persons <jpersons@utah.gov>
Cc: Bingham, Quin <Quin.Bingham@gcinc.com>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Will do. I'm in the middle of reviewing a very large modeling project that will likely require a couple more days. I've got Granite I80 next in line and will reach out with any questions or concerns.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

Emails to and from this email address may be considered public records and thus subject to Utah GRAMA requirements.

On Tue, Mar 7, 2023 at 10:49 AM John Persons <jpersons@utah.gov> wrote:

Jason and Dave,

Let me know how the model is looking once you get a chance to review it. Thanks.

- Best Regards
John Persons

On Tue, Feb 28, 2023 at 3:56 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Great. Thanks for letting me know. Please don't hesitate to reach out with any questions.

From: Jason Krebs <jkrebs@utah.gov>
Sent: Tuesday, February 28, 2023 3:55 PM
To: Bingham, Quin <Quin.Bingham@gcinc.com>
Cc: John Persons <jpersons@utah.gov>; Dave Prey <dprey@utah.gov>; Sweet, Brad <Brad.Sweet@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>
Subject: Re: Updated I-80 South Quarry ADM

CAUTION: This email originated from outside of Granite

Thanks for sharing these files Quin. I was able to download them.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

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On Tue, Feb 28, 2023 at 2:08 PM Bingham, Quin <Quin.Bingham@gcinc.com> wrote:

Good afternoon, John,

I have updated the I-80 South Quarry ADM based on our last discussion. I sent you all access to a One Drive Folder [02282023_ADM](#) that has the most recent model files for both phase 1 and phase 2 along with the emission calculation spreadsheets. Please confirm you can access this shared OneDrive folder.

Please reach out with any questions.

Best,

Quin

Quinten G. Bingham

Utah Region Environmental Manager
1000 N Warm Springs Rd
Salt Lake City, UT 84116

Direct: [801-526-6050](tel:801-526-6050)

Mobile: [435-770-4319](tel:435-770-4319)

Email: quin.bingham@gcinc.com
www.graniteconstruction.com

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John Persons <jpersons@utah.gov>

Updated NOI Air Permit Application - Granite Construction I-80 South Quarry

22 messages

Andre Almeida <aalmeida@sespeconsulting.com>

Mon, Oct 17, 2022 at 4:39 PM

To: John Persons <jpersons@utah.gov>

Cc: "Bingham, Quin" <Quin.Bingham@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, Scott Cohen <scohen@sespeconsulting.com>, Brian Mensinger <bmensinger@trinityconsultants.com>

Hello John,

Due to an oversight, disturbed ground emissions were left out of the original emissions calculations and modeling files for the proposed I-80 South Quarry.

Attached, please find a zip file containing an updated application, emissions calculations, and modeling files, which account for 10 acres of disturbed ground in the quarry area.

Please let me know if you have any questions.

Thank you,

Andre Almeida, P.E.

Engineer II

Sespe Consulting, Inc.

A Trinity Consultants Company

Cell: (650) 336-5587

www.sespeconsulting.com

Files attached to this message

Filename	Size	Checksum (SHA256)
180_South_Quarry_NOI_pkg_2022-1017.zip	1.45 GB	0c55cab097883b8e9640a8bb2fdc67 97fa4478c49cf3b5a408ae22116f5f7080

This email or download link can not be forwarded to anyone else. Upon clicking on this link, you may be prompted to enter your email address once for verification. During the email verification process, a second email is sent to your email inbox containing the verification key to access the files.

Please click on the following link to download the attachments: <https://files.trinityconsultants.com/message/sKJ6fMu0tfeapYjpyZ7a4Z>

The attachments are available until: **Wednesday, 16 November.**

Message ID: sKJ6fMu0tfeapYjpyZ7a4Z

John Persons <jpersons@utah.gov>

Tue, Oct 18, 2022 at 7:56 AM

To: Andre Almeida <aalmeida@sespeconsulting.com>

Cc: "Bingham, Quin" <Quin.Bingham@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, Scott Cohen <scohen@sespeconsulting.com>, Brian Mensinger <bmensing@trinityconsultants.com>, Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>

Thanks for sending this over.

- John

[Quoted text hidden]

--



John Persons

Environmental Engineer | Minor NSR Section

M: (385) 306-6503

airquality.utah.gov



Jason Krebs <jkrebs@utah.gov>

Tue, Oct 18, 2022 at 8:01 AM

To: John Persons <jpersons@utah.gov>, Dave Prey <dprey@utah.gov>

Coincidentally - I was actually just typing up an email about this! My email address isn't authorized for the download. Can you download and share to a google drive?

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

Emails to and from this email address may be considered public records and thus subject to Utah GRAMA requirements.

[Quoted text hidden]

John Persons <jpersons@utah.gov>

Tue, Oct 18, 2022 at 8:17 AM

To: Jason Krebs <jkrebs@utah.gov>, Dave Prey <dprey@utah.gov>

I had asked them about it and was waiting for them to get back to me and then they just sent me a completed updated NOI file folder. They just missed it I guess. I'm uploading it now. It might take 20 mins. It is a pretty big file. Let me know if you have any other questions. Thanks.

- John

[Quoted text hidden]

Jason Krebs <jkrebs@utah.gov>

Tue, Oct 18, 2022 at 8:20 AM

To: John Persons <jpersons@utah.gov>

Cc: Dave Prey <dprey@utah.gov>

Sounds good. Thank you.

Jason Krebs | Environmental Scientist | Utah Division of Air Quality

Phone: 385.306.6531

[195 North 1950 West, Salt Lake City, UT 84116](#)

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[Quoted text hidden]

Dave Prey <dprey@utah.gov>
To: Jason Krebs <jkrebs@utah.gov>
Cc: John Persons <jpersons@utah.gov>

Tue, Oct 25, 2022 at 8:42 AM

Thanks for all the updates!

[Quoted text hidden]

John Persons <jpersons@utah.gov>
To: Andre Almeida <aalmeida@sespeconsulting.com>
Cc: "Bingham, Quin" <Quin.Bingham@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, Scott Cohen <scohen@sespeconsulting.com>, Brian Mensinger <bmensinger@trinityconsultants.com>

Wed, Nov 9, 2022 at 1:30 PM

All,

I had a quick question about the disturbed ground emissions calculation. It looks like an emissions factor of 0.38 tons/acre yr was used. The facility has 10 acres of disturbed ground. Therefore, the PM emissions should be 3.8 tons/yr. This should result in a PM10 emissions rate of $3.8 * 0.75 = 2.85$ tons PM10/yr. In the emissions calculation spreadsheets that I am looking at it looks like these emissions were not included. Does this still have to be updated? Thanks.

- Best Regards
John Persons

On Mon, Oct 17, 2022 at 4:39 PM Andre Almeida <aalmeida@sespeconsulting.com> wrote:

[Quoted text hidden]

[Quoted text hidden]

Bingham, Quin <Quin.Bingham@gcinc.com>
To: John Persons <jpersons@utah.gov>, Andre Almeida <aalmeida@sespeconsulting.com>
Cc: "Greenwood, Mark" <Mark.Greenwood@gcinc.com>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, Scott Cohen <scohen@sespeconsulting.com>, Brian Mensinger <bmensinger@trinityconsultants.com>

Thu, Nov 10, 2022 at 8:20 AM

John,

Good catch. It does appear what you pointed out is correct.

Andre and Scott,

Can you please make this correction and provide John the updated emissions calculations?

Thanks,
Quin

From: John Persons <jpersons@utah.gov>
Sent: Wednesday, November 9, 2022 1:30:17 PM
To: Andre Almeida <aalmeida@sespeconsulting.com>

Cc: Bingham, Quin <Quin.Bingham@gcinc.com>; Greenwood, Mark <Mark.Greenwood@gcinc.com>; Sweet, Brad <Brad.Sweet@gcinc.com>; Scott Cohen <scohen@sespeconsulting.com>; Brian Mensinger <bmensinger@trinityconsultants.com>

Subject: Re: Updated NOI Air Permit Application - Granite Construction I-80 South Quarry

CAUTION: This email originated from outside of Granite

[Quoted text hidden]

Andre Almeida <aalmeida@sespeconsulting.com>

Thu, Nov 10, 2022 at 12:05 PM

To: "Bingham, Quin" <Quin.Bingham@gcinc.com>, John Persons <jpersons@utah.gov>

Cc: "Greenwood, Mark" <Mark.Greenwood@gcinc.com>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, Scott Cohen <scohen@sespeconsulting.com>, Brian Mensinger <bmensinger@trinityconsultants.com>

Hi All,

Attached find updated emissions calculations. The updated sheets are also attached in PDF for both Phase 1 and 2. As John pointed out, the annual PM10 emissions have increased, but the daily emissions calculations used for modeling were not impacted by the error.

Cheers,

Andre Almeida, P.E.

Engineer II

Sespe Consulting, Inc.

A Trinity Consultants Company

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[Quoted text hidden]

[Quoted text hidden]

[Quoted text hidden]

John Persons







Environmental Engineer | Minor NSR Section

M: (385) 306-6503

airquality.utah.gov



6 attachments

-  **Permitting_emissions_calcs_Phase_2 NOI 2022-0929 v1.8.xlsx**
638K
-  **Permitting_emissions_calcs_Phase_2 NOI 2022-0929v1.8_Drilling_Blasting_Distrubed.pdf**
569K
-  **Permitting_emissions_calcs_Phase_2 NOI 2022-0929v1.8_Emissions_Summary.pdf**
646K
-  **Permitting_emissions_calcs_Phase_1 NOI 2022-0929v1.8.xlsx**
878K
-  **Permitting_emissions_calcs_Phase_1 NOI 2022-0929v1.8_Emissions_Summary.pdf**
644K
-  **Permitting_emissions_calcs_Phase_1 NOI 2022-0929v1.8_Drilling_Blasting_Distrubed.pdf**
150K

John Persons <jpersons@utah.gov> Mon, Nov 14, 2022 at 4:06 PM
 To: Andre Almeida <aalmeida@sespeconsulting.com>
 Cc: "Bingham, Quin" <Quin.Bingham@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, Scott Cohen <scohen@sespeconsulting.com>, Brian Mensinger <bmensing@trinityconsultants.com>

Andre,

Thanks for sending these updates over. However, I noticed one other thing. On the page "Dozer, Loader, Drops" shouldn't the total loader emissions (row 31) be the sum of both loading locations (rows 28 and 29). It looks like the total loader emissions (row 31) does not include row 28. Let me know what you think. Thanks.

- Best Regards
John Persons

[Quoted text hidden]

--



John Persons

Environmental Engineer | Minor NSR Section

M: (385) 306-6503

airquality.utah.gov



Andre Almeida <aalmeida@sespeconsulting.com> Mon, Nov 14, 2022 at 4:32 PM
 To: John Persons <jpersons@utah.gov>
 Cc: "Bingham, Quin" <Quin.Bingham@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, Scott Cohen <scohen@sespeconsulting.com>, Brian Mensinger <bmensing@trinityconsultants.com>

Hi John,

Good catch. That is certainly an error with the presentation of the data. It's worth noting that the "total daily emissions" tab which was used for modeling purposes sums the values correctly, so this should be a quick fix which will not affect modeling or significance determinations.

I'm going to fix that error and do another QA before sending you updated calculations.

Cheers,

Andre Almeida, P.E.

Engineer II

Sespe Consulting, Inc.

A Trinity Consultants Company

Cell: (650) 336-5587

www.sespeconsulting.com

[Quoted text hidden]

John Persons <jpersons@utah.gov>

Tue, Nov 15, 2022 at 10:04 AM

To: Andre Almeida <aalmeida@sespeconsulting.com>

Cc: "Bingham, Quin" <Quin.Bingham@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, Scott Cohen <scohen@sespeconsulting.com>, Brian Mensinger <bmensing@trinityconsultants.com>

Andre,

You're right. These emissions are correctly included in the "total daily emissions". However, these emissions are not included in the total tons per year emissions calculation in the "Emissions Summary". Just want to make sure we are on the same page.

Also, the UDAQs modeling department estimated that the lbs/hr from some of the source's processes was higher than what your estimates showed. I believe that due to this and the location of the facility (in a canyon) a couple of restrictions will have to be added to the permit limiting operational times. The modeling is not officially finished yet but that is what it is looking like. Just wanted to give you a heads-up.

- Best Regards
John Persons

[Quoted text hidden]

--



John Persons

Environmental Engineer | Minor NSR Section

M: (385) 306-6503

airquality.utah.gov



Bingham, Quin <Quin.Bingham@gcinc.com>

Tue, Nov 15, 2022 at 10:11 AM

To: John Persons <jpersons@utah.gov>, Andre Almeida <aalmeida@sespeconsulting.com>

Cc: "Greenwood, Mark" <Mark.Greenwood@gcinc.com>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, Scott Cohen <scohen@sespeconsulting.com>, Brian Mensinger <bmensing@trinityconsultants.com>

John,

Thanks, be so communicative during this process.

Are you able provide additional details on which source processes the UDAQ modeling department estimated a higher lb/hr emission rate? This information would likely benefit our team.

Thanks,

Quin

[Quoted text hidden]

John Persons <jpersons@utah.gov>

Tue, Nov 15, 2022 at 1:09 PM

To: "Bingham, Quin" <Quin.Bingham@gcinc.com>

Cc: Andre Almeida <aalmeida@sespeconsulting.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, Scott Cohen <scohen@sespeconsulting.com>, Brian Mensinger <bmensing@trinityconsultants.com>

Quin,

I am currently gathering more information from our modeling department right now. I want to make sure that the emissions estimates in this approval order are really solid because if they aren't it could greatly lengthen the process through more public comments. I will let you know when I know more.

At the moment modeling has required that two conditions be added to your permit. I have included the draft of these two conditions below. Please let me know your thoughts on them.

"The following suggested permit language should be included under the Terms and Conditions in the AO:

- The owner/operator shall only operate the I-80 South Quarry from March 1st through November 30th, and shall not operate the I-80 South Quarry from December 1st through the last day of February.
- The owner/operator shall only conduct blasting operations between the hours of 10:00 am and 2:00 pm. "

- Best Regards

John Persons

[Quoted text hidden]

John Persons <jpersons@utah.gov> Wed, Nov 16, 2022 at 12:20 PM
To: "Bingham, Quin" <Quin.Bingham@gcinc.com>
Cc: Andre Almeida <aalmeida@sespeconsulting.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, Scott Cohen <scohen@sespeconsulting.com>, Brian Mensinger <bmensing@trinityconsultants.com>

Quin,

The difference in modeled emissions comes primarily from how the UDAQ models blasting emissions. This is what the modeler in charge of the project said: "My blasting emissions are greater because I'm treating them as an intermittent source much like emergency generators, and modeled them at their actual hourly rate based on PM10/blast assuming one blast per hour." Let me know if you have any questions about this.

Once I receive the new potential emissions (PTEs in tpy) and Granite confirms that they are ok with the two conditions listed in the previous email, I will be able to move this project into UDAQ's internal review process.

- Best Regards
John Persons

[Quoted text hidden]

Bingham, Quin <Quin.Bingham@gcinc.com> Wed, Nov 16, 2022 at 4:06 PM
To: John Persons <jpersons@utah.gov>
Cc: "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

John,

Thank for the additional clarification.

Granite would like to meet with you and the UDAQ modeler that is reviewing our model to discuss these two conditions in more detail.

Is there a date and time between 12/6 – 12/9 when we could meet in person at your office to discuss our model?

Please provide a couple options between suggested date range when you and your team are available.

Thanks,

Quin

Quinten G. Bingham

Utah Region Environmental Manager

1000 N Warm Springs Rd

Salt Lake City, UT 84116

Direct: [801-526-6050](tel:801-526-6050)

Mobile: 435-770-4319
Email: quin.bingham@gcinc.com
www.graniteconstruction.com



[Quoted text hidden]

John Persons <jpgersons@utah.gov> Thu, Nov 17, 2022 at 12:18 PM
To: "Bingham, Quin" <Quin.Bingham@gcinc.com>
Cc: "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Quin,

I'll figure out what days/times work best for myself, the modeler, and my boss Alan. Would you be able to do the meeting virtually through google meet or are you guys pretty set on an in-person meeting? Thanks.

- John

[Quoted text hidden]

John Persons <jpgersons@utah.gov> Thu, Nov 17, 2022 at 1:57 PM
To: "Bingham, Quin" <Quin.Bingham@gcinc.com>
Cc: "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Quin,

Does 10:00 AM on either Tuesday (12/6/2022) or Thursday (12/8/2022) work for you guys?

Additionally, Jason (this project's modeler) is wondering which of the conditions you have questions on. These conditions came directly from the model that was submitted by Granite (Trinity's model) so he is curious why Granite has questions about these conditions. Was Granite hoping to have winter operations? Let me know. Thanks

- Best Regards
John Persons

[Quoted text hidden]

Bingham, Quin <Quin.Bingham@gcinc.com> Fri, Nov 18, 2022 at 8:43 AM
To: John Persons <jpgersons@utah.gov>
Cc: "Sweet, Brad" <Brad.Sweet@gcinc.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>

Hi John,

Thanks for getting back to me.

There was an apparent miscommunication between Granite and Trinity regarding winter month operations. We didn't realize that they had not included any type of operations in the winter months and assumed UDAQ had suggested this condition. We will likely model operational options during the winter models to determine what they may be. So, for now,

it likely doesn't make sense for your modeling team to continue their review of our submitted model as we will be providing a new model submittal soon.

That said, we feel it would be worthwhile to still meet and discuss our overall submittal. Let's plan on 12/8 at 10am. Virtually should be fine.

[Quoted text hidden]

Scott Cohen <scohen@sespeconsulting.com>

Fri, Nov 18, 2022 at 11:49 AM

To: John Persons <jpersons@utah.gov>, "Bingham, Quin" <Quin.Bingham@gcinc.com>

Cc: Andre Almeida <aalmeida@sespeconsulting.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, Brian Mensinger <bmensinger@trinityconsultants.com>

Dear Mr. Persons,

Attached please find updated emissions calculations that incorporate the changes identified by UDAQ. We are concerned that UDAQ methodology on blasting may produce unrepresentative results and would like to better understand that methodology before the matter is settled.

Intermittency of a blast is an understatement and, in our opinion, modeling blasting in AERMOD for periods of one-hour produces unrepresentative results. This is because blasting occurs for less than half of one second. Simply put, AERMOD is a steady-state model and blasting is about as far from steady-state process as is possible. There are other models that may produce representative results (e.g., CalPuff). AERMOD does not.

Further, the analogy to intermittent operation of an engine is erroneous as the engine could operate the entire hour at so many revolutions per minute (RPM) whereas the blast lasts for as long as only a handful of engine revolutions and likely too few revolutions to start the engine much less operate it. Please provide documentation demonstrating that modeling blast emissions on an hourly basis yields representative concentrations.

If AERMOD must be used to model blasts, then one should consider how the puff of blast emissions are experienced at a receptor to obtain a representative average concentration for an hour at the receptor. Blast emissions are dispersed primarily along the wind direction. A receptor located within the plume would experience elevated dust while the plume passes its location. In all but the most stable conditions, the receptor would be within the plume for a matter of minutes. Then the plume is gone from that receptor location and exposure is zero for the remainder of an hour. Assuming the receptor is within the plume for five (5) minutes, the average exposure over the hour is $1/12^{\text{th}}$ of the modeled concentration (5/60).

Thank you for your time and consideration in this matter.

Sincerely,

Scott D. Cohen, P.E., C.I.H.

Principal Engineer

Sespe Consulting – a Trinity Consultants Company

619.894.8670 – Direct

619.894.8669 – Receptionist

619.300.1880 – Google Voice/cell phone


www.sespe.com


From: John Persons <jpersons@utah.gov>
Sent: Wednesday, November 16, 2022 11:21 AM
To: Bingham, Quin <Quin.Bingham@gcinc.com>


[Quoted text hidden]


[Quoted text hidden]

4 attachments

 **Permitting_emissions_calcs_Phase_1 NOI 2022-0929v1.9.xlsx**
831K

 **Permitting_emissions_calcs_Phase_2 NOI 2022-0929 v1.9.pdf**
337K

 **Permitting_emissions_calcs_Phase_2 NOI 2022-0929 v1.9.xlsx**
591K

 **Permitting_emissions_calcs_Phase_1 NOI 2022-0929v1.9.pdf**
326K

John Persons <jpersons@utah.gov> Fri, Nov 18, 2022 at 2:38 PM
To: Scott Cohen <scohen@sespeconsulting.com>
Cc: "Bingham, Quin" <Quin.Bingham@gcinc.com>, Andre Almeida <aalmeida@sespeconsulting.com>, "Greenwood, Mark" <Mark.Greenwood@gcinc.com>, "Sweet, Brad" <Brad.Sweet@gcinc.com>, Brian Mensinger <bmensing@trinityconsultants.com>, Jason Krebs <jkrebs@utah.gov>

Quin and Scott,

Thanks for sending over the updated emissions calculations. I will review them and incorporate them into the project. Going forward I will wait to hear from Trinity regarding an updated model. Having the meeting on 12/8 at 10:00 AM sounds good. I will send out google meet virtual meeting invites to everybody in this email chain. Let me know if there is anyone else that should be included.

Regarding your specific modeling questions, this project's modeler (Jason Krebs) will be able to provide more detailed answers. I have cc'd him on this email. Feel free to reach out to him. If you reach out to him, please cc me on the emails. Thanks.

- Best Regards
John Persons

[Quoted text hidden]

Bingham, Quin <Quin.Bingham@gcinc.com> Fri, Nov 18, 2022 at 3:37 PM
To: John Persons <jpersons@utah.gov>
Cc: "Greenwood, Mark" <Mark.Greenwood@gcinc.com>, "Sweet, Brad" <Brad.Sweet@gcinc.com>

Hey John,

Thanks for your response.

5/17/23, 12:24 PM

State of Utah Mail - Updated NOI Air Permit Application - Granite Construction I-80 South Quarry

Please send the meeting invite to all those on this email and to Scott Cohen, Andre Almeida, and Jason Krebs.

-Quin

[Quoted text hidden]

UTAH DIVISION OF AIR QUALITY NOTICE OF INTENT

**I-80 South Quarry – Salt Lake City, Utah
(Small Mine Operation No. S/035/0055)**

New Approval Order

Prepared By:

TRINITY CONSULTANTS

4525 Wasatch Boulevard
Suite 200
Salt Lake City, Utah 84124
(801) 272-3000

Submitted on Behalf of:

GRANITE CONSTRUCTION INC.

1000 N Warm Springs Rd
Salt Lake City, UT 84116

October 17, 2022

Project 204502.0036



TABLE OF CONTENTS

Contents

1.	EXECUTIVE SUMMARY	1-3
2.	GENERAL INFORMATION	2-1
2.1	Description of Installation	2-1
2.2	Fees	2-2
2.3	Forms.....	2-2
3.	DESCRIPTION OF PROJECT AND PROCESS	3-1
3.1	Description of Project	3-1
3.2	Description of Process	3-1
3.3	Site Plan.....	3-4
4.	EMISSIONS RELATED INFORMATION	4-1
4.1	Crushing and Screening	4-1
4.2	Material Loading, Unloading and Transfer.....	4-1
4.3	Bulldozer Use.....	4-2
4.4	Haul Roads.....	4-3
4.5	Blasting.....	4-3
4.6	Drilling	4-5
4.7	Wind Erosion and Disturbed Ground	4-5
4.8	Internal Combustion Engines	4-6
4.9	Tanks	4-6
	<i>Standing Storage Loss.....</i>	<i>4-7</i>
	<i>Working Loss.....</i>	<i>4-9</i>
4.10	Source Size Determination	4-11
5.	BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS	5-1
5.1	Crushing, Screening and Material Handling Aggregate Operations	5-1
	<i>PM₁₀ and PM_{2.5} Emissions.....</i>	<i>5-1</i>
5.2	Road Emissions.....	5-4
	<i>Fugitive PM₁₀ and PM_{2.5} Emissions.....</i>	<i>5-4</i>
5.3	Drilling and Blasting	5-7
	<i>NO_x and SO₂ – Blasting</i>	<i>5-7</i>
	<i>PM₁₀ and PM_{2.5} – Drilling and Blasting.....</i>	<i>5-7</i>
	<i>Drilling and Blasting PM₁₀ and PM_{2.5} Step 3 – Rank Remaining Control Technologies by Control Effectiveness</i>	<i>5-8</i>
	<i>Drilling and Blasting PM₁₀ and PM_{2.5} Step 4 – Evaluate Most-Effective Controls and Document Results</i>	<i>5-9</i>
	<i>Drilling and Blasting PM₁₀ and PM_{2.5} Step 5 – Select BACT.....</i>	<i>5-9</i>
5.4	Diesel Engines Powering Crushing and Screening Units	5-9
5.5	Diesel Tank VOCs & Volatile HAPs	5-12
	<i>Diesel Tank VOCs & Volatile HAPs- Step 1-5 – Identify All Control Technologies & Select BACT... 5-12</i>	
6.	EMISSION IMPACT ANALYSIS	6-1

7.	NONATTAINMENT/MAINTENANCE AREAS - OFFSETTING	7-1
8.	APPLICABLE REGULATIONS	8-1
8.1	General Introduction – Utah Regulations	8-1
	<i>UAC R307-101 General Requirements</i>	8-4
	<i>UAC R307-107 General Requirements: Breakdowns</i>	8-4
	<i>UAC R307-150 Emission Inventories</i>	8-5
	<i>UAC R307-201 Emission Standards: General Emission Standards</i>	8-5
	<i>UAC R307-203 Emission Standards: Sulfur Content of Fuels</i>	8-5
	<i>UAC R307-205 Emission Standards: Fugitive Emissions and Fugitive Dust</i>	8-5
	<i>UAC R307-305 Nonattainment and Maintenance Areas for PM₁₀: Emission Standards:</i>	8-6
	<i>UAC R307-309 Nonattainment and Maintenance Areas for PM₁₀ and PM_{2.5}: Fugitive Emissions and Fugitive Dust</i>	8-6
	<i>UAC R307-312 Aggregate Processing Operations for PM_{2.5} Nonattainment Areas</i>	8-7
	<i>UAC R307-325 Ozone Nonattainment and Maintenance Areas: General Requirements</i>	8-7
	<i>UAC R307-401-8 Approval Order</i>	8-7
	<i>UAC R307-410 Permits: Emission Impact Analysis</i>	8-8
	<i>UAC R307-414 Permits: Fees for Approval Orders</i>	8-8
8.2	Federal Rules: New Source Performance Standards	8-8
	<i>NSPS Subpart A (General Provisions)</i>	8-8
	<i>NSPS Subpart OOO (Standards of Performance for Nonmetallic Mineral Processing Plants)</i>	8-8
	<i>NSPS Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines</i>	8-9
	<i>NSPS Subpart Kb – Storage Tanks</i>	8-9
8.3	Federal Rules: National Emission Standards for Hazardous Air Pollutants	8-9
	<i>NESHAP Subpart A (General Provisions)</i>	8-10
	<i>NESHAP SUBPART ZZZZ (NESHAP for Stationary Reciprocating Internal Combustion Engines)</i>	8-10
APPENDIX A.	FORMS	A
APPENDIX B.	EMISSION CALCULATIONS	B
APPENDIX C.	AIR DISPERSION MODELING REPORT	C
APPENDIX D.	TANKS EMISSIONS	D

1. EXECUTIVE SUMMARY

Granite Construction Inc. (Granite) is a diversified construction and construction materials company. Granite is proposing to operate a permanent aggregate mining operation at its I-80 South Quarry (Quarry) site east of Salt Lake City, Utah in Salt Lake County. The proposed Quarry is located within an area of Salt Lake County designated as serious nonattainment of the National Ambient Air Quality Standards (NAAQS) for particulate matter (PM) with an aerodynamic diameter of 2.5 microns or less (PM_{2.5}), moderate nonattainment for the 2015 8-hour ozone standard, and nonattainment for sulfur dioxide (SO₂).

This Notice of Intent (NOI) air quality permit application is submitted to the Utah Division of Air Quality (UDAQ) to obtain an air quality Approval Order (AO) for the Small Mine Operation (SMO) permitted by the Division of Oil, Gas and Mining (SMO No. S/035/0055). The NOI application is for mining, crushing, and screening operations, and sales to be conducted at the site.

Emissions from the Quarry will consist of PM with an aerodynamic diameter of 10 microns or less (PM₁₀) and filterable PM_{2.5} fugitives. Fugitive dust controls will be implemented through the use of water and/or chemical suppressant throughout the processes. The Quarry is proposed to be permitted as a minor source and will be subject to 40 Code of Federal Regulations (CFR) Part 60, New Source Performance Standards (NSPS) Subpart OOO Standards of Performance for Nonmetallic Mineral Processing Plant(s) (NMPP). The level of emissions triggers impact analysis summarized in Section 9 below and provided in detail within Appendix C.

Emission calculations were performed for Quarry installation and operations to determine the emissions of criteria pollutants (see Appendix B). The proposed potential to emit (PTE) of the Quarry, given in tons per year (tpy) are as follows and representative of the activities: PM₁₀ = 4.97, PM_{2.5} = 1.15, NO_x = 1.19, CO = 11.95, SO₂ = 0.02, VOC = 0.52, and HAPs = 0.04.

This NOI application has been developed pursuant Utah Administrative Code (UAC) R307-401-5 and Utah's application guidance including, but not limited to:

- ▶ NOI Forms and Fees;
- ▶ Process Description;
- ▶ Site Plan;
- ▶ Potential Emission Calculations;
- ▶ Best Available Control Technology (BACT) Analysis;
- ▶ Applicable Requirements; and
- ▶ Emission Impact Analysis.

2. GENERAL INFORMATION

2.1 Description of Installation

The Quarry installation will be a standalone, aggregate mining, crushing, and screening operation located off Exit 132, Ranch Exit of Interstate I-80, east of Salt Lake City, Utah. The Quarry will conduct drilling and blasting operations within the mining area to produce rock in a manageable range of sizes. Rock will then be transported to the crushing and screening operations. Stripping of overburden soil and stone is typically required to prepare an area for mining. Bulldozing emissions have been accounted for in overburden removal, although this activity is anticipated to be minimal for the proposed mining operation.

The Quarry is proposed to be permitted as a minor source. The Standard Industrial Classification (SIC) code for the Quarry operation is 1422, Construction Sand and Gravel.

The Universal Transverse Mercator (UTM) coordinates for the Quarry are as follows:

- ▶ Easting: 437048.00 meters (m)
- ▶ Northing: 4509436 m
- ▶ Zone: 12T
- ▶ 1984 World Geodetic System

All correspondence regarding this submission should be addressed to:

Quinten G. Bingham
Granite Construction Inc.
Utah Environmental Manager
1000 N Warm Springs Rd
Salt Lake City, UT 84116
quin.bingham@gcinc.com

Brad Sweet
Granite Construction Inc.
Utah Mine Manager
1000 N Warm Springs Rd
Salt Lake City, UT 84116
brad.sweet@gcinc.com

2.2 Fees

It is understood that UDAQ's Payment Portal will be used to prepay the following UDAQ NOI fees associated with this submittal:

- ▶ "Application Filing Fee" for the "New Minor Source and Major (not PSD) Source" source type = \$500
- ▶ "Application Review Fee" for the "New Minor Source" source type = \$2,200
- ▶ Total UDAQ fees = \$2,700

It is understood that the total permit review fees are based on the total actual time spent by UDAQ staff processing this NOI. Upon issuance of the AO, if the total review time is more than twenty (20) standard hours, UDAQ will invoice the Applicant at \$110 per hour for the additional time above twenty (20) standard hours.

2.3 Forms

The following UDAQ forms have been included in Appendix A of this application:

- ▶ Form 1: Notice of Intent (NOI) Application Checklist
- ▶ Form 2: Company Information/Notice of Intent
- ▶ Form 3: Process Information
- ▶ Form 5: Emissions Information
- ▶ Form 11: Internal Combustion Engines (3)
- ▶ Form 15: Rock Crushing and Screening

3. DESCRIPTION OF PROJECT AND PROCESS

3.1 Description of Project

SMO Permit No. S/035/0055 allows installation of the Quarry on Route I-80 east of Salt Lake City, Utah. This NOI air quality permit application is submitted to UDAQ to obtain an AO for the mining of aggregate and crushing and screening operations. The crushing and screening equipment are track-mounted, portable units that are mobile in nature and powered by internal combustion engines. Installations and the associated emission sources are as shown below. Site-wide emission projections based on this equipment are detailed in Section 4.

Mining Operations

- ▶ Drilling and Blasting (not concurrent); and
- ▶ Off-Highway Equipment for loading and tramming aggregate.
- ▶ 10 Acres of Disturbed Area

Crushing and Screening Operations

- ▶ One (1) Feeder;
- ▶ One (1) Primary Crusher
- ▶ One (1) Secondary Crusher
- ▶ One (1) Triple-deck Screen;
- ▶ Approximately eight (8) Various Conveyors;
- ▶ Four (4) of the eight (8) are Stackers;
- ▶ Four (4) Active Stockpiles; and
- ▶ Additional Acreage of Storage Stockpiles.

3.2 Description of Process

Material is blasted from the portion of the resource currently located within the mine area, wetted (as necessary), and then transported to the primary feeder. Aggregate then proceeds through the crushing and screening process (see Figure 3-1). The aggregate is first passed through the primary crusher for size reduction. Crushed aggregate is then screened separating the aggregate by size. Properly sized aggregates passing through the screen are stacked in two (2) stockpiles. Aggregates that remain on the top of the screen (i.e., "overs") are conveyed to a secondary crusher to further reduce the size of the aggregates, before it is recirculated through the screen. The portable crushing and screening plant will process 1,000,000 tons per year (tpy) of mined rock.

The Quarry is a new development that requires pioneering the site and then bootstrapping operations before activity begins in earnest. Accordingly, Quarry emissions were calculated and modeled in consideration of two phases. Within the SMO boundary, Phase 1 is representative of pioneering and bootstrapping mining operations that are expected to last for approximately the first year of operation. In Phase 1 the crushing and screening plant is located near the north side of the property. Within the SMO boundary, Phase 2 represents a fully operational mining configuration that is expected after non-mining related tasks of pioneering and bootstrapping are complete and the mining area has progressed further south into the center of the property and requiring a longer access road. Both phases will process up to 1,000,000 tpy. It was assumed that the Quarry would loadout trucks 24 hours per day.

Emission calculations and air dispersion modeling were developed as follows:

A two-way paved road, that enters the facility, which has a round trip length of 0.33- and 0.46-miles during Phase 1 and 2, respectively.

A two-way unpaved road, which connects the paved road to the stockpile areas and other Quarry operations, which has a round trip length of 0.22 miles during both Phase 1 and Phase 2.

Emission calculations and modeling parameters for all fugitive material handling emission and emission rates can be found in Appendix B and the Project modeling files.

Figure 3-3-1. Crushing and Screening Unit Profile

- ▶ K1- Crushing Unit
- ▶ J1 – Secondary Crushing Unit
- ▶ AI – Screening and Stockpiling Unit

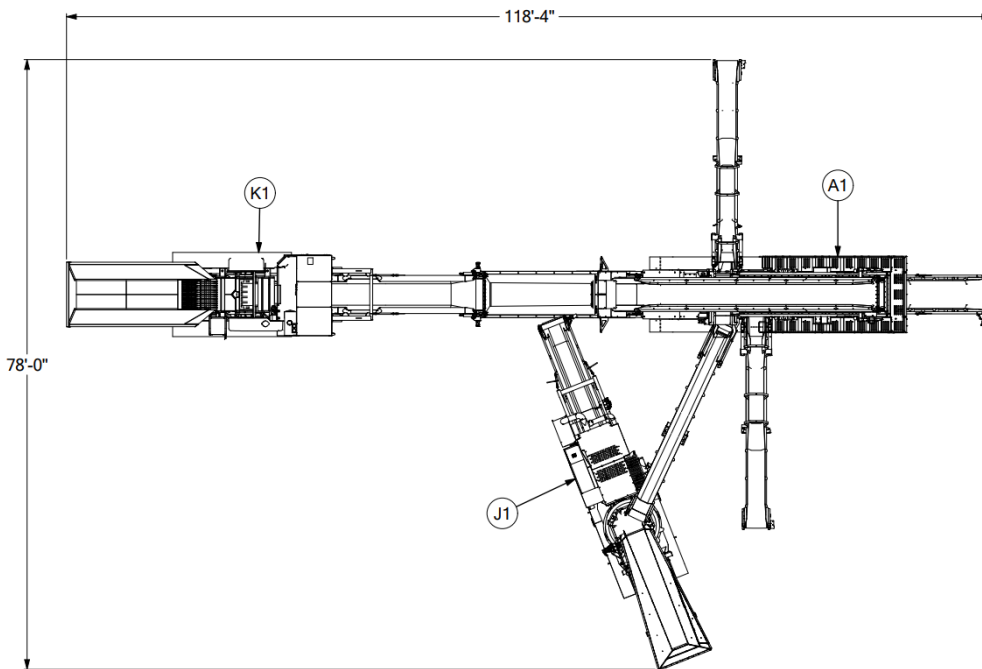
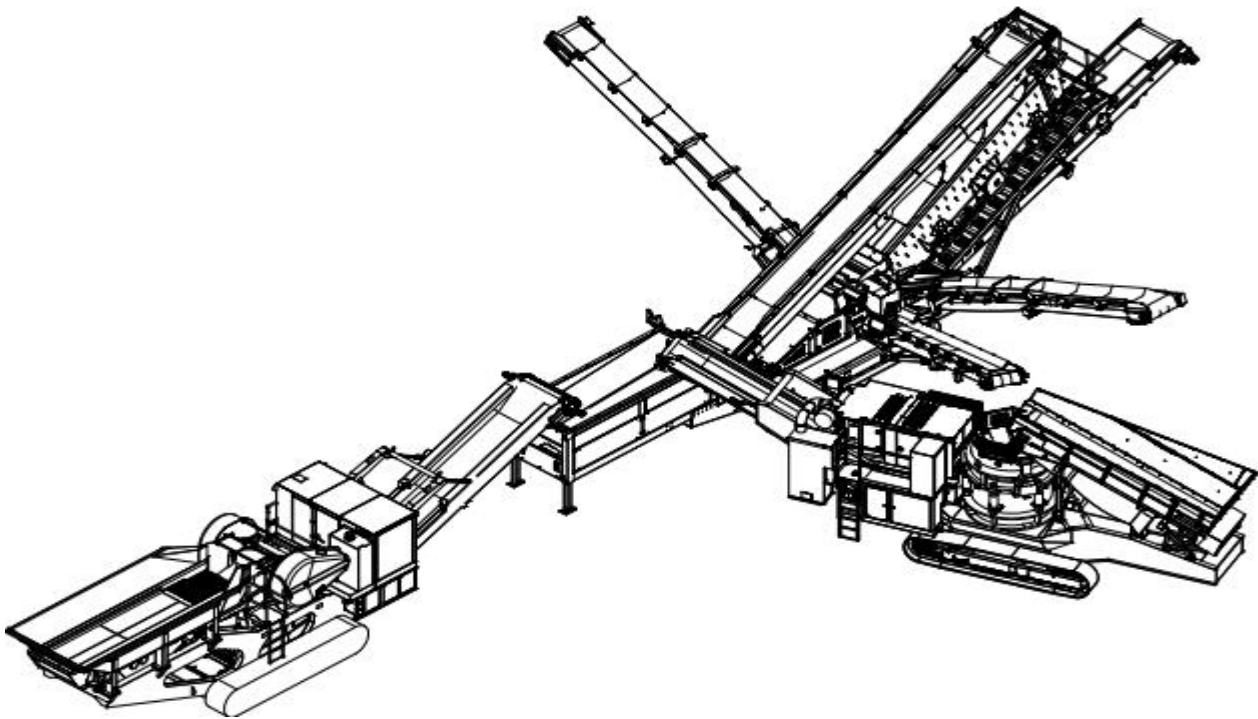


Figure 3-2 Crushing and Screening Unit Layout



3.3 Site Plan

Figure 3-2, shown below, provides a vicinity map of the Quarry. The property boundaries are shown in red. Figure 3-3 provides a closer view of the site boundaries.

Figure 3-2. Site Vicinity

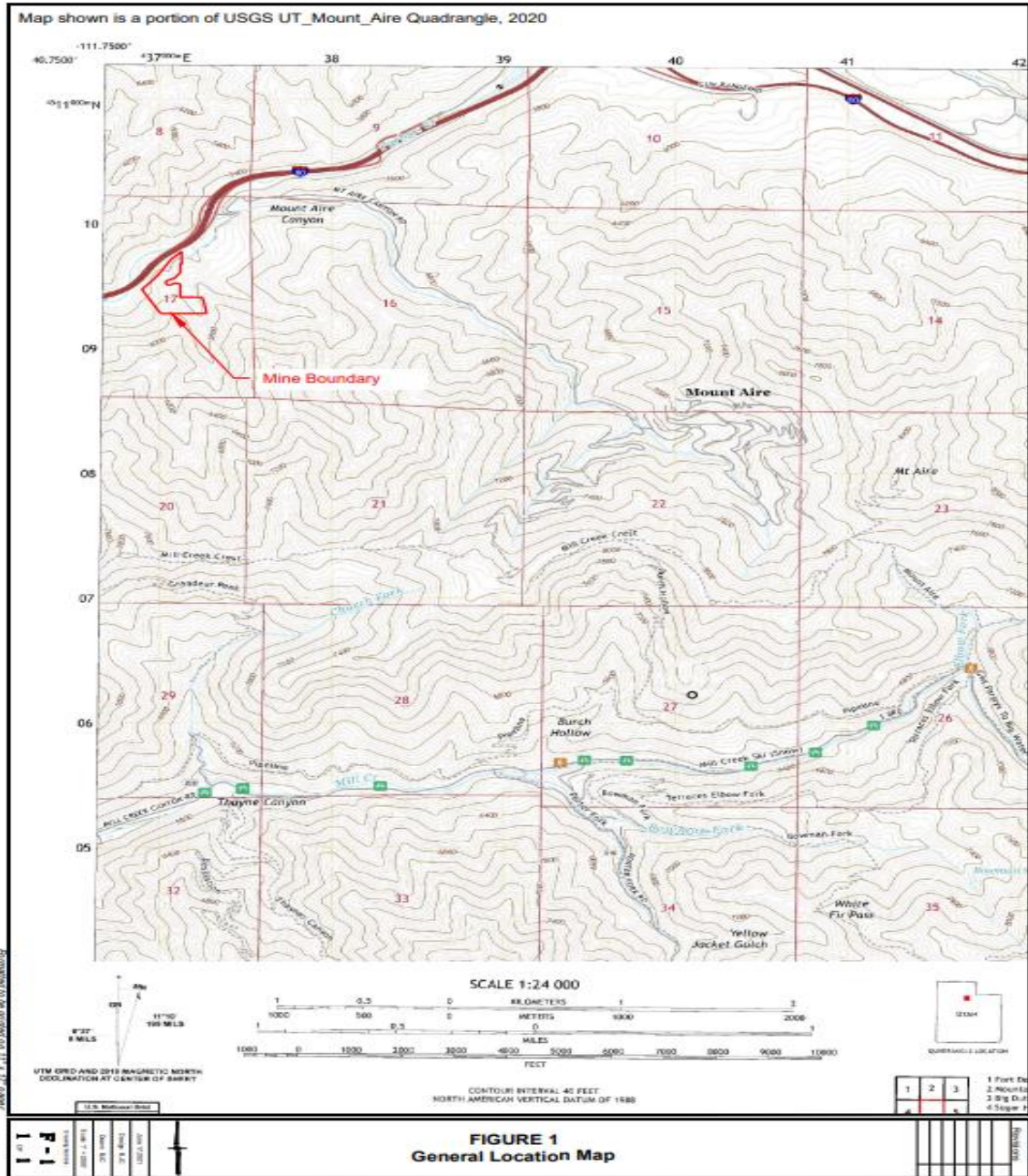
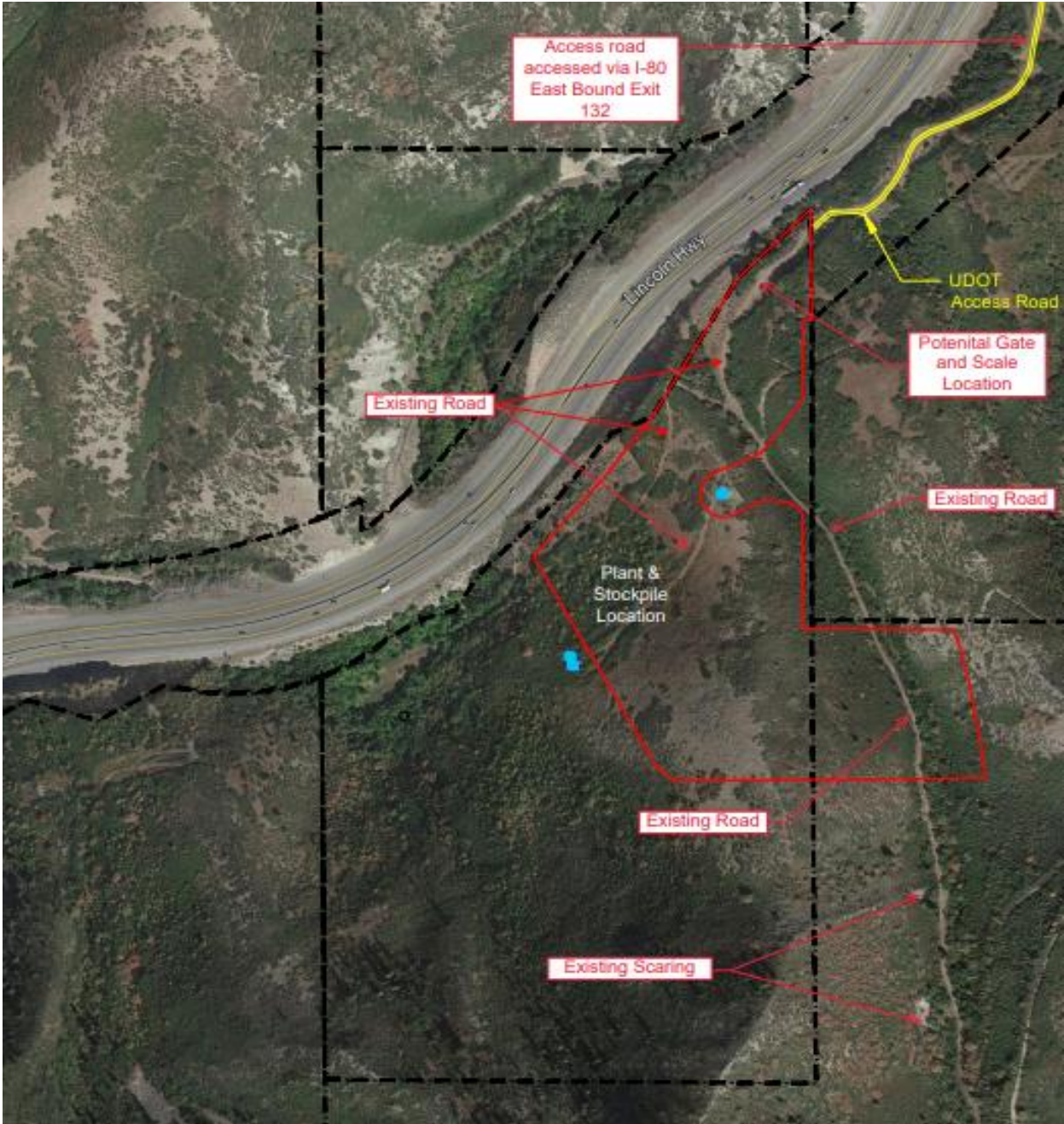


Figure 3-3 Site Map



4. EMISSIONS RELATED INFORMATION

This section details the methodology used to calculate controlled and uncontrolled emissions for criteria pollutants, greenhouse gases, and hazardous air pollutants (HAPs) associated with each new unit and its associated fugitives as regulated by R307-401-5(2)(b). Additionally, a comparison to major source thresholds is conducted. Detailed emission calculation tables are included in Appendix B.

4.1 Crushing and Screening

PM, PM₁₀, and PM_{2.5} emissions generated from the crushing and screening of aggregate are estimated by multiplying the material throughput by the appropriate emission factor (EF). Uncontrolled EFs for screening and crushing were obtained from AP-42, Section 11.19.2 (Crushed Stone Processing and Pulverized Mineral Processing), August 2004. The equation used is as follows:

$$\text{Annual Emissions (tpy)} = \text{EF} \left(\frac{\text{lb}}{\text{ton}} \right) \times \text{Annual Throughput (tpy)} \times \left(\frac{\text{ton}}{2,000 \text{ lb}} \right) \times \text{Equipment Quantity}$$

Crushing and screening operations are three (3) pieces of equipment operated as one (1). The emissions are calculated to crush and screen all 1,000,000 tpy of mined material. Water will be used in addition to the inherent moisture content of mined material to contain fugitive dust emissions.

4.2 Material Loading, Unloading and Transfer

For conveyor transfer points, EFs from AP-42, Section 11.19.2 were used. For Crushing and Screening, dropped material transfer, including stacker drops resulting from the crushing and screening unit, material loading in both unit, and material unloading in the Crushing and Screening unit, stockpiling, the uncontrolled PM₁₀ and PM_{2.5} EFs were obtained from the "drop equation" in AP-42, Section 13.2.4 (November 2006). The equation for all emitting drops is:

$$E = k(0.0032) \times \frac{\left(\frac{U}{5} \right)^{1.3}}{\left(\frac{M}{2} \right)^{1.4}}$$

where:

- E = emission factors (lb/ton)
- k = particle size multiplier (dimensionless)
- U = mean wind speed (mph)
- M = material moisture content (%)

Parameter "U" is determined from historical data retrieved from the Salt Lake City Airport in Salt Lake City, UT over the past five (5) years (January 2015 – January 2020). The material moisture content used in this equation for the crushing and screening unit is based on values previously recommended by UDAQ.

Material throughput for transfer will incorporate the maximum site-wide throughput of 1,100,000 tpy and the appropriate equipment throughput ratio for each process. The annual PM emissions rate for the crushing and screening unit, given in tpy, is given by the equation below. The EF corresponds to the annual emissions of the criteria pollutant in question at the time of use of the equation; namely, PM₁₀ or PM_{2.5}.

Annual Crushing and Screening PTE (tpy)

$$= \text{Potential Annual Throughput (tpy)} \times \text{EF} \left(\frac{\text{lb}}{\text{ton}} \right) \times \text{Number of Units or Drop Points} \\ \times \text{Conversion} \left(\frac{1 \text{ ton}}{2,000 \text{ lb}} \right)$$

4.3 Bulldozer Use

PM₁₀, and PM_{2.5} emissions generated from bulldozing were calculated assuming one (1) bulldozer operating 2,503 hours per year. Bulldozer emissions are multiplied by the EFs given in AP-42, Section 11.9 (October 1998). AP-42 Table 11.9-1 provides the following equations for calculating EFs for total suspended solids (TSP) and PM₁₅ from bulldozing operation:

$$\text{TSP} = \frac{5.7(s)^{1.2}}{(M)^{1.3}}$$

$$\text{PM}_{15} = \frac{1.0(s)^{1.5}}{(M)^{1.4}}$$

where:

TSP and PM₁₅ = emission factors (lb/hr)

s = material silt content (%),

M = material moisture content (%),

The material silt content was provided by Granite while the material moisture content was suggested by UDAQ. Note that the silt content for bulldozing is lower than those values given for bulldozing of overburden in AP-42 Section 11.9. This is due to the highly exposed nature of the consolidated calcium carbonate and minimal overburden covering areas where bulldozing operations will occur. As AP-42 Section 11.9 only accounts for Western Surface Coal Mining, and as the given silt value is particular to the Quarry location, this value is deemed more appropriate for estimating bulldozing emissions than the AP-42 coal mine overburden default value. AP-42 Section 11, Table 11.9-1, provides scaling factors that are applied to TSP and/or PM₁₅ EFs to obtain PM₁₀, and PM_{2.5} EFs. PM₁₀ and PM_{2.5} EFs were calculated as follows:

▶ PM₁₀ = 0.75 × PM₁₅; and

▶ PM_{2.5} = 0.105 × TSP.

▶

The annual PM emissions generated by bulldozer use are estimated by utilizing the EFs stated above. The EF is multiplied by the maximum annual operating hours, the application of the control efficiency, the number of bulldozers, and the conversion factor of pounds to tons.

Annual Dozing Emissions (tpy)

$$= \text{EF} \left(\frac{\text{lb}}{\text{hr}} \right) \times \text{Max. Operating Hours} \left(\frac{\text{hr}}{\text{yr}} \right) \times [1 - \text{Control Efficiency (\%)}] \times \text{Number of Dozers} \\ \times \text{Conversion} \left(\frac{1 \text{ ton}}{2,000 \text{ lb}} \right)$$

4.4 Haul Roads

The haul roads at the Quarry consist of paved and unpaved roads. PM₁₀ and PM_{2.5} emissions were derived using the guidance found in UDAQ's March 10, 2008 memorandum regarding EFs for unpaved haul roads¹. Emissions from these roads were calculated using the following equation:

$$PM = k \times \left(\frac{s}{12}\right)^a \times \left(\frac{W}{3}\right)^b \times D \times \frac{1 \text{ ton}}{2,000 \text{ lb}} \times (1 - \eta)$$

Where:

PM	=	PM/PM ₁₀ /PM _{2.5} emissions (tpy)
k	=	PM/PM ₁₀ /PM _{2.5} k-Factor (lb/VMT)
s	=	Average silt content (%)
W	=	Mean vehicle weight (tons)
D	=	Distance traveled (VMT/yr)
a	=	Constant for equation (varies for PM/PM ₁₀ /PM _{2.5}) (unit less)
b	=	Constant for equation (varies for PM/PM ₁₀ /PM _{2.5}) (unit less)
η	=	Control efficiency (%)

Parameter (W) is determined for each vehicle type by taking the average of the mean loaded and unloaded weights of the different types of vehicles; in this case, tractor trailers, medium front-end loaders, and large front-end loaders.^{2,3} Parameter (D) is determined by using the product throughput divided by the difference in full and empty vehicle weight to determine the total number of hauls required. This value is multiplied by the round-trip distance traveled by the customer trucks. The average silt content used in this equation was given by the Applicant based on engineering estimates.

As a means of control, a watering truck regularly applies water to suppress fugitive PM emissions at the Quarry for loader travel. The entrance road will be paved into the mine including watering and sweeping for a control factor of 95%. In addition, chemical suppressant is applied as necessary to the main haul route within the mine. Therefore, using guidance from the memorandum issued by UDAQ regarding emission factors for paved and unpaved haul roads, a control factor of 85% chemical suppressant application and watering, a control factor of 75% for road base and watering and were used for fugitive emissions related to vehicle traffic. Loader tram lengths are conservatively estimated to account for an average hourly throughput of 225 tons per hour, as the majority of loader operations serve to load equipment or vehicles in distinct areas. Emissions were projected based on the haul road layouts, vehicle weights, and hauling capacity and based on an average of the control factors.

4.5 Blasting

Drilling and blasting operations will be conducted within the mining area to produce rock in a manageable size. The following assumptions were made for blasting operations:

- ▶ At most, a blasting event will occur once per day;
- ▶ The maximum area affected per blast is 7,890 square feet (ft²); and
- ▶ During a blasting day, hours of excavation for the mine area will be reduced by 4 hours per day eliminating from 10 AM-2 PM so that blasting can occur.

¹ Per memorandum issued by UDAQ; "Emission Factors for Paved and Unpaved Haul Roads" dated January 12, 2015.

² National Academy of Sciences, Technologies and Approaches to Reducing the Fuel Consumption of Medium and Heavy-Duty Vehicles, prepublication copy, March 2010, pp. 2-2 and 5-42. Table 5.13.

³ Per UAC R909-2-5. Table 2.

The blasting SO₂ emission factor is obtained from AP-42 Section 13.3-1. The SO₂ EF was developed using a mass balance that assumes a 6% fuel oil mixture with 500 ppm sulfur content, consistent with EPA non-road standards.

$$EF_{SO_2} \left(\frac{\text{lb}}{\text{ton}} \right) = \text{Sulfur Content (ppm)} \times \%_{\text{Fuel Oil Mixture}} \times \text{Conversion}$$

Both the NO_x and CO EF is that of the ANFO blasting agent factor from AP-42 Section 13.3; and PM₁₀ and PM_{2.5} EFs were based on the blasting PM EF given in AP-42 11.9, where a maximum blasting depth of 70 feet is used, by the following equation:

$$EF_{PM} \left(\frac{\text{lb}}{\text{blast}} \right) = 1.4 \times 10^{-5} \times A(\text{ft}^2)^{1.5}$$

Where EF_{PM} is the EF of PM in pounds per blast, and A is the average daily blast area in square feet. Scaling factors were applied to the TSP EF to calculate PM₁₀ and PM_{2.5} EFs, respectively, per AP-42 Table 11.9, as seen below. It is conservatively assumed that the PM EF is equal to the TSP EF.

$$EF_{PM_{10}} \left(\frac{\text{lb}}{\text{blast}} \right) = EF_{PM} \left(\frac{\text{lb}}{\text{blast}} \right) \times 0.52$$

$$EF_{PM_{2.5}} \left(\frac{\text{lb}}{\text{blast}} \right) = EF_{PM} \left(\frac{\text{lb}}{\text{blast}} \right) \times 0.03$$

Where $EF_{PM_{10}}$ is the EF of PM₁₀ given in pounds per blast and $EF_{PM_{2.5}}$ is the EF of PM_{2.5} given in pounds per blast. Note that, as there is only one (1) blast per day, pounds per blast is equivalent to pounds per day.

Daily fugitive dust (PM, PM₁₀, and PM_{2.5}) blasting emissions were calculated using blasting material quantities, which were provided per design basis. Blasting emissions are calculated as follows:

$$\text{Daily Fugitive Dust Emissions} \left(\frac{\text{lbs}}{\text{day}} \right) = EF \left(\frac{\text{lbs}}{\text{blast}} \right) \times (1 - \%_{\text{control}}) \times \left(\frac{1 \text{ blast}}{\text{day}} \right)$$

Where the EF is that of PM, PM₁₀, or PM_{2.5}, whichever is calculated.

Annual fugitive dust (PM, PM₁₀, and PM_{2.5}) blasting emissions are given as follows:

$$\text{Annual Emissions (tpy)} = \text{Daily Fugitive Dust Emissions} \left(\frac{\text{lbs}}{\text{day}} \right) \times \text{Annual \# of Blasts} \times \text{Conversion} \left(\frac{\text{tons} \cdot \text{day}}{\text{lb} \cdot \text{year}} \right)$$

Where the *Daily Fugitive Dust Emissions* are those of PM, PM₁₀, or PM_{2.5}, whichever is calculated.

Daily emissions for SO₂, NO_x, and CO are calculated for each pollutant as follows:

$$\text{Daily Emissions} \left(\frac{\text{lbs}}{\text{day}} \right) = EF \left(\frac{\text{lbs}}{\text{ton}} \right) \times \text{Annual ANFO Use (tpy)} \times \text{Conversion} \left(\frac{\text{year}}{\text{days}} \right)$$

Annual emissions for SO₂, NO_x, and CO are calculated for each pollutant as follows:

$$\text{Annual Emissions (tpy)} = \text{EF} \left(\frac{\text{lbs}}{\text{ton}} \right) \times \text{Annual ANFO Use (tpy)} \times \text{Conversion} \left(\frac{\text{tons}}{\text{lb}} \right)$$

4.6 Drilling

Drilling operations precede blasting operations, allowing for the placement of explosives beneath the surface of the mine. The drilling PM EF is retrieved from AP-42 Section 11.9, utilizing the conservative drilling PM EF given for overburden material. As no EFs are provided for PM₁₀ and PM_{2.5} drilling operations, EFs were calculated using the PM₁₀ and PM_{2.5} to TSP ratios for blasting overburden per AP-42 Section 11.9, where the factor for PM₁₀ is 0.52 and the factor for PM_{2.5} is 0.03, as shown below;

$$\text{EF}_{\text{PM}_{10}} = \text{EF}_{\text{PM}_{15}} \times 0.52$$

And

$$\text{EF}_{\text{PM}_{2.5}} = \text{EF}_{\text{TSP}} \times 0.03$$

For the purposes of determining the PM₁₀ and PM_{2.5} EFs, the EF for PM, PM₁₅, and TSP are considered equivalent.

Fugitive dust emissions from drilling operations will be controlled through the use of wet system. The EPA reports that baghouses can achieve a 95-99.9% control efficiency, while the National Institute for Occupational Safety and Health (NIOSH) reports that wet drilling achieves a control of fugitive emissions between 86-97%.^{4,5} As wet drilling is selected, it is assumed that the average control efficiency of wet drilling is achieved for drilling operations (88.8%).

The daily emissions of PM, PM₁₀, and PM_{2.5} were calculated as follows:

$$\text{Daily Emissions} \left(\frac{\text{lb}}{\text{day}} \right) = \text{EF} \left(\frac{\text{lb}}{\text{hole}} \right) \times \text{Daily \# of Holes} \left(\frac{\text{holes}}{\text{day}} \right) \times (1 - \%_{\text{control}})$$

Where both the daily emissions and the *EF* are those of the pollutant in question (i.e., PM, PM₁₀, or PM_{2.5}). The annual emissions of PM, PM₁₀, and PM_{2.5} were calculated as follows:

$$\text{Annual Emissions (tpy)} = \text{EF} \left(\frac{\text{lb}}{\text{hole}} \right) \times \text{Annual Holes Drilled} \left(\frac{\text{holes}}{\text{year}} \right) \times (1 - \%_{\text{control}}) \times \text{Conversion} \left(\frac{\text{ton}}{\text{lb}} \right)$$

Where both the annual emissions and the *EF* are those of the pollutant in question (i.e., PM, PM₁₀, or PM_{2.5}).

4.7 Wind Erosion and Disturbed Ground

The Quarry will involve up to 10 acres of disturbed ground. Disturbed ground particulate matter (PM) emissions are calculated based on AP-42 Chapter 11, Table 11.9-4, which states a value of 0.38 tons of PM per acre year. PM₁₀ emissions were determined by scaling PM emissions per Table 11.9-1, which states a scaling factor of 0.75% for PM₁₀ in PM from bulldozed overburden.

⁴ From EPA Air Pollution Control Technology Fact Sheet for baghouses: <https://www3.epa.gov/ttnchie1/mkb/documents/ff-pulse.pdf> (EPA-452/F-03-025).

⁵ Summary of NIOSH research completed on dust control methods for surface and underground drilling, Pg 2, December 2008

4.8 Internal Combustion Engines

The Quarry will be using three (3) diesel-fired internal combustion engines 440 hp, 190 hp, and 300 hp to supply mechanical power to the three (3) units that comprise of the crushing and screening system. EFs are based on Tier 4 emission standards and were used in the following equation:

$$\begin{aligned} \text{Annual Emissions (tpy)} &= \text{Rated Horsepower (bhp)} \times \text{EF} \left(\frac{\text{g}}{\text{bhp} - \text{hr}} \right) \times 0.0222 \left(\frac{\text{lbs}}{\text{g}} \right) \times \text{Hours of Operation} \left(\frac{\text{hr}}{\text{yr}} \right) \\ &\times \left(\frac{\text{ton}}{2,000 \text{ lb}} \right) \end{aligned}$$

In order to standardize and streamline the emission calculations, total annual emissions for VOCs and SO₂ were based on standard EPA EFs based on AP-42 Section 3.3: Gasoline and Diesel Industrial Engines, used in the following equation:

$$\text{Annual Emissions (tpy)} = \text{Heat Input} \left(\frac{\text{MMBtu}}{\text{hr}} \right) * \text{EF} \left(\frac{\text{lb}}{\text{MMBtu}} \right) * \text{Hours of Operation} \left(\frac{\text{hr}}{\text{yr}} \right) * \left(\frac{\text{ton}}{2,000 \text{ lb}} \right)$$

The EFs used, and the results of these calculations can be found in Appendix B.

GHG emissions calculations are based on diesel use in the engine planned for addition. In order to calculate total Carbon Dioxide Equivalent (CO₂e, equivalent to GHG) emissions, total fuel usage was multiplied by fuel-specific emission factors and global warming potentials (GWP) provided in 40 CFR 98 Tables A-1, C-1 and C-2.

$$\begin{aligned} \text{Diesel CO}_2\text{e Annual Emissions (tpy)} &= \left(\text{Emission Factor CO}_2 \left(\frac{\text{kg}}{\text{MMBtu}} \right) + \text{Emission Factor CH}_4 \left(\frac{\text{kg}}{\text{MMBtu}} \right) * \text{GWP CH}_4 \right. \\ &+ \left. \text{Emission Factor N}_2\text{O} \left(\frac{\text{kg}}{\text{MMBtu}} \right) * \text{GWP N}_2\text{O} \right) * \text{Heat Input} \left(\frac{\text{MMBtu}}{\text{hr}} \right) * \text{Operating Hours} \left(\frac{\text{hr}}{\text{yr}} \right) \\ &* \left(\frac{\text{ton}}{907.185 \text{ kg}} \right) \end{aligned}$$

4.9 Tanks

Annual VOC emissions from fixed-roof storage tanks are calculated using the methodology provided in the Fifth Edition (2020) of AP-42 Chapter 7: Liquid Storage Tanks, last updated in March of 2020; all equations, tables, and figures referenced here refer to AP-42, Section 7.1. Appendix D contains tables documenting input and resultant data for the calculation methods presented below.

The potential VOC emission estimates account for the working and standing losses associated with changes in temperature, pressure, and liquid level. Liquid throughput for all tanks is estimated based on the annual production increase associated with this project.

Per Equation 1-1, the total routine losses from the fixed roof tanks are equal to the sum of the standing loss and working loss:

$$L_T = L_S + L_W$$

Where:

L_T	=	total losses, lb/yr
L_S	=	standing storage losses, lb/yr
L_W	=	working losses, lb/yr

The standing storage loss and working loss components of the total loss equation are discussed in the subsections below.

Standing Storage Loss

Annual fixed roof standing losses can be estimated using Equation 1-2:

$$L_S = 365 (V_v)(W_v)(K_E)(K_S)$$

Where:

L_S	=	standing storage loss, lb/yr
V_v	=	vapor space volume, ft ³
W_v	=	stock vapor density, lb/ft ³
K_E	=	vapor space expansion factor, dimensionless
K_S	=	vented vapor saturation factor, dimensionless
365	=	constant, the number of daily events in a year, days/yr

Tank Vapor Space Volume, V_v

The tank vapor space volume (V_v) is calculated using Equation 1-3:

$$V_v = \left(\frac{\pi}{4} D^2\right) H_{vO}$$

Where:

V_v	=	vapor space volume, ft ³
D	=	internal tank diameter, ft
H_{vO}	=	vapor space outage, ft

The standing loss equation can be simplified by combining Equation 1-2 with Equation 1-3 to derive Equation 1-4:

$$L_S = 365 K_E \left(\frac{\pi}{4} D^2\right) (H_{vO})(K_S)(W_v)$$

Where:

L_S	=	standing storage loss, lb/yr
K_E	=	vapor space expansion factor, dimensionless
D	=	internal tank diameter, ft
H_{vO}	=	vapor space outage, ft
K_S	=	vented vapor saturation factor, dimensionless
W_v	=	stock vapor density, lb/ft ³
365	=	constant, the number of daily events in a year, days/yr

Vapor Space Expansion Factor, K_E

The calculation of the vapor space expansion factor, K_E , depends upon the properties of the liquid in the tank and the breather vent settings, and is represented by Equation 1-5:

$$K_E = \frac{\Delta T_V}{T_{LA}} + \frac{\Delta P_V - \Delta P_B}{P_A - P_{VA}}$$

Where:

- T_V = average daily vapor temperature range, °R
- ΔP_V = average daily vapor pressure range, psi
- ΔP_B = breather vent pressure setting range, psi
- P_A = atmospheric pressure, psia
- P_{VA} = vapor pressure at average daily liquid surface temperature, psia
- T_{LA} = average daily liquid surface temperature, °R

For an uninsulated tank, the average daily vapor temperature range is calculated using Equation 1-6:

$$\Delta T_V = \left(1 - \frac{0.8}{2.2 \left(\frac{H_S}{D} \right) + 1.9} \right) \Delta T_A + \frac{0.042 \alpha_R I + 0.026 \left(\frac{H_S}{D} \right) \alpha_S I}{2.2 \left(\frac{H_S}{D} \right) + 1.9}$$

Where:

- ΔT_V = average daily vapor temperature range, °R
- H_S = tank shell height, ft
- D = internal tank diameter, ft
- ΔT_A = average daily ambient temperature range, °R
- α_R = tank roof surface solar absorptance, dimensionless
- α_S = tank shell surface solar absorptance, dimensionless
- I = average daily total insolation factor, Btu/ft² day

API assigns a default value of $H_S/D = 0.5$ and an assumption of $\alpha_R = \alpha_S$, resulting in the simplified equation for an uninsulated tank:

$$\Delta T_V = 0.7 \Delta T_A + 0.02 \alpha I$$

Where:

- α = average tank surface solar absorptance, dimensionless

The vapor pressure range (ΔP_V) is calculated from Equation 1-9:

$$\Delta P_V = P_{VX} - P_{VN}$$

Where:

- P_{VX} and P_{VN} are the vapor pressures at T_{LX} and T_{LN} ; respectively.

Vapor Space Outage, H_{VO}

For horizontal tanks, the vapor space outage (H_{VO}) is estimated as:

$$H_{VO} = \frac{H_E}{2}$$

Where:

- H_E = effective height of an equivalent upright cylinder, ft

$$H_E = \frac{\pi}{4} D$$

D = diameter of a vertical cross-section of the horizontal tank, ft

Vented Vapor Saturation Factor, K_S

The vented vapor saturation factor (K_S) is calculated using Equation 1-21:

$$K_S = \frac{1}{1 + 0.053P_{VA}H_{VO}}$$

Where:

K_S = vented vapor saturation factor, dimensionless
 P_{VA} = vapor pressure at average daily liquid temperature, psia
 H_{VO} = vapor space outage, ft

Stock Vapor Density, W_V

The density of the vapor (W_V) is calculated using Equation 1-22:

$$W_V = \frac{M_V P_{VA}}{RT_V}$$

Where:

W_V = vapor density, lb/ft³
 M_V = vapor molecular weight, lb/l-mol
 R = the ideal gas constant, 10.731 psia ft³/lb-mole °R
 P_{VA} = vapor pressure at daily average liquid surface temperature, psia
 T_V = average vapor temperature, °R

Working Loss

Annual fixed roof tank working losses are estimated using Equation 1-35:

$$L_w = V_Q K_N K_P W_V K_B$$

Where:

L_w = working loss, lb/yr
 V_Q = net working loss throughput, ft³/yr
 K_N = working loss turnover (saturation) factor, dimensionless
For turnovers > 36, $K_N = (180 + N)/6N$
 N = number of turnovers per year, dimensionless
 $N = Q/V$
 Q = annual net throughput, gal/yr
 V = working volume, gal
 K_P = working loss product factor, dimensionless
 $K_P = 1$ for organic liquids except crude oils
 W_V = vapor density, lb/ft³
 K_B = vent setting correction factor, dimensionless, $K_B = 1$

When the breather vent settings are greater than the typical values of ±0.03 psig, and the condition expressed in Equation 1-40 is met, a vent setting correction factor, K_B , must be determined using equation 1-41. This value of K_B will be used in Equation 1-25 to calculate working losses.

Therefore, when Equation 1-40:

$$K_N \left[\frac{P_{BP} + P_A}{P_I + P_A} \right] > 1.0$$

Then, Equation 1-41 becomes:

$$K_B = \left[\frac{\frac{P_I + P_A}{K_N} - P_{VA}}{P_{BP} + P_A - P_{VA}} \right]$$

Where:

- K_B = vent setting correction factor, dimensionless
- P_I = pressure of the vapor space at normal operating conditions, psig
- P_A = atmospheric pressure, psia
- K_N = working loss turnover (saturation) factor, dimensionless
- P_{VA} = vapor pressure at the average daily liquid surface temperature, psia
- P_{BP} = breather vent pressure setting, psig
- N = number of turnovers per year

$$N = \frac{Q}{C}$$

Where:

- Q = annual tank throughput, gal/yr
- C = tank capacity, gal

4.10 Source Size Determination

The results of criteria pollutant emission calculations done for the Quarry are compared to major source thresholds in Table 4-1, below. The Quarry is in an area of nonattainment for PM_{2.5} and ozone, but in attainment area for all other pollutants including PM₁₀. As previously mentioned, NO_x, SO₂, VOCs, and ammonia are all precursors of PM_{2.5}. As presented in the table below, emissions at the Quarry are less than major source thresholds (i.e., 100 tpy for any criteria pollutant with exception to direct PM_{2.5} and its precursors for which the major source threshold is 70 tpy, 10 tpy for any HAP, 25 tpy for all HAPs combined, and 100,000 tpy for CO_{2e}). Therefore, the Quarry is classified as a minor source.

Table 4-1. Quarry Emissions Versus Major Source Thresholds -Phase 1

Process	Annual Emission Rates (tpy)							
	PM ₁₀ (fugitive)	PM _{2.5}	NO _x	CO	SO ₂	VOC	Total HAP	CO _{2e}
Crushing and Screening Operations	1.00	0.44	--	--	--	--	--	--
Bulldozing & Loading Operations	1.31	0.21	--	--	--	--	--	--
Drilling & Blasting	0.05	3.02E-03	0.11	2.49	2.21E-04	--	--	--
Roads	2.31	0.49	--	--	--	--	--	--
Engines	0.05	0.03	0.95	8.28	0.02	0.45	3.10E-02	235,143
Tanks ¹	--	--	--	--	--	5.70E-03	--	--
Project Total	4.72	1.16	1.06	10.77	0.02	0.45	0.03	235,143
Modeling Limit ²	5	--	40	100	40	--	10/25	--
Modeling Required?	No	No	No	No	No	No	No	No
Major Source Thresholds^{3,4,5}	250	70	70	250	70	70	10/25	100,000
Exceeding Major Source Thresholds?	No	No	No	No	No	No	No	No

1. HAPs from the storage tank were considered, but are below the reasonable reporting threshold suggested by UDAQ (i.e., <1.00E-03 tpy), and are therefore considered negligible.

2. Modeling Limit is stated in UDAQ Emissions Impact Assessment Guidelines under Table 1: Total Controlled Emission Rates for New Sources.

3. Major source thresholds defined by 40 CFR section 51.165(a)(1)(iv)(A).

4. Total HAP Threshold is stated in 40 CFR Section 63.2 under definition of a Major Source.

5. 100,000 tons CO_{2e} threshold is for "anyways" sources that are already major source for another pollutant in this table.

Table 4-2 Quarry Emissions Versus Major Source Thresholds -Phase 2

Process	Annual Emission Rates (tpy)							
	PM ₁₀ (fugitive)	PM _{2.5}	NO _x	CO	SO ₂	VOC	Total HAP	CO _{2e}
Crushing and Screening Operations	1.00	0.38	--	--	--	--	--	--
Bulldozing & Loading Operations	1.31	0.21	--	--	--	--	--	--
Drilling & Blasting	0.05	3.02E-03	0.11	2.49	2.21E-04	--	--	--
Roads	2.56	0.54	--	--	--	--	--	--
Engines	0.05	0.02	1.08	9.46	0.02	0.51	3.55E-02	268,735
Tanks ¹	--	--	--	--	--	5.70E-03	--	--
Project Total	4.97	1.15	1.19	11.95	0.02	5.19E-01	3.55E-02	268,735
Modeling Limit ²	5	--	40	100	40	--	10/25	--
Modeling Required?	No	No	No	No	No	No	No	No
Major Source Thresholds^{3,4,5}	250	70	70	250	70	70	10/25	100,000
Exceeding Major Source Thresholds?	No	No	No	No	No	No	No	No

1. HAPs from the storage tank were considered, but are below the reasonable reporting threshold suggested by UDAQ (i.e., <1.00E-03 tpy), and are therefore considered negligible.

2. Modeling Limit is stated in UDAQ Emissions Impact Assessment Guidelines under Table 1: Total Controlled Emission Rates for New Sources.

3. Major source thresholds defined by 40 CFR section 51.165(a)(1)(iv)(A).

4. Total HAP Threshold is stated in 40 CFR Section 63.2 under definition of a Major Source.

5. 100,000 tons CO_{2e} threshold is for "anyways" sources that are already major source for another pollutant in this table.

5. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

In the State of Utah, under R307-401-5(2)(d), Notice of Intent, every facility, operation, or process that proposes any activity that would emit an air contaminant, must consider BACT for the proposed activity. The BACT analysis below was performed pursuant to this rule. It only addresses units which will be modified, installed, or otherwise altered according to this NOI.

5.1 Crushing, Screening and Material Handling Aggregate Operations

PM₁₀ and PM_{2.5} Emissions

The equipment associated with portable crushing and screening operations include the following classifications:

- Crushing
- Screening
- Conveyor transfer points
- Stackers
- Stockpiles

This BACT analysis has been completed for all material handling operations within the crushing and screening operations.

Crushing, Screening, and Material Handling PM₁₀ and PM_{2.5} Step 1 – Identify All Control Technologies

Control technologies identified for PM₁₀ and PM_{2.5} emissions from material handling operations are as follows, based on a May 30, 2022 review of relevant entries in EPA's RACT/BACT/LAER Clearinghouse (RBLC) Section 90.024:

- Baghouse/Fabric Filter
- Cyclone
- Electrostatic Precipitator
- Enclosures
- Management/Operation Practices
- Watering and Material Moisture Content
- Wet Scrubber

Crushing, Screening, and Material Handling PM₁₀ and PM_{2.5} Step 2 – Eliminate Technically Infeasible Options

Baghouse/Fabric Filter

Fabric filters (baghouses) are used for medium and low gas-flow streams with high particulate concentrations. The typical baghouse has a control efficiency between 95 and 99.9 percent.⁶ This is generally accomplished through the installation of ductwork, capture hoods, fans, motors, starters, stacks, and other stationary equipment. Material at the Quarry travels through a series of portable conveyors. The process requires flexibility to alter on-site stockpile configurations and the location of crushing and screening operations. In other words, the crushing and screening equipment must remain mobile. This necessity for

⁶ From EPA Air Pollution Control Technology Fact Sheet for baghouses: <https://www3.epa.gov/ttnchie1/mkb/documents/ff-pulse.pdf> (EPA-452/F-03-025).

mobility is incompatible with the size of stationary baghouse equipment required, and thus renders the use of a baghouse technically infeasible.

Cyclone

A cyclone separator (cyclone) operates on the principle of centrifugal separation. A high-efficiency cyclone designed specifically for PM_{2.5} and PM₁₀ removal is likely to achieve between 20% to 70% removal for PM_{2.5} and 60% to 95% removal for PM₁₀, respectively.⁷ Like a baghouse, cyclone feasibility is based on routing emissions to a stationary control system via ductwork, capture hoods, fans, etc. This results in a cyclone being technically infeasible for the Quarry, as the crushing and screening equipment used for production is mobile.

Electrostatic Precipitator

A dry electrostatic precipitator (ESP) is a particle control device that uses electrical forces to move coarse particles at high concentrations out of a gas stream and onto collector plates, and then into a hopper. This removal efficiency is typically between 90-99.9%.⁸ ESPs are sensitive to variations in gas streams and do not work well with streams that are highly variable, such as those present in crushing and screening.⁹ Therefore, implementation of this control technology is considered technically infeasible for all crushing and screening sources.

Enclosures

Enclosures confine emissions to the enclosed area, prohibiting most PM from reaching ambient air. Although effective, industrial enclosures are permanent structures. As discussed, the Quarry is proposed to operate with mobile equipment, which requires flexibility of crushing and screening configurations. Therefore, enclosures are technically infeasible as control technology.

Management/Operation Practices

Management practices during material movement, such as minimizing drop heights, will minimize PM_{2.5} and PM₁₀ emissions are considered technically feasible for this project. Best operating practices, such as regular inspection and maintenance, are also considered technically feasible.

Watering and Material Moisture Content

Watering changes the physical properties of the surface material by binding soil particles together such that fugitive emissions are minimized or not generated. Moreover, carryover of material moisture content from water sprays mitigates particulate emissions beyond the initial point of watering. Inherent moisture found in mined aggregate achieves the same effect as wetting by watering controls. Wet suppression is shown to achieve between 50-90% control of emissions¹⁰. This control measure is considered technically feasible for material handling.

⁷ From Air Pollution Control Technology Fact Sheet for cyclones: <https://www3.epa.gov/ttn/catc/dir1/fcyclon.pdf> (EPA-452/F-03-005)

⁸ From EPA Air Pollution Control Technology Fact Sheet for Crushing and Screening Electrostatic Precipitators: <https://www3.epa.gov/ttn/catc/dir1/fdespwpi.pdf> (EPA-452/F-03-028)

⁹ Ibid.

¹⁰ From Western Regional Air Partnership, *Fugitive Dust Handbook*; Executive Summary, p. 3, September 2006.

Wet Scrubber

Wet gas scrubbers can achieve 50-95% control of PM emissions.¹¹ However, this control technology faces the same difficulties in mobile mining facilities as other stationary control technologies. Namely, they rely on stationary ductwork and other equipment to route emissions to the scrubber itself. Due to the nature of mining, conveyors leading to crushing, screening, and drop points will be moved. The incompatibility between the mobile crushing and screening equipment and stationary wet scrubber equipment renders the use of a wet scrubber technically infeasible.

Crushing, Screening, and Material Handling Material Handling PM₁₀ and PM_{2.5} Step 3 – Rank Remaining Control Technologies by Control Effectiveness

Table 5-1 ranks, in order of control effectiveness, the control technologies that were considered technically feasible in Step 2 of the analysis.

Table 5-1. Summary of PM₁₀ and PM_{2.5} for Material Handling

Control Technologies	Rank	Percent Control	Feasible	BACT
Water Spray/Inherent Properties	1	50 – 90%	Yes	Yes
Best Management/Operational Practices	2	Variable	Yes	Yes

Crushing, Screening, and Material Handling PM₁₀ and PM_{2.5} Step 4 – Evaluate Most Effective Controls and Document Results

These operations are subject to NSPS Subpart OOO. These NSPS standards were updated by U.S. Environmental Protection Agency (EPA) in 2008.¹² Section 111 of the Clean Air Act (CAA) requires that NSPS reflect the application of the best system of emission reductions, taking into consideration the cost of achieving such reductions, non-air quality health impact, environmental impact, and energy requirements. In this amendment, EPA made revisions to the emission limits for NMPP-affected facilities which commence construction, modification, or reconstruction after publishing the revised rules. EPA’s review of permits and other available information when revising these standards of performance did not reveal any new or emerging pollution-prevention measures or PM control technologies as best demonstrated technologies (BDT). EPA found that the NSPS Subpart OOO fugitive emission limits are most commonly met through use of wet suppression (as needed) and water carryover. Wet dust suppression remains the method of choice for control for the vast majority of crushing and screening facilities.

The BDT control systems identified in EPA’s NSPS evaluations achieve a reduction in PM₁₀ and PM_{2.5}, along with reduction in larger PM particles required to meet NSPS Subpart OOO emission standards. Additionally, as the Quarry is located in a PM_{2.5} nonattainment area, it is subject to R307-309 Aggregate Processing Operations. Therefore, the Applicant proposes to implement both water spray/inherent properties and best management/operational practices. Furthermore, since all technically feasible control technologies are proposed for implementation, a cost analysis is unnecessary.

¹¹ From EPA Air Pollution Control Technology Fact Sheet for Packed-Bed/Packed-Tower Wet Scrubber (EPA-452/F-03-015)

¹² U.S. EPA revised NSPS, Subpart OOO in 73 Federal Register (FR) 78, April 22, 2008.

Crushing, Screening, and Material Handling PM₁₀ and PM_{2.5} Step 5 – Select BACT

This application proposes that BACT consist of restricting fugitive emissions to opacity standards set forth by NSPS Subpart OOO, namely 7% opacity for belt conveyors, transfer points, screens, and enclosed trucks; and 12% opacity for crushing operations. Like many crushing and screening facilities, this will be done by water application and material moisture content controls. This includes, but is not limited to:

Application of water to stockpiles via water spray from stackers and/or the water truck;
Application of water spray to crushing operations; and
Moisture content carryover during transportation on conveyors and screens.

Furthermore, management and best operational practices will be applied. These include, but are not limited to:

Minimizing drop distance for material transfers; and
Periodic inspections of material handling equipment.

5.2 Road Emissions

Fugitive PM₁₀ and PM_{2.5} Emissions

Fugitive emissions are generated from road use by customer trucks, support vehicles, and heavy equipment used in mining operations. Fugitive dust from production activities such as loading, unloading, storage of bulk materials, and material transporting may cause PM to be deposited on plant roads. There is one (1) paved, primary entrance road for offsite shipments which extends from the exterior of the property to the scale and loading areas. Haul routes within the mine will be unpaved. Unpaved tram routes for front-end loader movement are also included in these emissions. Vehicular traffic in these areas may then disturb dust deposited on plant roads, resulting in more PM emissions.

Roads PM₁₀ and PM_{2.5} Step 1 - Identify All Control Technologies

Control technologies identified for PM₁₀ and PM_{2.5} emissions from roads are as follows:

Chemical Treatment (Applicable to Unpaved Roads Only)
Reduced Speed (Applicable to Unpaved Roads Only)
Road Paving (Applicable to Unpaved Roads Only)
Silt Content Reduction (Applicable to Unpaved Roads Only)
Street Sweeping (Applicable to Paved Roads Only)
Watering and Material Moisture Content

Roads PM₁₀ and PM_{2.5} Step 2 – Eliminate Technically Infeasible Options

Chemical Treatment

Applying chemical treatment to unpaved roads binds surface particles together and inhibits fugitive emissions by up to 85%.¹³ This is feasible for haul roads, but not for paths on which bulldozers and/or front-end loaders operate. Chemical treatment applied in such areas may contaminate mined aggregate and cause technical problems during the crushing and screening process. Furthermore, product stockpiles may

¹³ UDAQ Guidelines: Emission Factors for Paved and Unpaved Haul Roads, January 2015

become contaminated, and the effects of chemical treatment are reduced due to the frequent turning of aggregate by front-end loaders while loading customer haul trucks. Therefore, this control method is considered technically feasible for haul roads, but not technically feasible for roads where bulldozers and front-end loaders operate or for storage piles.

Reduced Speed

Reducing the speed on plant roads reduces the generation of fugitive dust. The Western Regional Air Partnership (WRAP) Fugitive Dust Handbook reports that a 57% reduction in emissions occurs when speeds are restricted to less than fifteen miles per hour (15 mph), and a 44% reduction in emissions when speeds are restricted to 25 mph.¹⁴ This control method is considered technically feasible.

Road Paving

Paving provides effective controls on fugitive road emissions. Guidelines from UDAQ indicate that paved roadways, combined with sweeping and watering, provide a 90% control efficiency for particulate emissions.¹⁵ The entrance road, which is used for product export will be paved.

Paving mine roads interior to the mine operations is not technically feasible near dynamic mining operations at the Quarry, as route configurations are subject to change according to mine development. Furthermore, emissions from paved roads in disrepair due to impact from heavy equipment are higher than properly treated unpaved roads. Similarly, the benefits of applying chemical dust suppressants are negated in areas where trucks turn and tracked equipment is used because those activities cause chemical dust suppressants to deteriorate more quickly than is useful. Travel of this sort rapidly deteriorates paved road surfaces, which is an accepted, significant concern for paved roads. If the main haul road were paved, the frequent re-paving and road construction that would be necessary due to its regular deterioration would hinder haul truck travel and subsequently obstruct the selling of processed aggregate. The application of chemical suppressant and regular watering that will be done maintained.¹⁶ As such, paving of the main haul road inside mine operations is considered technically infeasible.

Silt Content Reduction

Silt content reduction involves covering unpaved road surfaces with material that has a lower silt content than what is naturally present, e.g., gravel or stone. Combined with watering, this method achieves up to 75% control efficiency.¹⁷ This control method is considered technically feasible.

Street Sweeping

Street sweeping is a method of PM control that utilizes a mobile street sweeping unit to remove loose material from paved road surfaces. For the paved entrance road, street sweeping is feasible. This control technology is technically infeasible to adequately maintain unpaved roads within the mine area.

Watering and Material Moisture Content

Watering of haul roads reduces fugitive PM_{2.5} and PM₁₀ emissions by binding soil particles together and increasing their weight, thus retarding movement such as being picked up by wind or vehicles. Water is applied on a scheduled basis and supplemented as needed based on driver observation of dust conditions.

¹⁴ Western Regional Air Partnership, *Fugitive Dust Handbook*. Executive Summary, p. 3, September 2006.

¹⁵ UDAQ Guidelines: Emission Factors for Paved and Unpaved Haul Roads, January 2015

¹⁶ Western Regional Air Partnership (WRAP) Fugitive Dust Handbook, 2006.

¹⁷ UDAQ Guidelines: Emission Factors for Paved and Unpaved Haul Roads, January 2015

Basic watering results in a dust control efficiency of up to 70%.¹⁸ This control technology is considered technically feasible.

Roads PM₁₀ and PM_{2.5} Step 3 – Rank Remaining Control Technologies by Control Effectiveness

Table 5-2. Fugitive PM₁₀ and PM_{2.5} Control Technologies and Efficiencies for Paved Roads

Control Method	Control Efficiency (%)
Paving with Vacuum Sweeping and Watering ¹	95

¹ Control factor is consistent with UDAQ’s January 12, 2015 Emission Factors for Paved and Unpaved Roads.

Table 5-3 Fugitive PM₁₀ and PM_{2.5} Control Technologies and Efficiencies for Unpaved Roads

Control Method	Control Efficiency (%)
Chemical Suppressant and Watering	85
Basic Watering and Road Base	75
Basic Watering	70
Reduced Speed	44

For the technologies applied to unpaved roads, any grouping of silt-content reduction, chemical suppressant, watering, and speed reduction can be applied together, as they are not competitive. Note that variable control technologies include:

Silt Content Reduction: Varies with current, uncontrolled road conditions, per AP-42 13.2.2.

Roads PM₁₀ and PM_{2.5} Step 4 – Evaluate Most Effective Controls and Document Results

Paving will be applied to the main entrance road and all technically available controls including chemical suppression, road watering, speed reduction, and silt content reduction on unpaved roads will be implemented, no detailed economic, energy, or environmental impact evaluations were conducted.

Roads PM₁₀ and PM_{2.5} Step 5 – Select BACT

BACT has been established for three scenarios:

Pave the permanent entrance road into the Quarry.

Use chemical application, watering, and/or silt-content reduction to minimize fugitive dust from unpaved haul roads.

Use watering and/or silt content reduction to minimize fugitive dust from non-permanent roads and unpaved surfaces (e.g., roads in proximity to the mining face).

The Quarry will implement these controls.

¹⁸ Ibid.

5.3 Drilling and Blasting

NO_x and SO₂ – Blasting

Blasting operations incorporate combustion of compounds containing ammonium nitrate in order to loosen material in the mining area. Blasting operations will produce fugitive NO_x and SO₂ emissions. However, there are no control technologies that can be used to mitigate NO_x and SO₂ emissions associated with blasting. As such, no BACT analysis has been conducted for these emissions.

PM₁₀ and PM_{2.5} – Drilling and Blasting

Drilling and blasting methods loosen raw materials in the mining area in order to access the desired aggregate embedded in the ground. These activities create fugitive dust.

Drilling and Blasting PM₁₀ and PM_{2.5} Step 1 – Identify All Control Technologies

Control technologies identified for PM₁₀ and PM_{2.5} emissions from drilling and blasting have been identified using the following sources:

Utah Division of Air Quality Fugitive Dust Control Plans (Revised 1/13) BMP 02;
Dust Control Handbook for Industrial Minerals Mining and Processing, NIOSH, January 2012
WRAP Fugitive Dust Handbook, Countess Environmental, September 2006

The following methods have been identified as control technologies to reduce fugitive dust emissions from drilling and blasting:

Apply a shroud to the drilling equipment;
Apply best management and operational practices for drilling and blasting;
Install a dust collection system on drilling equipment; and
Install a water spray on drilling equipment, i.e., use of wet drilling practices.

Drilling and Blasting PM₁₀ and PM_{2.5} Step 2 – Eliminate Technically Infeasible Options

Shroud Application to Drilling Equipment

Installing a shroud at the drilling location is one common method for controlling fugitive dust emissions from drilling operations. Shrouds can vary in shape (rectangular vs. circular) and complexity in order to adapt to mining operations. When installed and replaced correctly, shrouds can control 88% of fugitive dust emissions.¹⁹ Using a shroud during drilling operations is technically feasible.

Best Management and Operational Practices for Drilling and Blasting

Best management and operational practices for blasting operations includes the following: using sufficient stem length and refraining from blasting operations during high winds.²⁰ Best management and operational practices for drilling operations includes conducting routine inspections of drilling control technologies. This may include repairing and/or replacing shrouds when they become damaged. Best management and operational practices for controlling both drilling and blasting operations are technically feasible.

¹⁹ Dust Control Handbook for Industrial Minerals Mining and Processing, pg. 137. NIOSH, March, 2019

²⁰ The Office of Surface Mining, U.S. Department of Interior, Controlling the Adverse Effects of Blasting, Methods to Reduce Airblast

Dust Collection System on Drilling Equipment

Dust control is often accomplished using a fan-powered dust-collection system. For drilling operations, these collection systems are mounted on the drill. If properly maintained, these systems can be up to 99% efficient.²¹ For drilling operations, installing a dust collection system is technically feasible.

Water Spray on Drilling Equipment

Fugitive emissions for drilling equipment can be significantly reduced through wet drilling, using a water spray which provides continuous water flow during drilling operations. With a high volumetric flow rate, dust control efficiencies often attain 86-97%. However, when water flow rates approach one (1) gallon per minute (gpm) operational problems such as drill bit plugging, and drill rotation binding often occur. Dust control efficiencies are reduced when water flow rates are reduced.²² Watering is technically feasible for drilling operations.

Drilling and Blasting PM₁₀ and PM_{2.5} Step 3 – Rank Remaining Control Technologies by Control Effectiveness

The most-effective control technologies for fugitive dust generated from drilling operations are provided in the table below, according to effectiveness.

Table 5-3. Summary of PM_{2.5} and PM₁₀ Control Methods for Drilling

Control Technologies	Rank	Percent Control	Feasible	BACT
Dust Collection System ²³	1	95-99.9%	Yes	Yes
Using Water Spray (Wet Drilling) ²⁴	2	86-97%	Yes	Yes
Shroud Use ²⁵	3	63-88%	Yes	Yes
Best Management and Operational Practices	4	Varies	Yes	Yes

The most-effective control technologies for fugitive dust generated from blasting operations are provided in the table below, according to effectiveness.

Table 5-4. Summary of PM_{2.5} and PM₁₀ Control Techniques for Blasting

Control Technologies	Rank	Percent Control	Feasible	BACT
Best Management and Operational Practices	5	Varies	Yes	Yes

²¹ Dust Control Handbook for Industrial Minerals Mining and Processing, pg. 124. NIOSH, March, 2019

²² Dust Control Handbook for Industrial Minerals Mining and Processing, pg. 80-82. NIOSH, January, 2012

²³ Dust Control Handbook for Industrial Minerals Mining and Processing, pg. 124. NIOSH, March, 2019

²⁴ Summary of NIOSH Research Completed on Dust Control Methods for Surface and Underground Drilling, Pg. 2, December 2008

²⁵ Dust Control Handbook for Industrial Minerals Mining and Processing, pg. 137. NIOSH, March, 2019

Drilling and Blasting PM₁₀ and PM_{2.5} Step 4 – Evaluate Most-Effective Controls and Document Results

Since equivalent technology including wet drilling, and installing a shroud for drilling, and best management and operational practices for drilling and blasting will be implemented, no detailed economic, energy, or environmental impact evaluations were conducted.

Drilling and Blasting PM₁₀ and PM_{2.5} Step 5 – Select BACT

BACT for drilling will be accomplished through adhering to best management practices and using a wet drilling practices proposed as BACT for drilling operations which will maintain average of 88.8% controls.

BACT for blasting will be accomplished by applying best management practices, minimizing the blasting area, limiting the size of blasting, and avoiding blasting operations during high winds. Additionally, blasting and drilling events will not occur on the same day. These practices will mitigate fugitive dust from blasting operations.

5.4 Diesel Engines Powering Crushing and Screening Units

Emission estimates for engines operation at the Quarry are based on the operation of one (1) 260-hp for the Jaw Crusher, one (1) 175-hp for the screen, and one (1) 440-hp for the cone crusher. These engines will provide power for the crushing, screening and stacking equipment. The engines meet the EPA's Tier IV Nonroad Compression-Ignition Engines: Exhaust Emission Standards. Although the mobile engines are unaffected by stationary source regulations, each engine would meet the applicable National Emission Standards for Hazardous Air Pollutants (NESHAP) Subpart ZZZZ emission limits for reciprocating internal combustion engines (RICE), as well as those in New Source Performance Standards (NSPS) IIII. Ultra-low sulfur diesel (ULSD) fuel will be used to fuel the engines, which is based on a fuel sulfur content of 0.0015% as defined under 40 CFR 80, Subpart I, Section 80.510(c)(1). Nevertheless, requirements in these regulations are inapplicable and the permit conditioning should omit these requirements.

Engine Emissions Step 1 - Identify All Control Technologies

The following sources were reviewed on May 30, 2022, to identify available control technologies:

- ▶ EPA's RBLC Database for Diesel Engines;
- ▶ EPA's Air Pollution Technology Fact Sheets;
- ▶ Bay Area Air Quality Management District (BAAQMD)
- ▶ California Air Resources Board (CARB)
- ▶ San Diego County Air Pollution Control District (SDCAPCD)
- ▶ San Joaquin Valley Air Pollution Control District (SJVAPCD)
- ▶ Texas Commission on Environmental Quality (TCEQ)
- ▶ South Coast Air Quality Management District Example Permits.

Available control technologies for diesel-fired, non-emergency engines include the following:

- ▶ Limited Hours of Operation
- ▶ Good Combustion Practices
- ▶ Use of Tier-Certified Engines
- ▶ Engine Design
- ▶ Diesel Particulate Filter (DPF)
- ▶ Ultra-Low Sulfur Fuel

- ▶ Diesel Oxidation Catalyst (DOC)
- ▶ Exhaust Gas Recirculation (EGR)
- ▶ Selective Catalyst Reduction (SCR)

The following step evaluates the technical feasibility of each of these options.

Engine Emissions Step 2 – Eliminate Technically Infeasible Options

Limited Hours of Operation

One of the apparent opportunities to control the emissions of all pollutants released from non-emergency engines is to limit the hours of operation to essential hours of operation only. The engine proposed will be limited to 2,200 hours of operation per year, which coincides with the operation of the crushing and screening operation at each set.

Good Combustion Practices

Good combustion practices refer to the operation of engines at high combustion efficiency, which reduces the products of incomplete combustion. The engine proposed is designed to achieve maximum combustion efficiency. The manufacturer has provided operation and maintenance manuals that detail the required methods to achieve the highest levels of combustion efficiency.

Use of an Appropriate Tier Certified Engine

EPA noted that non-road engines were a significant source of emissions and began adopting emission standards for these emission units in 1994. Today, engines are required to meet certain emission limits, or tier ratings, based on the size and model year. Emission standards for these engines have progressively become more stringent over time and are an indicator of good combustion design. The proposed engines have an EPA Tier IV rating.

Diesel Particulate Filters

This technology is placed in the exhaust pathway to prevent the release of particulate and may be coated with a catalyst to further capture hydrocarbon emissions. According to EPA's Response to Public Comments on Notice of Reconsideration of NESHAP for RICE and NSPS for Stationary ICE, "Diesel particulate filters are also proven commercially available technology for retrofit applications to stationary engines...and are capable of reducing diesel PM by 90 percent or more."²⁶ Additionally, the CA ARB was able to determine that this technology was technically feasible for non-emergency and prime engines through obtaining several vendor quotes.²⁷

DPFs were shown to be used on engines meeting at least the Tier 2 engine standards of this size in the aforementioned RBLC search. It was found that the emission rate of PM was lower for the proposed engine than that of those that had DPFs, according to the search. DPFs create backpressure within the engine, effectively reducing the power output. Since the proposed engines are sized appropriately to suit the needs of the operation, it is critical that the power output not be reduced. Since the emission rate is lower than

²⁶ Response to Public Comments on Notice of Reconsideration of National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines and New Source Performance Standards for Stationary Internal Combustion Engines, EPA Docket EPA-HQ-OAR-2008-0708, June 16, 2014

²⁷ Response to Public Comments on Notice of Reconsideration of National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines and New Source Performance Standards for Stationary Internal Combustion Engines, EPA Docket EPA-HQ-OAR-2008-0708, June 16, 2014

those of engines with DPFs in the RBLC search, and since the installation of a DPF is considered technically infeasible due to the back pressure, it is concluded that the proposed engine meets BACT.

Ultra-Low Sulfur Diesel

ULSD fuel contains less than 0.0015% sulfur by weight. The reduced sulfur content reduces the potential for SO₂ emissions. Additionally, the low sulfur content results in a lower potential for aggregation of sulfur-containing compounds, and thus reduces PM_{2.5} emissions. Engines at the Quarry will use ULSD fuel for its diesel-fired engine.

Diesel-Oxidation Catalyst

A DOC utilizes a catalyst such as platinum or palladium to further oxidize the engine's exhaust, which includes hydrocarbons (HC), (i.e., VOC), to carbon dioxide (CO₂) and water. Use of a DOC can result in approximately 90 percent reduction in HC/VOC emissions.²⁸ In addition to controlling HC/VOC, a DOC also has the potential to reduce PM emissions by 30 percent (based on the concentration of soluble organics) and CO emissions by 50 percent if low sulfur diesel fuel is used.²⁹

The use of a DOC reduces the effective power output of RICE and results in a solid waste stream, resulting in more complex environmental treatment than an engine without it. Since the power output of the proposed engine is required as discussed in the DPF section above, it is critical not to reduce it. As such, a DOC is considered technically infeasible.

Although DOC is listed by the BAAQMD, it is not listed as a control in the RBLC search for the EPA size range that the proposed engine falls under. Furthermore, it is not listed as a control technology in the TCEQ, SDAPCD, or SJVAPCD for similarly sized engines.

Exhaust Gas Recirculation

NO_x reduction can be achieved through recirculating exhaust into an engine. EPA tests conducted on mobile engines have demonstrated NO_x reduction up to 50% if the engine timing is retarded, but test results are accompanied by an increase in particulates³⁰. Computer-based control schemes can assist in NO_x reduction with associated timing retardation, but EGR can also result in heat rejection, reduced power density and lower fuel economy. The proposed engine is equipped with a manufacturer-installed NO_x reduction system that is effectively equivalent to an EGR.³¹ It is for this reason that an EGR is considered technically feasible for the proposed engine.

Selective Catalytic Reduction

SCR systems introduce a liquid reducing agent such as ammonia or urea into the flue gas stream prior to a catalyst. The catalyst reduces the temperature needed to initiate the reaction between the reducing agent and NO_x to form nitrogen and water. Retrofitting an SCR creates backpressure in the exhaust system which affects the performance and effective power output of an engine. As discussed in previous sections (DPF

²⁸ U.S. EPA, *Alternative Control Techniques Document: Stationary Diesel Engines*, March 5, 2010, p. 41.

(https://www.epa.gov/sites/production/files/2014-02/documents/3_2010_diesel_eng_alternativecontrol.pdf)

²⁹ Response to Public Comments on Notice of Reconsideration of National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines and New Source Performance Standards for Stationary Internal Combustion Engines, EPA Docket EPA-HQ-OAR-2008-0708, June 16, 2014

³⁰ U.S. EPA Control of Heavy-Duty Diesel NO_x Emissions by Exhaust Gas Recirculation, Office of Mobile Source Air Pollution Emissions Control Technology Division, August 1985

³¹ Per manufacturer's guarantee.

and DOC), the engine is small, and reducing power output of the engine would compromise the power output required for the process. For these reasons, retrofitting an SCR is considered technically infeasible.

Engine Emissions Step 3 – Rank Remaining Control Technologies by Control Effectiveness

Effective control technologies for diesel engines include limited hours of operation, good combustion practices, use of tier-certified engines, use of EGR, and the use of ULSD fuel. Each of these is currently being proposed as controls.

Engine Emissions Step 4 – Evaluate Most Effective Controls and Document Results

Engines that would meet the Tier 4 Final emissions standards are proposed. Such engines benefit from various emissions control systems listed above and installed by the original equipment manufacturer. Diesel engines that meet the Tier 4 Final emissions standards are the best available and the most effective controls short of electrification which is not technically feasible due to the mobile nature of the engines.

Engine Emissions Step 5 - Select BACT

The following control technologies will be implemented and are considered BACT: limited hours of operation, good combustion practices, use of tier-certified engines, use of EGR, and the use of ULSD fuel.

5.5 Diesel Tank VOCs & Volatile HAPs

The Quarry would operate three (3) diesel tanks with a capacity of 250 gallons each and a throughput of approximately 6,000 gallons per year of diesel each. However, for purposes of simplicity, conservativeness, and to allow for flexibility to install a larger tank in the future, the emissions for a 10,000-gallon aboveground diesel tank were estimated. The potential to emit of VOCs from the diesel tank is 0.01 tpy and the potential to emit of HAPs is 1.5 lb/yr.

Diesel Tank VOCs & Volatile HAPs- Step 1-5 – Identify All Control Technologies & Select BACT

Emissions from fixed-roof storage tanks result from displacement of headspace vapor during filling operations (working losses) and from diurnal temperature and heating variations (breathing losses). While a variety of technologies may be considered, due to the size and minimal throughput anticipated for the proposed tank, VOC emissions from the tank is minimal, as demonstrated in the emission calculations. The belly tank stands at a shallow height, due to its positioning underneath a engine, which leads to minimized splashing during filling operations, as the distance that the fuel falls from the feed to the surface of the fuel oil in the tank is minimal. Per AP-42 5.2, *Transportation and Marketing of Petroleum Liquids*, higher levels of turbulence during splash loading results in increased amounts of vapor generation and loss. Because of the shallow nature of the belly tank, turbulence during filling operations will be minimized, thus reducing emissions, especially compared to standard horizontal fixed-roof or vertical fixed-roof tanks.

Because of these various considerations – namely, low throughput, shallow depth, reduced splashing, and the involatile nature of No. 2 fuel oil – emissions from this belly tank will be minimal, and BACT is considered to be the use of best management and operational practices.

6. EMISSION IMPACT ANALYSIS

Tables 4-1 and 4-2 compare criteria pollutant total proposed emissions to applicable thresholds contained in R307-403-4 through 7, and R307-410-4. As shown in Tables 4-1 and 4-2, emissions do not exceed the “modeling” limit established for each pollutant. Thus, modeling criteria pollutants shown in Tables 4-1 and 4-2 is unwarranted. Nevertheless, air dispersion modeling analysis was performed to demonstrate that the impacts of the site-wide PM₁₀ emissions from the Quarry will be less than the NAAQS (Appendix C). Utah Admin. Code R307-410-5 - Documentation of Ambient Air Impacts for Hazardous Air Pollutants (HAPs) describes how UDAQ calculates Emissions Threshold Values (ETVs) for HAPs. Pre-calculated ETVs are provided in a spreadsheet by UDAQ. If the mass of emissions exceeds the ETVs then additional analysis is necessary. Total HAPs emitted by the Quarry is presented in Table 6 alongside the applicable ETV for each pollutant from the UDAQ spreadsheet. As shown in Table 6, Total HAPs emissions for the Quarry of 0.00017 lb/hr is less than each of the ETVs, the most stringent of which (0.071 lb/hr for acrolein) is over 400 times greater than the Quarry emissions of all HAPs. Thus, Quarry HAP emissions are much less than the ETVs and additional analysis is unwarranted.

Table 6 HAPs Emissions

Analyte	Total (lbs/hr)	Total (lbs/yr)	ETV ^{1,2} (lb/hr)	Over ETV?
Benzene	0.00017	1.5	0.587822	No
Toluene			27.7332	No
Xylenes			159.7827	No
Propylene			0.242	No
Formaldehyde			0.114225	No
Acetaldehyde			13.96268	No
Acrolein			0.071078	No
Naphthalene			19.29404	No

Notes:

1. Utah Admin. Code R307-410-5 - Documentation of Ambient Air Impacts for Hazardous Air Pollutants (HAPs)
2. UDAQ provided spreadsheet with calculated Emission Threshold Values based on methods in UAC R307-410-5.

7. NONATTAINMENT/MAINTENANCE AREAS - OFFSETTING

Per UDAQ's Form 1 for NOI and R307-420 and R307-421, this section should include offset requirements for nonattainment and maintenance areas. The Quarry is located within a PM_{2.5} nonattainment area.

PM_{2.5} Offsets

PM_{2.5} offsets are applicable to major sources located within or impacting a PM_{2.5} nonattainment area of the NAAQS. A major source in a serious nonattainment area is defined in R307-403-5(2)(b) as "any stationary source of air pollutants which emits or has the potential to emit 70 [TPY] or more of direct PM_{2.5} or any individual PM_{2.5} precursor as defined in R307-403-1(4)(c) [i.e., SO₂, NO_x, VOCs, and ammonia]." The Quarry emits less than a major source, and it is therefore not subject to the offset requirements of R307-403.

PM₁₀ Offsets

PM₁₀ offsets requirements are described in UAC R307-421-2. They apply to new or modified sources of SO₂ or NO_x that are located in or impact Salt Lake County or Utah County. Any new source that has the potential to emit, or any modified source that would increase SO₂ or NO_x in an amount equal to or greater than 25 tons/year are subject to the PM₁₀ offset requirements of R307-421. As the SO₂ and NO_x emissions from the Quarry are less than 25 tpy, PM₁₀ offsets are unnecessary.

Ozone Offsets

NO_x and VOC offset requirements recorded in UAC R307-420-3(2) are applicable to significant sources located within or impacting an ozone nonattainment area of the NAAQS. In summary, significant sources located in Davis County or Salt Lake County shall offset the proposed increase in VOC emissions by a ratio of 1.2:1 before the Director may issue an AO to construct, modify, or relocate under R307-401. As the Quarry is located in Salt Lake County, NO_x and VOC offsets are applicable.

Furthermore, "significant" means, for the purposes of determining what is a significant emission increase or a significant net emission increase and therefore a major modification, a rate of emissions that would equal or exceed any of the following rates:

- (1) for volatile organic compounds, 25 tons per year,
- (2) for nitrogen oxides, 40 tons per year.

The PTE of the Quarry presented in Appendix B is less than 25 tpy of VOCs and less than 40 tpy of NO_x. Thus, offsets for ozone precursors established in R307-420-3 are inapplicable.

8. APPLICABLE REGULATIONS

8.1 General Introduction – Utah Regulations

Granite has evaluated the applicability of each rule under the UAC Title R307. Rules generally applicable to the Quarry, but not associated with operational compliance for the facility will not be discussed in this section, while all other applicable rules associated with the project described in this NOI will be discussed in the subsequent subsections.

Table 8-1. Evaluation of UDAQ Air Quality Rules

Reference	Regulation Name	Applicability	
		Yes	No
R307-101	General Requirements	X	
R307-102	¹ General Requirements: Broadly Applicable Requirements	X	
R307-103	¹ Administrative Procedures	X	
R307-104	¹ Conflict of Interest		X
R307-105	¹ General Requirements: Emergency controls	X	
R307-107	General Requirements: Breakdowns	X	
R307-110	¹ General Requirements: State Implementation Plan	X	
R307-115	¹ General Conformity	X	
R307-120	General Requirements: Tax Exemption for Air Pollution Control Equipment	X	
R307-121	General Requirements: Clean Air and Efficient Vehicle Tax Credit		X
R307-122	General Requirements: Heavy Duty Vehicle Tax Credit		X
R307-123	General Requirements: Clean Fuels and Vehicle Technology Grant and Loan Program		X
R307-124	General Requirements: Conversion to Alternative Fuel Grant Program		X
R307-125	Clean Air Retrofit, Replacement, and Off-Road Technology Program		X
R307-130	¹ General Penalty Policy	X	
R307-135	Enforcement Policy for Asbestos Hazard Emergency Response Act		X
R307-150	¹ Emission Inventories	X	
R307-165	Emission Testing		X
R307-170	Continuous Emission Monitoring Program		X

Reference	Regulation Name	Applicability	
		Yes	No
R307-201	Emission Standards: General Emission Standards	X	
R307-202	Emission Standards: General Burning		X
R307-203	Emission Standards: Sulfur Content of Fuels	X	
R307-204	Emission Standards: Smoke Management		X
R307-205	Emission Standards: Fugitive Emissions and Fugitive Dust	X	
R307-206	Emission Standards: Abrasive Blasting		X
R307-207	Residential Fireplaces and Solid Fuel Burning Devices		X
R307-208	Outdoor Wood Boilers		X
R307-210	² Standards of Performance for New Stationary Sources	X	
R307-214	² National Emission Standards for Hazardous Air Pollutants	X	
R307-220	Emission Standards: Plan for Designated Facilities		X
R307-221	Emission Standards: Emission Controls for Existing Municipal Solid Waste Landfills		X
R307-222	Emission Standards: Existing Incinerator for Hospital, Medical, Infectious Waste		X
R307-223	Emission Standards: Existing Small Municipal Waste Combustion Units		X
R307-224	Mercury Emission Standards: Coal Fired Electric Generating Units		X
R307-230	NO _x Emission Limits for Natural Gas-Fired Water Heaters		X
R307-250	Western Backstop Sulfur Dioxide Trading Program		X
R307-301	Utah and Weber Counties: Oxygenated Gasoline Program as a Contingency Measure		X
R307-302	Solid Fuel Burning Devices		X
R307-303	Commercial Cooking		X
R307-304	Solvent Cleaning		X
R307-305	Nonattainment and Maintenance Areas for PM ₁₀ : Emission Standards	X	
R307-306	PM ₁₀ Nonattainment and Maintenance Areas: Abrasive Blasting		X
R307-307	¹ Road Salting and Sanding	X	

Reference	Regulation Name	Applicability	
		Yes	No
R307-309	Nonattainment and Maintenance Areas for PM ₁₀ and PM _{2.5} : Fugitive Emissions and Fugitive Dust	X	
R307-310	Salt Lake County: Trading of Emission Budgets for Transportation Conformity		X
R307-311	Utah County: Trading of Emission Budgets for Transportation Conformity		X
R307-312	Aggregate Processing Operations for PM _{2.5} Nonattainment Areas	X	
R307-320	Ozone Maintenance Areas and Ogden City: Employer Based Trip Reduction		X
R307-325	Ozone Nonattainment and Maintenance Areas: General Requirements		X
R307-326	Ozone Nonattainment and Maintenance Areas: Control of Hydrocarbon Emissions in Petroleum Refineries		X
R307-327	Ozone Nonattainment and Maintenance Areas: Petroleum Liquid Storage		X
R307-328	Gasoline Transfer and Storage		X
R307-335	Degreasing		X
R307-341	Ozone Nonattainment and Maintenance Areas: Cutback Asphalt		X
R307-342	Adhesives and Sealants		X
R307-343	Wood Furniture Manufacturing Operations		X
R307-344	Paper, Film, and Foil Coatings		X
R307-345	Fabric and Vinyl Coatings		X
R307-346	Metal Furniture Surface Coatings		X
R307-347	Large Appliance Surface Coatings		X
R307-348	Magnet Wire Coatings		X
R307-349	Flat Wood Panel Coating		X
R307-350	Misc. Metal Parts and Product Coating		X
R307-351	Graphic Arts		X
R307-352	Metal Container, Closure, and Coil Coatings		X
R307-353	Plastic Parts Coatings		X
R307-354	Automotive Refinishing Coatings		X

Reference	Regulation Name	Applicability	
		Yes	No
R307-355	Aerospace Manufacture and Rework Facilities		X
R307-356	Appliance Pilot Light		X
R307-357	Consumer Products		X
R307-361	Architectural Coatings		X
R307-401	Permit: New and Modified Sources	X	
R307-403	Permits: New and Modified Sources in Nonattainment and Maintenance Areas		X
R307-405	Permits: Major Sources in Attainment or Unclassified Areas (PSD)		X
R307-406	Visibility		X
R307-410	Permits: Emission Impact Analysis		X
R307-414	Permits: Fees for Approval Orders	X	
R307-415	Permits: Operating Permit Requirements		X
R307-417	Permits: Acid Rain Sources		X
R307-420	Permits: Ozone Offset Requirements in Salt Lake County and Davis County		X
R307-421	Permits: PM ₁₀ Offset Requirements in Salt Lake County and Utah County		X
R307-424	Permits: Mercury Requirements for Electric Generating Units		X
R307-501 to 505	Oil and Gas Industry		X
R307-801	Utah Asbestos Rule		X
R307-840	Lead-Based Paint Program Purpose, Applicability, and Definitions		X
R307-841	Residential Property and Child-Occupied Facility Renovation		X
R307-842	Lead-Based Paint Activities		X

1. The subject rule is or could be applicable to the Quarry; however, this rule is not specific to operational compliance requirements, and is therefore not discussed in the enclosed NOI.

2. Applicable NSPS and NESHAP regulations are detailed under appropriate project headings

UAC R307-101 General Requirements

The Quarry will comply and conform to the definitions, terms, abbreviations, and references used in the UAC R307-101 and 40 CFR.

UAC R307-107 General Requirements: Breakdowns

The Quarry will report breakdowns within 24 hours via telephone, electronic mail, fax, or other similar method and provide detailed written description within 14 days of the onset of the incident to UDAQ.

UAC R307-150 Emission Inventories

Every third year, the Quarry will report its emissions inventory in accordance with R307-150-6. The emissions inventory shall include all criteria pollutants, including filterable and condensable PM, hazardous air pollutants not exempted in R307-150-8 and chargeable pollutants in accordance with R307-150-6.

UAC R307-201 Emission Standards: General Emission Standards

All rules applicable to the Quarry are incorporated by reference from 40 CFR Part 60. Applicability and requirements for these rules are outlined in Section 8.2 of this submittal.

UAC R307-203 Emission Standards: Sulfur Content of Fuels

Sulfur emissions shall be no more than 0.85 pounds sulfur per million gross BTU heat input for any oil. The following specifications for each purchase of fuel oil are recorded: weight percent sulfur, gross heating value (Btu per unit volume), and density. These parameters shall be determined in accordance with the methods of the American Society for Testing and Materials (ASTM). Records of fuel sulfur content shall be kept for all periods when the plant is in operation and shall be made available to the Director upon request and shall include a period of two years ending with the date of the request.

The Quarry will record the following specifications for each purchase of fuel oil in the event that it will be used: weight percent sulfur, gross heating value (Btu per unit volume), and density. In doing so, Granite will meet the emission standards for sulfur content of fuel as described in R307-203(1)(a).

UAC R307-205 Emission Standards: Fugitive Emissions and Fugitive Dust

UAC R307-205-4 Emission Standards – Fugitive Emissions

The Quarry is located in Salt Lake County, which is a nonattainment area for PM_{2.5}. Fugitive emissions from sources shall not exceed 20% opacity.

UAC R307-205-5 Emission Standards - Fugitive Dust

Owning, operating, or maintaining a new or existing material storage, handling, or hauling operation shall take measures to minimize fugitive dust from such activities. Such control may include enclosures, covers, stabilization or other equivalent methods or techniques as approved by the director.

The Quarry will comply with minimization techniques as described in R307-205-5. Steps will be taken to minimize fugitive dusts.

UAC R307-205-7 Emission Standards – Roads

The Quarry will supply traffic count information as determined necessary and clean any deposited materials that may create fugitive dust.

UAC R307-205-7 Emission Standards – Mining Activities

Minimizing fugitive dust shall be an integral part of site preparation mining activities and reclamation operations. Fugitive dust control measures include: periodic watering of unpaved roads and application of chemical suppressant to unpaved roads, and prompt removal of coal, rock minerals, soil, and other dust-forming debris from roads. Additional controls include: frequent scraping and compaction of unpaved roads to stabilize the road surface, restricting the speed of vehicles in and around the mining operation and

restricting the travel of vehicles on other than established roads. Enclosing, covering, watering, or otherwise treating loaded haul trucks to minimize loss of material to wind and spillage is a viable means to control fugitive dust from haul trucks. Substitution of conveyor systems for haul trucks and the covering of conveyor systems are subject to wind erosion. Additionally, minimizing the disturbed grounds and engaging in activities such as revegetation, mulching, or otherwise stabilizing the surface of all areas adjoining roads that are source of fugitive dust.

The Quarry will comply with minimization techniques described in R307-205-7 and engage in various techniques aimed to reduce fugitive dust from mining activities. Techniques include, but are not limited to, the following: water controls, maintaining both paved and unpaved roads, restricting the speed of vehicles in and around mining operations, and control of dust from storage piles.

UAC R307-305 Nonattainment and Maintenance Areas for PM₁₀: Emission Standards:

Emissions from diesel engines, except locomotives, shall be of a shade or density no darker than 20% opacity, except for starting motion no farther than 100 yards or for stationary operation not exceeding three minutes in any hour. Visible emissions shall be measured using EPA Method 9.

Visible emissions exceeding the opacity standards for short time periods as the result of initial warm-up, soot blowing, cleaning of grates, building of boiler fires, cooling, etc., caused by start-up or shutdown of a facility, installation or operation, or unavoidable combustion irregularities which do not exceed three minutes in length are not to be deemed in violation provided that the director finds that adequate control technology has been applied. The owner or operator shall minimize visible and non-visible emissions during start-up or shutdown of a facility, installation, or operation through the use of adequate control technology and proper procedures.

The Quarry is located in Salt Lake County, which is currently in maintenance for PM₁₀. Granite will comply with the requirements described in UAC R307-305 and limitations as addressed in the SIP.

UAC R307-309 Nonattainment and Maintenance Areas for PM₁₀ and PM_{2.5}: Fugitive Emissions and Fugitive Dust

Fugitive emissions from any individual source shall not exceed 15% opacity for more than three (3) minutes in any one-hour period.

Fugitive dust shall not exceed the following opacity limits:

- (a) 10% at the property boundary for more than three (3) minutes in any one-hour period; and
- (b) 20% on site for more than three (3) minutes in any one-hour period.

Any person responsible for construction or maintenance of any existing road or having right-of-way easement or possessing the right to use the same whose activities result in fugitive dust from the road shall minimize fugitive dust to the maximum extent possible. Any such person who deposits materials that may create fugitive dust on a public or private paved road shall clean the road promptly.

The Quarry will minimize fugitive dust created from the construction and maintenance of the existing paved road to the extent both practical and possible.

UAC R307-312 Aggregate Processing Operations for PM_{2.5} Nonattainment Areas

R307-312-4 Visible Emissions

(1) Visible emissions from aggregate processing operations shall not exceed opacity limits as described in Appendix Table 8-2.

Table 8-2. Aggregate Processing Operations Visible Emissions

Category	Opacity Limit
Crushers	12%
Screens	7%
Conveyor Transfer Points	7%

The Quarry will comply with visible emissions for aggregate processing operations described in R307-312.

UAC R307-325 Ozone Nonattainment and Maintenance Areas: General Requirements

The Quarry is located in the Northern Wasatch Front Ozone Nonattainment area and emits VOCs from some operations. This rule is therefore applicable. Granite will ensure that VOCs are not spilled, discarded, stored in open containers, or handled in any other manner that would result in greater evaporation of VOCs than would have if reasonably available control technology (RACT) had been applied.

UAC R307-401-8 Approval Order

The director will issue an AO if all conditions and regulations have been met.

- (a) The degree of pollution control for emissions, to include fugitive emissions and fugitive dust, is at least best available control technology. When determining best available control technology for a new or modified source in an ozone nonattainment or maintenance area that will emit VOC or NO_x, best available control technology shall be at least as stringent as any Control Technique Guidance document that has been published by EPA that is applicable to the source.
- (b) The proposed installation will meet the applicable requirements of:
 - (i) R307-403, Permits: New and Modified Sources in Nonattainment Areas and Maintenance Areas;
 - (ii) R307-405, Permits: Major Sources in Attainment or Unclassified Areas (PSD);
 - (iii) R307-406, Visibility;
 - (iv) R307-410, Emissions Impact Analysis;
 - (v) R307-420, Permits: Ozone Offset Requirements in Davis and Salt Lake Counties;
 - (vi) R307-210, National Standards of Performance for New Stationary Sources;
 - (vii) National Primary and Secondary Ambient Air Quality Standards;
 - (viii) R307-214, National Emission Standards for Hazardous Air Pollutants;
 - (ix) R307-110, Utah State Implementation Plan; and
 - (x) All other provisions of R307.
- (2) The AO requires that all pollution control equipment be adequately and properly maintained.
- (3) Receipt of an AO does not relieve any owner or operator of the responsibility to comply with the provisions of R307 or the State Implementation Plan.

The Quarry will establish and maintain compliance through the following:

- (1) Pollution control equipment will be properly maintained; and
- (2) Relevant provisions of R307 or SIP will be followed.

BACT provisions specified in UAC R307-401 will be applied through installation of control equipment and compliance with monitoring conditions.

UAC R307-410 Permits: Emission Impact Analysis

Emission impacts associated with the Quarry are addressed in Section 9 of this submittal.

UAC R307-414 Permits: Fees for Approval Orders

Fees associated with the submission of this NOI are addressed in Section 2 of this submittal.

8.2 Federal Rules: New Source Performance Standards

NSPS requires new, modified, or reconstructed sources to control emissions to the level achievable by the best demonstrated technology as specified in the applicable provisions. Moreover, any source subject to NSPS is also subject to the general provisions of NSPS Subpart A, except as noted. The following section details the applicability of NSPS regulations to the facility operations.

NSPS Subpart A (General Provisions)

All affected sources subject to an NSPS are also subject to the general provisions of NSPS Subpart A unless specifically excluded by the source specific NSPS. NSPS Subpart A requires the following of facilities subject to a source specific NSPS:

- Initial construction/reconstruction notification
- Initial startup notification
- Performance tests
- Performance test date initial notification
- General monitoring requirements
- General recordkeeping requirements
- Semiannual monitoring system and/or excess emission reports

NSPS Subpart 000 (Standards of Performance for Nonmetallic Mineral Processing Plants)

NSPS Subpart 000, provide standards of performance for affected facilities located at fixed or portable nonmetallic mineral processing plants that are constructed, modified, or reconstructed after August 31, 1983. The following are considered affected facilities under NSPS Subpart 000:

- Crusher
- Screening Operation
- Belt Conveyors

The proposed project will involve the installation of nonmetallic mineral affected facilities under NSPS Subpart 000 (e.g., crushers, screens, belt conveyors, etc.). Per 40 CFR 60.672(b), the affected facilities must meet the emission limits and compliance requirements in Table 3 of the standard within 60 days after

achieving maximum production rate but no later than 180 days after initial startup. Monitoring must be conducted in accordance with 40 CFR 60.674(b). Finally, testing, recordkeeping, and reporting must be met in accordance with 40 CFR 60.675 through 60.676. The Quarry will demonstrate compliance with the requirements upon completion of construction of the affected facilities.

Table 8-3. NSPS Subpart 000 Visible Emissions

Requirement	Opacity Limit	Regulatory Citation
I. Fugitive Emission Limits Crushers	Opacity must be less than 12% for crushers for which a capture system is not used.	60.672(b) Table 3
II. Additional Fugitive Emission Limits (Excluding Crushing)	Opacity must be less than 7% for screening operations, transfer points on belt conveyors, or from any other affected facility.	60.670 60.671 Table 3

NSPS Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

40 CFR 60, Subpart IIII establishes standards for owners and operators of stationary compression ignition, internal combustion engines which commenced construction after July 11, 2005, and were manufactured after April 1, 2006. However, the engines are mounted on tracks and self-propelled. Accordingly, the engines are mobile sources and would be unaffected by the requirements of Subpart IIII.

NSPS Subpart Kb – Storage Tanks

NSPS, Subpart Kb, *Standards of Performance for Volatile Organic Liquid Storage Vessels*, regulates storage vessels with a design capacity greater than or equal to 75 cubic meters (m³) that store volatile organic liquids.³² The standards are effective for all facilities for which construction, reconstruction, or modification commenced after July 23, 1984. Storage vessels with a capacity greater than or equal to 151 cubic meters (m³) storing a liquid with a maximum true vapor pressure, excluding water, less than 3.5 kilopascals (kPa) or with a capacity greater than or equal to 75 m³ but less than 151 m³ storing a liquid with a maximum true vapor pressure less than 15.0 kPa are exempt from the requirements of this rule.³³ Tanks that are subject to this rule must be equipped with sealing systems or closed vent systems and are subject to recordkeeping and reporting requirements.³⁴

All storage tanks at the Quarry are less than 75 m³ in volume. NSPS Subpart Kb is therefore not applicable to the Quarry.

8.3 Federal Rules: National Emission Standards for Hazardous Air Pollutants

The NESHAP federal regulations found in Title 40 Part 61 and 63 of the CFR are emission standards for HAPs. NESHAP are applicable to both major sources of HAPs (facilities that exceed the major source thresholds of 10 tpy of a single HAP and 25 tpy of any combination of HAPs from stationary sources) as well as non-major sources (termed “minor sources”). NESHAP apply to sources in specifically regulated industrial

³² 40 CFR 60.110b(a)

³³ 40 CFR 60.110b(b)

³⁴ 40 CFR 60.112b

source classifications (Clean Air Act Section 112(d)) or on a case-by-case basis (Clean Air Act Section 112(g)) for facilities not regulated as a specific industrial source type.

The Facility is a minor source under the NSR program. As such, this document only addresses regulatory applicability for area sources and does not include standards for major sources.

NESHAP Subpart A (General Provisions)

All affected sources are subject to the general provisions of Part 63 NESHAP Subpart A unless specifically excluded by the source-specific NESHAP. These provisions include initial notification and performance testing, recordkeeping, and monitoring requirements for all other subparts as applicable.

NESHAP SUBPART ZZZZ (NESHAP for Stationary Reciprocating Internal Combustion Engines)

NESHAP Subpart ZZZZ, *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*, applies to stationary RICE at major and area sources of HAPs. Per 40 CFR 63.6590(a)(2)(iii), a stationary RICE at an area source of HAPs is new if construction commenced after June 12, 2006. Thus, the proposed engine is considered a new stationary RICE under NESHAP Subpart ZZZZ. Per 40 CFR 63.6590(c) and 40 CFR 63.6590(c)(1), new stationary RICE located at an area source of HAPs may show compliance with NESHAP ZZZZ by being in compliance with NSPS IIII.³⁵ Granite Construction is not a major source of HAP, as total HAP emissions amount to less than ten (10) tons per year for an individual HAP, and less than twenty-five (25) tons per year of total HAP.

However, the engines are mounted on tracks and self-propelled. Accordingly, the engines are mobile sources and would be unaffected by the requirements of NESHAP ZZZZ.

³⁵ NESHAP Subpart 40 CFR 63.6675



Form 1
Notice of Intent (NOI) Application Checklist

Date _____

Company _____

Utah Division of Air Quality
New Source Review Section

AIR QUALITY

Source Identification Information [R307-401-5]

- 1. Company name, mailing address, physical address and telephone number
2. Company contact (Name, mailing address, and telephone number)
3. Name and contact of person submitting NOI application (if different than 2)
4. Source Universal Transverse Mercator (UTM) coordinates
5. Source Standard Industrial Classification (SIC) code
6. Area designation (attainment, maintenance, or nonattainment)
7. Federal/State requirement applicability (NAAQS, NSPS, MACT, SIP, etc.)
8. Source size determination (Major, Minor, PSD)
9. Current Approval Order(s) and/or Title V Permit numbers

NOI Application Information: [R307-401]

- 1. Detailed description of the project and source process
2. Discussion of fuels, raw materials, and products consumed/produced
3. Description of equipment used in the process and operating schedule
4. Description of changes to the process, production rates, etc.
5. Site plan of source with building dimensions, stack parameters, etc.
6. Best Available Control Technology (BACT) Analysis [R307-401-8]
A. BACT analysis for all new and modified equipment
7. Emissions Related Information: [R307-401-2(b)]
A. Emission calculations for each new/modified unit and site-wide
B. References/assumptions, SDS, for each calculation and pollutant
C. All speciated HAP emissions (list in lbs/hr)
8. Emissions Impact Analysis - Approved Modeling Protocol [R307-410]
A. Composition and physical characteristics of effluent
9. Nonattainment/Maintenance Areas - Major NSR/Minor (offsetting only) [R307-403]
A. NAAQS demonstration, Lowest Achievable Emission Rate, Offset requirements
B. Alternative site analysis, Major source ownership compliance certification
10. Major Sources in Attainment or Unclassified Areas (PSD) [R307-405, R307-406]
A. Air quality analysis (air model, met data, background data, source impact analysis)
B. Visibility impact analysis, Class I area impact
11. Signature on Application

Note: The Division of Air Quality will not accept documents containing confidential information or data. Documents containing confidential information will be returned to the Source submitting the application.



AIR QUALITY

Form 2
Company Information/Notice of Intent (NOI)

Utah Division of Air Quality
New Source Review Section

Date

Company Granite Construction

Application for: [] Initial Approval Order [] Approval Order Modification

General Owner and Source Information

1. Company name and mailing address:

[]
[]
[]
Phone No.:
Fax No.:

2. Company** contact for environmental matters:

[]
Phone no.:
Email:
** Company contact only; consultant or independent contractor contact information can be provided in a cover letter

3. Source name and physical address (if different from above):

[]
[]
[]
Phone no.:
Fax no.:

4. Source Property Universal Transverse Mercator coordinates (UTM), including System and Datum:

UTM:
X:
Y:

5. The Source is located in: County

6. Standard Industrial Classification Code (SIC)

7. If request for modification, AO# to be modified: DAQE # DATED: / /

8. Brief (50 words or less) description of process.

Electronic NOI

9. A complete and accurate electronic NOI submitted to DAQ Permitting Mangers Jon Black (jblack@utah.gov) or Alan Humpherys (ahumpherys@utah.gov) can expedite review process. Please mark application type.

Hard Copy Submittal Electronic Copy Submittal [] Both

Authorization/Singnature

I hereby certify that the information and data submitted in and with this application is completely true, accurate and complete, based on reasonable inquiry made by me and to the best of my knowledge and belief.

Signature: [Handwritten Signature]

Title:

Name (Type or print)

Telephone Number:

Date:

Email:



Form 3

Company _____

Process Information

Site _____

**Utah Division of Air Quality
New Source Review Section**

Process Information - For New Permit ONLY		
1. Name of process:	2. End product of this process:	
3. Process Description*:		
Operating Data		
4. Maximum operating schedule: _____ hrs/day _____ days/week _____ weeks/year	5. Percent annual production by quarter: Winter _____ Spring _____ Summer _____ Fall _____	
6. Maximum Hourly production (indicate units.): _____	7. Maximum annual production (indicate units): _____	
8. Type of operation: Continuous Batch Intermittent	9. If batch, indicate minutes per cycle <u> N/A </u> Minutes between cycles _____	
10. Materials and quantities used in process.*		
Material	Maximum Annual Quantity (indicate units)	
See Attached for Emission Information		
11. Process-Emitting Units with pollution control equipment*		
Emitting Unit(s)	Capacity(s)	Manufacture Date(s)
See Attached for Emission Information		

**If additional space is required, please create a spreadsheet or Word processing document and attach to form.*



Form 5
Emissions Information
Criteria/GHGs/ HAP's
Utah Division of Air Quality
New Source Review Section

Company _____
 Site _____

Potential to Emit* Criteria Pollutants & GHGs			
Criteria Pollutants	Permitted Emissions (tons/yr)	Emissions Increases (tons/yr)	Proposed Emissions (tons/yr)
PM ₁₀ Total			
PM ₁₀ Fugitive			
PM _{2.5}			
NO _x		See Attached for Emission Information	
SO ₂			
CO			
VOC			
VOC Fugitive			
NH ₃			
<u>Greenhouse Gases</u>	<u>CO₂e</u>	<u>CO₂e</u>	<u>CO₂e</u>
CO ₂		See Attached for Emission Information	
CH ₄			
N ₂ O			
HFCs			
PFCs			
SF ₆			
Total CO₂e			

*Potential to emit to include pollution control equipment as defined by R307-401-2.

Hazardous Air Pollutants** (**Defined in Section 112(b) of the Clean Air Act)				
Hazardous Air Pollutant***	Permitted Emissions (tons/yr)	Emission Increase (tons/yr)	Proposed Emission (tons/yr)	Emission Increase (lbs/hr)
Total HAP				

*** Use additional sheets for pollutants if needed



**Utah Division of Air Quality
New Source Review Section**

Date October 17, 2022
 Company Granite Construction
 Site I-80 South Quarry

**Form 15
Aggregate Processing Operations**

Equipment Information																																							
1. Check the appropriate crushing operations used in your process: Type of Unit <u>Mobile Processing Unit</u> Manufacturer/Model _____ Design Capacity _____ tons/hr Date Manufactured <u>TBD</u> <input type="checkbox"/> Primary Crushing type <input type="checkbox"/> Cone <input checked="" type="checkbox"/> Jaw <input type="checkbox"/> Ball <input type="checkbox"/> Secondary Crushing type <input checked="" type="checkbox"/> Cone <input type="checkbox"/> Jaw <input type="checkbox"/> Ball <input type="checkbox"/> Tertiary Crushing type <input type="checkbox"/> Cone <input type="checkbox"/> Jaw <input type="checkbox"/> Ball Screen Manufacturer _____ Model and Date Manufactured _____ Screen type and size (triple, double, or single deck) <u>Double Deck</u>		2. Dust sources will be controlled as follows: <div style="text-align: center;"> <table style="margin: auto;"> <tr> <td></td> <td style="text-align: center;">No Control</td> <td style="text-align: center;">Pre Soaked</td> <td style="text-align: center;">Water Spray</td> <td style="text-align: center;">Bag house</td> <td style="text-align: center;">Other (explain)</td> </tr> </table> </div> <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"><input type="checkbox"/> Feed hopper</td> <td style="width: 10%; text-align: center;">-</td> <td style="width: 10%; text-align: center;">-</td> <td style="width: 10%; text-align: center;">X</td> <td style="width: 10%; text-align: center;">-</td> <td style="width: 10%; text-align: center;">-</td> </tr> <tr> <td><input type="checkbox"/> All belt transfer points</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> <td style="text-align: center;">X</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> </tr> <tr> <td><input type="checkbox"/> Inlet to all crushers</td> <td style="text-align: center;">-</td> <td style="text-align: center;">X</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> </tr> <tr> <td><input type="checkbox"/> Exit of all crushers</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> </tr> <tr> <td><input type="checkbox"/> All shaker screens</td> <td style="text-align: center;">-</td> <td style="text-align: center;">X</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> </tr> </table>			No Control	Pre Soaked	Water Spray	Bag house	Other (explain)	<input type="checkbox"/> Feed hopper	-	-	X	-	-	<input type="checkbox"/> All belt transfer points	-	-	X	-	-	<input type="checkbox"/> Inlet to all crushers	-	X	-	-	-	<input type="checkbox"/> Exit of all crushers	-	-	-	-	-	<input type="checkbox"/> All shaker screens	-	X	-	-	-
	No Control	Pre Soaked	Water Spray	Bag house	Other (explain)																																		
<input type="checkbox"/> Feed hopper	-	-	X	-	-																																		
<input type="checkbox"/> All belt transfer points	-	-	X	-	-																																		
<input type="checkbox"/> Inlet to all crushers	-	X	-	-	-																																		
<input type="checkbox"/> Exit of all crushers	-	-	-	-	-																																		
<input type="checkbox"/> All shaker screens	-	X	-	-	-																																		
3. Water Sprays <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 25%; border-right: 1px solid black; padding: 5px;"> Total Water Rate to nozzles (gal/min): _____ </td> <td style="width: 25%; border-right: 1px solid black; padding: 5px;"> Nozzle pressure (psi): _____ </td> <td style="width: 50%; padding: 5px;"> Quantity of nozzles at each spray bar location: _____ </td> </tr> </table>		Total Water Rate to nozzles (gal/min): _____	Nozzle pressure (psi): _____	Quantity of nozzles at each spray bar location: _____	4. Maximum Plant Production Rate and Operating Hours: <u>1,000,000</u> tons/yr _____ tons/hr _____ hrs/yr _____ hrs/day																																		
Total Water Rate to nozzles (gal/min): _____	Nozzle pressure (psi): _____	Quantity of nozzles at each spray bar location: _____																																					
5. Water sprays used on storage piles? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Storage pile size: _____		6a. Number of conveyor belt transfer and drop points: 6b. List manufactured dates for all conveyor belts																																					

- NOTE:**
1. **Submit this form in conjunction with Form 1 and Form 2.**
 2. To relocate an Aggregate Plant submit Form 15b.
 3. Call the Division of Air Quality (DAQ) at **(801) 536-4000** if you have problems or questions in filling out this form. Ask to speak with a New Source Review engineer. We will be glad to help!
 4. Equipment listed on this form may be subject to New Source Performance Standards. If so, additional information may be requested for the engineering review.

Instructions

1. Indicate the type, manufacturer/model, design capacity and manufactured date of the equipment. Mark the appropriate box for the kind of crushing at the facility and indicate the type (cone, ball, jaw) of crushing being done.
2. Mark the appropriate box for the control device for the emission points.
3. List the specifications of the water sprays. Check vendor literature or call sales agent.
4. Indicate the maximum amount of product that will be processed by the facility in tons per hour, the number of hours the facility will be run per day and number of days/year.
5. Are water sprinklers used on storage piles? Indicate the size of the storage piles.
6. Provide the number of belt drop points and list manufactured dates for all your conveyor belts.

**INTERNAL COMBUSTION ENGINE
FORM 11 (continued)
EMISSION SOURCES**

Review of applications and issuance of permits will be expedited by supplying all necessary information requested on this form.

AIR CONTAMINANT DATA						EMISSION POINT DISCHARGE PARAMETERS							
EMISSION POINT (1)		CHEMICAL COMPOSITION OF TOTAL STREAM		AIR CONTAMINANT EMISSION RATE		UTM COORDINATES OF EMISSION PT. (6)			STACK SOURCES (7)				
NUMBER	NAME	COMPONENT OR AIR CONTAMINANT NAME (2)	CONC. (%V) (3)	LB/HR (4)	TONS/YR (5)	ZONE	EAST (METERS)	NORTH (METERS)	HEIGHT ABOVE GROUND (FT)	HEIGHT ABOVE STRUCT. (FT)	EXIT DATA		
											DIA. (FT)	VELO. (FPS)	TEMP. (°F)
1	JAW	Tier 4f Standards				12T	437044	4509470	10		0.4	298	871
2	SCRN	Tier 4f Standards				12T	437044	4509470	10		0.4	298	871
3	CONE	Tier 4f Standards				12T	437044	4509470	10		0.4	298	871

GROUND ELEVATION OF FACILITY ABOVE MEAN SEA LEVEL 5,500 feet.
UTAH AIR CONSERVATION BOARD STANDARD CONDITIONS ARE 68° F AND 14.7 PSIA.

- General Instructions for this form.
1. Identify each emission; point with a unique number for this plant site on plot plan, previous permits and emission inventory questionnaire. Limit emission point number to 8 character spaces. For each emission point use as many lines as necessary to list air contaminant data. Typical emission point names are: heater, vent, boiler, tank, reactor, separator, baghouse, fugitive, etc. Abbreviations are OK.
 2. Typical component names are: air, H₂O, nitrogen, oxygen, CO₂, CO, NO_x, SO_x, hexane, particulate matter (PM₁₀ and PM_{2.5}), etc. Abbreviations are OK.
 3. Concentration data is required for all gaseous components. Show concentration in volume percent of total gas stream.
 4. Pounds per hour. (#/hr) is maximum emission rate expected by applicant.
 5. Tons per year (T/Y) is annual maximum emission rate expected by applicant, which takes into account process operating schedule.
 6. As a minimum applicant must furnish a facility plot plan drawn to scale showing a plant benchmark, latitude and longitude correct to the nearest second for the benchmark, and all emission points dimensioned with respect to the benchmark. Please show emission point UTM coordinates if known.
 7. Supply additional information as follows if appropriate:
 - (a) Stack exit configuration other than a round vertical stack. Show length and width for a rectangular stack. Indicate if horizontal discharge with a note.
 - (b) Stack's height above supporting or adjacent structures if structure is within three "stack heights above ground" of stack.



**Utah Division of Air Quality
New Source Review Section**

**Form 11
Internal Combustion Engines**

Company Granite Construction
 Site/Source 180 South Quarry
 Date 10/17/2022

Equipment Information	
1. Manufacturer: <u>TBD</u> Model no.: <u>TBD</u> The date the engine was constructed or reconstructed <u>TBD</u>	2. Operating time of Emission Source: average maximum _____ Hours/day <u>16</u> Hours/day _____ Days/week <u>6</u> Days/week _____ Weeks/year <u>235</u> Weeks/year
3. Manufacturer's rated output at baseload, ISO <u>440</u> _____ hp or _____ Kw Proposed site operating range <u>TBD</u> _____ hp or _____ Kw	
Gas Firing	
4. Are you operating site equipment on pipeline quality natural gas: <input type="checkbox"/> Yes <input type="checkbox"/> No	
5. Are you on an interruptible gas supply: <input type="checkbox"/> Yes <input type="checkbox"/> No If "yes", specify alternate fuel: _____	6. Annual consumption of fuel: _____ MMSCF/Year
7. Maximum firing rate: _____ BTU/hr	8. Average firing rate: _____ BTU/hr
Oil Firing	
9. Type of oil: Grade number <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 Other specify _____	
10. Annual consumption: <u>85,992</u> gallons	11. Heat content: <u>TBD</u> BTU/lb or _____ BTU/gal
12. Sulfur content: <u>0.0015</u> % by weight	13. Ash content: <u>TBD</u> % by weight
14. Average firing rate: <u>17</u> gal/hr	15. Maximum firing rate: <u>23</u> gal/hr
16. Direction of firing: <input type="checkbox"/> horizontal <input type="checkbox"/> tangential <input type="checkbox"/> other: (specify)	

**Internal Combustion Engine
Form 11 (Continued)**

Operation

17. Application:

- Electric generation
 _____ Base load _____ Peaking
- Emergency Generator
- Driving pump/compressor
- Exhaust heat recovery
- Other (specify) _____

18. Cycle

- Simple cycle
- Regenerative cycle
- Cogeneration
- Combined cycle

Emissions Data

19. Manufacturer's Emissions in grams per hour (gr/hp-hr): EPA Tier 4f Standards

20. Attach manufacturer's information showing emissions of NO_x, CO, VOC, SO_x, CH₂O, PM₁₀, PM_{2.5}, CO₂, CH₄ and N₂O for each proposed fuel at engine loads and site ambient temperatures representative of the range of proposed operation. The information must be sufficient to determine maximum hourly and annual emission rates. Annual emissions may be based on a conservatively low approximation of site annual average temperature. Provide emissions in pounds per hour and except for PM₁₀ and PM_{2.5} parts per million by volume (ppmv) at actual conditions and corrected to dry, 15% oxygen conditions.

Method of Emission Control:

- Lean premix combustors Oxidation catalyst Water injection Other (specify) _____
- Other low-NO_x combustor SCR catalyst Steam injection

Additional Information

21. On separate sheets provide the following:

- A. Details regarding principle of operation of emission controls. If add-on equipment is used, provide make and model and manufacturer's information. Example details include: controller input variables and operational algorithms for water or ammonia injection systems, combustion mode versus engine load for variable mode combustors, etc.
- B. Exhaust parameter information on attached form.
- C. All calculations used for the annual emission estimates must be submitted with this form to be deemed complete.
- D. All formaldehyde emissions must be modeled as per Utah Administrative Code R307-410-5 using SCREEN3.
- E. If this form is filled out for a new source, forms 1 and 2 must be submitted also.



Utah Division of Air Quality New Source Review Section

Form 11 Internal Combustion Engines

Company Granite Construction
Site/Source 180 South Quarry
Date 10/17/2022

Equipment Information

1. Manufacturer: <u>TBD</u> Model no.: <u>TBD</u> The date the engine was constructed or reconstructed <u>TBD</u>	2. Operating time of Emission Source: average maximum ____ Hours/day <u>16</u> Hours/day ____ Days/week <u>6</u> Days/week ____ Weeks/year <u>235</u> Weeks/year
---	---

3. Manufacturer's rated output at baseload, ISO 260 hp or ___ Kw
Proposed site operating range TBD hp or ___ Kw

Gas Firing

4. Are you operating site equipment on pipeline quality natural gas: Yes No

5. Are you on an interruptible gas supply: <input type="checkbox"/> Yes <input type="checkbox"/> No If "yes", specify alternate fuel: _____	6. Annual consumption of fuel: _____ MMSCF/Year
7. Maximum firing rate: _____ BTU/hr	8. Average firing rate: _____ BTU/hr

Oil Firing

9. Type of oil:
Grade number 1 2 4 5 6 Other specify _____

10. Annual consumption: <u>50,813</u> gallons	11. Heat content: <u>TBD</u> BTU/lb or _____ BTU/gal
12. Sulfur content: <u>0.0015</u> % by weight	13. Ash content: <u>TBD</u> % by weight
14. Average firing rate: <u>10</u> gal/hr	15. Maximum firing rate: <u>14</u> gal/hr

16. Direction of firing: horizontal tangential other: (specify)

**Internal Combustion Engine
Form 11 (Continued)**

Operation

17. Application:

- Electric generation
 _____ Base load _____ Peaking
- Emergency Generator
- Driving pump/compressor
- Exhaust heat recovery
- Other (specify) _____

18. Cycle

- Simple cycle
- Regenerative cycle
- Cogeneration
- Combined cycle

Emissions Data

19. Manufacturer's Emissions in grams per hour (gr/hp-hr): EPA Tier 4f Standards

20. Attach manufacturer's information showing emissions of NO_x, CO, VOC, SO_x, CH₂O, PM₁₀, PM_{2.5}, CO₂, CH₄ and N₂O for each proposed fuel at engine loads and site ambient temperatures representative of the range of proposed operation. The information must be sufficient to determine maximum hourly and annual emission rates. Annual emissions may be based on a conservatively low approximation of site annual average temperature. Provide emissions in pounds per hour and except for PM₁₀ and PM_{2.5} parts per million by volume (ppmv) at actual conditions and corrected to dry, 15% oxygen conditions.

Method of Emission Control:

- Lean premix combustors Oxidation catalyst Water injection Other (specify) _____
- Other low-NO_x combustor SCR catalyst Steam injection

Additional Information

21. On separate sheets provide the following:

- A. Details regarding principle of operation of emission controls. If add-on equipment is used, provide make and model and manufacturer's information. Example details include: controller input variables and operational algorithms for water or ammonia injection systems, combustion mode versus engine load for variable mode combustors, etc.
- B. Exhaust parameter information on attached form.
- C. All calculations used for the annual emission estimates must be submitted with this form to be deemed complete.
- D. All formaldehyde emissions must be modeled as per Utah Administrative Code R307-410-5 using SCREEN3.
- E. If this form is filled out for a new source, forms 1 and 2 must be submitted also.



**Utah Division of Air Quality
New Source Review Section**

**Form 11
Internal Combustion Engines**

Company Granite Construction
 Site/Source 180 South Quarry
 Date 10/17/2022

Equipment Information	
1. Manufacturer: <u>TBD</u> Model no.: <u>TBD</u> The date the engine was constructed or reconstructed <u>TBD</u>	2. Operating time of Emission Source: average maximum _____ Hours/day <u>16</u> Hours/day _____ Days/week <u>6</u> Days/week _____ Weeks/year <u>235</u> Weeks/year
3. Manufacturer's rated output at baseload, ISO <u>175</u> hp or _____ Kw Proposed site operating range <u>TBD</u> hp or _____ Kw	
Gas Firing	
4. Are you operating site equipment on pipeline quality natural gas: <input type="checkbox"/> Yes <input type="checkbox"/> No	
5. Are you on an interruptible gas supply: <input type="checkbox"/> Yes <input type="checkbox"/> No If "yes", specify alternate fuel: _____	6. Annual consumption of fuel: _____ MMSCF/Year
7. Maximum firing rate: _____ BTU/hr	8. Average firing rate: _____ BTU/hr
Oil Firing	
9. Type of oil: Grade number <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 Other specify _____	
10. Annual consumption: <u>34,201</u> gallons	11. Heat content: <u>TBD</u> BTU/lb or _____ BTU/gal
12. Sulfur content: <u>0.0015</u> % by weight	13. Ash content: <u>TBD</u> % by weight
14. Average firing rate: <u>7</u> gal/hr	15. Maximum firing rate: <u>9</u> gal/hr
16. Direction of firing: <input type="checkbox"/> horizontal <input type="checkbox"/> tangential <input type="checkbox"/> other: (specify)	

**Internal Combustion Engine
Form 11 (Continued)**

Operation

17. Application:

- Electric generation
 _____ Base load _____ Peaking
- Emergency Generator
- Driving pump/compressor
- Exhaust heat recovery
- Other (specify) _____

18. Cycle

- Simple cycle
- Regenerative cycle
- Cogeneration
- Combined cycle

Emissions Data

19. Manufacturer's Emissions in grams per hour (gr/hp-hr): EPA Tier 4f Standards

20. Attach manufacturer's information showing emissions of NO_x, CO, VOC, SO_x, CH₂O, PM₁₀, PM_{2.5}, CO₂, CH₄ and N₂O for each proposed fuel at engine loads and site ambient temperatures representative of the range of proposed operation. The information must be sufficient to determine maximum hourly and annual emission rates. Annual emissions may be based on a conservatively low approximation of site annual average temperature. Provide emissions in pounds per hour and except for PM₁₀ and PM_{2.5} parts per million by volume (ppmv) at actual conditions and corrected to dry, 15% oxygen conditions.

Method of Emission Control:

- Lean premix combustors Oxidation catalyst Water injection Other (specify) _____
- Other low-NO_x combustor SCR catalyst Steam injection

Additional Information

21. On separate sheets provide the following:

- A. Details regarding principle of operation of emission controls. If add-on equipment is used, provide make and model and manufacturer's information. Example details include: controller input variables and operational algorithms for water or ammonia injection systems, combustion mode versus engine load for variable mode combustors, etc.
- B. Exhaust parameter information on attached form.
- C. All calculations used for the annual emission estimates must be submitted with this form to be deemed complete.
- D. All formaldehyde emissions must be modeled as per Utah Administrative Code R307-410-5 using SCREEN3.
- E. If this form is filled out for a new source, forms 1 and 2 must be submitted also.

Appendix B. EMISSION CALCULATIONS

Table B-1. Operating Parameters

Description	Value	Unit
Potential Daily Operating Hours	24	(hr/day)
Annual Operating Days for Max Day Calculation*	235	(day/yr)
Maximum Hourly Throughput	225	(tph)
Haulage Hourly Throughput	248	(tph)
Project Throughput	1,000,000	(tpy)

*Represents number of days over which annual emissions will be divided in determination of the max day

Table B-2. Equipment List

Type of Equipment / Activities	Number of Units or Drop Points	Throughput Percent	Maximum Hourly Limit	Potential Annual Throughput	Potential Total Annual Throughput
		(%)	(tph)	(tpy/unit)	(tpy)
Primary Crusher (Jaw Crusher)	1	100.00%	225	1,000,000	1,000,000
Secondary Crusher (Cone Crusher)	1	100.00%	225	1,000,000	1,000,000
Tertiary Crusher (VSI)	1	100.00%	225	1,000,000	1,000,000
Loader to Jaw Crusher ¹	1	100.00%	225	1,100,000	1,100,000
Jaw Crusher to 3 Deck Screen Drop	1	100.00%	225	1,000,000	1,000,000
3 Deck Screen	1	100.00%	225	1,000,000	1,000,000
3 Deck Screen to Cone Crusher Drop	1	100.00%	225	1,000,000	1,000,000
3 Deck Screen to Conveyor Drop	1	100.00%	225	1,000,000	1,000,000
Cone Crusher to 3 Deck Screen Recycle Drop	1	100.00%	225	1,000,000	1,000,000
Conveyer to Pile Drop	1	100.00%	225	1,000,000	1,000,000
Loader to Haul Trucks (Product)	1	100.00%	225	1,000,000	1,000,000
Drilling Operations	1	100.00%	45000	540,000	540,000

¹ It is assumed that 10% of the aggregate loaded to the jaw crusher is lost through, mining, grizzly and/or particulate emissions.

Table B-3. Supporting Equipment

Type of Equipment	Quantity	Maximum Annual Operating Hours
		(hr/yr/unit)
Bulldozers	1	2,903

Table B-4. Roads

Parameter ¹	Quantity	Unit
Unpaved Road through Stockpile Area	0.22	(miles)
Paved Road to Property Boundary	0.33	(miles)
Empty Aggregate Haul Trucks	20.00	(tons)
Loaded Aggregate Haul Trucks	65.00	(tons)

1. All haul and tram route distances are given as roundtrip distances.

Table B-5. Tanks

Type of Equipment	Configuration ¹	Capacity (gal)	Contents	Annual Throughput	Units
Fuel Storage Tank	HFR	10,000	No. 2 Fuel Oil	600,000	(gal/yr)

1. HFR = Horizontal Fixed Roof

**Density (lb/gal) of No. 2 fuel oil, per AP-42 Section 1.3: 7.05

Table B-6. Drilling and Blasting

Parameter	Blasting	Units	Drilling	Units
Daily Maximum Frequency	1	(blast/day)	48	(holes/blast)
Annual Frequency	12	(blasts/yr)	480	(holes/yr)
Annual Area	94,675	(ft ² /yr)	--	--
Daily Area	7,890	(ft ² /day)	--	--
ANFO Usage	20,455	(lbs/blast)	--	--
Annual ANFO Usage	123	(tpy)	--	--
ANFO Heat Content	912	(cal/g)	--	--

Table B-7. Annual Potential Emissions Increase Summary

Process	Annual Emission Rates (tpy)							
	PM ₁₀ (fugitive)	PM _{2.5}	NO _x	CO	SO ₂	VOC	Total HAP	CO _{2e}
Crushing and Screening Operations	1.00	0.44	--	--	--	--	--	--
Bulldozing & Loading Operations	1.31	0.21	--	--	--	--	--	--
Drilling & Blasting	0.05	3.02E-03	0.11	2.49	2.21E-04	--	--	--
Roads	2.31	0.49	--	--	--	--	--	--
Engines	0.05	0.03	0.95	8.28	0.02	0.45	3.10E-02	235,143
Tanks ¹	--	--	--	--	--	5.70E-03	--	--
Project Total	4.72	1.16	1.06	10.77	0.02	0.45	0.03	235,143
Modeling Limit ²	5	--	40	100	40	--	10/25	--
Modeling Required?	No	No	No	No	No	No	No	No
Major Source Thresholds^{3,4,5}	250	70	70	250	70	70	10/25	100,000
Exceeding Major Source Thresholds?	No	No	No	No	No	No	No	No

1. HAPs from the storage tank were considered, but are below the reasonable reporting threshold suggested by UDAQ (i.e., <1.00E-03 tpy), and are therefore considered negligible.

2. Modeling Limit is stated in UDAQ Emissions Impact Assessment Guidelines under Table 1: Total Controlled Emission Rates for New Sources.

3. Major source thresholds defined by 40 CFR section 51.165(a)(1)(iv)(A).

4. Total HAP Threshold is stated in 40 CFR Section 63.2 under definition of a Major Source.

5. 100,000 tons CO_{2e} threshold is for "anyways" sources that are already major source for another pollutant in this table.

Table B-8. Emission Factors for Crushing, Screening, & Material Handling

Source ^{1,2}		Emission Factor (lb/ton)	
		PM ₁₀	PM _{2.5}
Primary Crushing	Controlled	5.40E-04	1.58E-04
Secondary Crushing	Controlled	5.40E-04	1.58E-04
Screening	Controlled	7.40E-04	5.00E-04
Conveyor Transfer	Controlled	4.60E-05	1.40E-05

1. Emission factors per EPA Potential to Emit Calculator for Stone Quarrying, Crushing, and Screening Plants last updated November 2013 and AP-42 11.19.2, "controlled".

2. PM_{2.5} emission factors assumed to be 29.2% of PM₁₀ based on SCAQMD's Updated CEIDARS

Table B-9. Annual Aggregate Processed

Equipment / Activity	Source Description	Number of Units or Drop Points	Throughput Percent (%)	Percent Recycled (%)	Potential Annual Throughput (tpy)	Controls ¹	Emission Factor (lb/ton)		Daily PTE Emissions (lb/day)		Annual PTE Emissions (tpy) ¹	
							PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}
Primary Crushing	Primary Crusher (Jaw Crusher)	1	100%		1,000,000	Wet Suppression	5.40E-04	1.58E-04	2.30	0.67	0.27	7.88E-02
Secondary Crushing	Secondary Crusher (Cone Crusher)	1	100%	0%	1,000,000	Wet Suppression	5.40E-04	1.58E-04	2.30	0.67	0.27	7.88E-02
Conveyor Transfer	Jaw Crusher to 3 Deck Screen Drop	1	100%	0%	1,000,000	Wet Suppression	4.60E-05	1.40E-05	0.20	5.97E-02	2.30E-02	7.00E-03
Screening	3 Deck Screen	1	100%	0%	1,000,000	Wet Suppression	7.40E-04	5.00E-04	3.15	2.13E+00	3.70E-01	0.25
Conveyor Transfer	3 Deck Screen to Cone Crusher Drop	1	100%	0%	1,000,000	Wet Suppression	4.60E-05	1.40E-05	0.20	5.97E-02	2.30E-02	7.00E-03
Conveyor Transfer	3 Deck Screen to Conveyor Drop	1	100%	0%	1,000,000	Wet Suppression	4.60E-05	1.40E-05	0.20	5.97E-02	2.30E-02	7.00E-03
Conveyor Transfer	Cone Crusher to 3 Deck Screen Recycle Drop	1	100%	0%	1,000,000	Wet Suppression	4.60E-05	1.40E-05	0.20	5.97E-02	2.30E-02	7.00E-03
Total Emissions:									8.54	3.71	1.00	0.44

¹ Water application will be used to control PM emissions on strategic transfer points throughout the crushing and screening operations.

Table B-10. Dozing and Loading Emissions

Source	Annual Emissions (tpy)	
	PM ₁₀	PM _{2.5}
Bulldozing Operations	0.63	0.19
Loading Operations	0.68	0.02
Total Loading and Drop Emissions	0.70	0.65

Table B-11. Dozing Emissions

Vehicle Type	Maximum Annual Operating Hours (hr/yr)	Quantity	Emission Factor ¹ (lb/hr)		Control Efficiency (%)	Daily Emissions (lb/day)		Annual Emissions (tpy)	
			PM ₁₀	PM _{2.5}		PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}
Bulldozers	2,903	1	0.43	0.13	0%	5.33	1.63	0.63	0.19
Total Dozing Emissions:						5.33	1.63	0.63	0.19

1. Emissions for the bulldozer were characterized using AP-42, Section 11.9 (October 1998), Table 11.9-1 and Table 11.9-3

where:

$$TSP = \frac{5.7(s)^{1.2}}{(M)^{1.3}}$$

$$PM_{15} = \frac{1.0(s)^{1.5}}{(M)^{1.4}}$$

Sil content s = 0.3 Percent (%) per AP-42 11.9.
 Moisture content M = 0.5 Material moisture content (%) per AP-42 11.9.
 Aerodynamic factor k = TSP

	PM ₁₀	PM _{2.5}
0.74	0.36	0.11

Scaling factors use Mojave Desert AQMD

Table B-12. Aggregate Handling and Storage Piles (stockpile erosion, loading and load out of aggregate)

Emission Activity	Potential Total Annual Throughput (tpy)	Uncontrolled Emission Factor ¹ (lb/ton)		Control Efficiency (%)	Daily Emissions (lb/day)		Annual Emissions (tpy)	
		PM ₁₀	PM _{2.5}		PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}
Loader to Jaw Crusher 1	1,100,000	1.36E-03	3.98E-05	0%	6.39	0.19	0.75	0.02
Loader to Haul Trucks (Product)	1,000,000	1.36E-03	3.98E-05	0%	5.81	0.17	0.68	0.02
Total Loading Emissions					5.81	0.17	0.68	0.02

1. Uncontrolled emission factors using the "drop equation" contained in U.S. EPA AP-42, Section 13.2.4 (Aggregate Handling and Storage Piles), November 2006:

$$E = k(0.0032) \frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$

E = Emission factor
 where:

	PM	PM ₁₀	PM _{2.5}	
k =	0.74	0.35	0.010	Particle size multiplier (dimensionless)
U =	9.00	Mean wind speed (mph) is given per UDAQ's Average Annual Wind Speed map, November 2000.		
M =	3.00	Material moisture content (%) previously recommended by UDAQ.		

Table B-13. Blasting and Drilling Area

Maximum Annual Blast Frequency (blasts/yr)	Maximum Annual Area Blasted (ft ² /yr)	Maximum Daily Blast Area (ft ² /blast)
12	94,675	7,890

Table B-14. Drilling, Blasting, and Disturbed Ground Emission Factors

Source Description	Source Activity	Throughput	Units	Emission Factor ^{1,2,3,4,5,6,7}											
				PM		PM ₁₀		PM _{2.5}		SO ₂		NO _x		CO	
				Value	Units	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
Blasting	ANFO	123	(tpy)	9.81	(lb/blast)	5.10	(lb/blast)	0.29	(lb/blast)	0.0036	(lb/ton)	1.80	(lb/ton)	40.64	(lb/ton)
Drilling	Annual # of Drill Holes	48	(holes/blast)	1.30	(lb/hole)	0.68	(lb/hole)	3.90E-02	(lb/hole)	-	(lb/ton)	-	(lb/ton)	-	(lb/ton)
Disturbed Ground	Mine Area	10	Acres	0.38	(tons/acre yr)	0.75	(lb PM10/lb PM)	1.05E-01	(lb PM2.5/ lb PM)	N/A	N/A	N/A	N/A	N/A	N/A

¹Blasting PM emission factors retrieved from AP-42 11.9, Table 11.9-1. Using the equation below the horizontal area blasted (A) is assumed to be the average daily Blast Area.

A = horizontal area (ft²), with blasting depth ≤ 70 ft

$$0.000014(A)^{1.5}$$

Scaling factors were applied to PM₁₅ and TSP emission factors to calculate PM₁₀ and PM_{2.5} emission factors respectively per Table 11.9-1:

$$PM_{10}: 0.52$$

$$PM_{2.5}: 0.03$$

As there is not data for the PM₁₅ emission factor equation, PM₁₅ is conservatively assumed to be equal to TSP.

²Drilling PM emission factor is retrieved from AP-42 11.9, Table 11.9-4, where the drilling PM emission factor is for overburden material for conservatism. The coal PM emission factor is lower and may be appropriate for some drilling operations.

Since no emission factors are provided for PM₁₀ and PM_{2.5} drilling operations, emission factors were calculated using the PM₁₀ and PM_{2.5} to TSP ratios for blasting overburden per AP-42 11.9, Table 11.9-1, where:

$$PM_{10} = PM_{15} * 0.52$$

$$PM_{2.5} = TSP * 0.03$$

³Blasting SO₂ emission factor developed using a mass balance assuming 6% fuel oil mixture with 500 ppm sulfur content, consistent with EPA non-road standards.

⁴Blasting NO_x and CO emission factors retrieved from ANFO blasting agent factor from AP-42 13.3-1.

⁶Blast and drilling quantities provided per design basis.

⁷Disturbed Ground Emissions Factor from "Wind Erosion of Exposed Areas" per AP-42 Table 11.9-4, with Scaling factors based on Bulldozing Overburden per Table 11.9-1

Table B-15. Drilling, Blasting, and Disturbed Ground Emissions

Source Description	Control Efficiency ¹ (%)	Max Daily Emissions (lbs/day) ^{2,3,6}						Annual Emissions (tpy) ^{5,6,7}					
		PM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	PM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO
Blasting	0%	9.81	5.10	0.29	0.04	18.41	415.64	0.06	0.03	1.77E-03	2.21E-04	0.11	2.49
Drilling	88.8%	6.99	3.63	0.21	--	--	--	0.04	0.02	1.26E-03	--	--	--
Disturbed Ground	0%	20.82	15.62	2.19	--	--	--	--	--	--	--	--	--
Total Emissions:		16.80	8.74	0.50	0.04	18.41	415.64	0.10	0.05	3.02E-03	0.00	0.11	2.49

¹Drilling operations will be controlled through wet-drilling. NIOSH reports 86-97% control efficiency for controlling fugitive emissions via wet-drilling (per NIOSH's Dust Control Handbook for Industrial Minerals Mining and Processing, 2012). Granite contracts a drilling company that implements wet-drilling control technologies to reduce fugitive drilling emissions but used the an average control factor of 88.8%.

²Daily Blasting PM Emissions (lb/day) = Emission Factor (lbs/day) as only one blast is allowed per day.

³SO₂, NO_x, & CO Daily Blasting Emissions (lb/day) = Emission Factor (lb/ton) * Annual ANFO Throughput (tpy) / Annual Blasts (blasts/yr)

⁴Daily PM Drilling Emissions (lb/day) = Emission Factor (lb/hole) * Drill Holes/yr / Expected Working Days/Year

⁵SO₂, NO_x, & CO Annual Blasting Emissions (tpy) = Emission Factor (lbs/ton) * Annual ANFO Throughput (tpy) * 1 ton/2000 lbs

⁶Annual Blasting PM Emissions (tpy) = Emission Factor (lb/blast) * blasts/yr * 1 ton/2000 lbs

⁷Annual PM Drilling Emissions (tpy) = Emission Factor (lb/hole) * Drill Holes/yr * 1 ton/2000 lb

Table B-16. Roads Emissions - PTE Emissions

Road Source	Controlled Emissions			
	Daily Emissions (lb/day) ¹		Annual Emissions (tpy) ¹	
	PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}
Unpaved, Chemical Application (Trucks)	19.80	4.20	1.68	0.36
Paved, Watered, Vacuum Swept (Trucks)	7.42	1.57E+00	0.63	1.34E-01
Total	27.22	5.77	2.31	0.49

¹ Daily and annual controlled emissions are calculated by applying the controlled emission factor (per UDAQ's control efficiencies) to the vehicular miles traveled per day (paved and unpaved).

Daily Emissions (lb/day) = Miles Travelled per Day (VMT/day) * Uncontrolled Emission Factor (lb/VMT) * (1 - η)

Annual Emissions (tpy) = Miles Travelled per Day (VMT/yr) * Uncontrolled Emission Factor (lb/VMT) * (1 - η)

Table B-17. Roads Emissions - Traveling Parameters (Supporting Operations)

Road Source	Product Throughput		Mean Vehicle Weights (tons) ¹		Vehicle Haul Capacity	Hauls/Year	Hauls/Day	Total Travel Distance per Haul (miles/haul)		Total Vehicle Miles Traveled			
			Empty Vehicle	Loaded Vehicle				Daily (VMT/day)		Annual (VMT/yr)			
	(tpy)	(ton/hr)	(tons)	(tons)	(tons/haul)	Unpaved	Paved	Unpaved	Paved	Unpaved	Paved		
Haul Trucks	1,100,000	248	20.00	65.00	42.5	24,445	144	0.22	0.33	31.68	47.52	5,378	8,067

¹ Vehicle weights provided by Granite Construction.

Annual Days Vehicles Operate: 235

Table B-18. Roads Emissions - Emission Factors

Road Surface	Controls ¹	Control Efficiency (%)	Vehicle Emission Factors ^{1,2} (lb/VMT)	
			PM ₁₀	PM _{2.5}
Unpaved	Granite I-80 Specific Factor	80%	0.62	0.13
Paved	Granite I-80 Specific Factor	95%	0.1562	0.0331

¹ Emission controls for vehicular traffic on paved and unpaved roads per UDAQ guidelines: Emission Factors for Paved and Unpaved Haul Roads, January 2015, in conjunction with U.S. EPA AP-42 Section 13.2.2, November 2006.

$$E = k (s/12)^a (W/3)^b$$

where

E = Size-specific emission factor (lb/VMT)

k, a, b = Constants for equation 1a

	PM	PM ₁₀	PM _{2.5}
k =	1.8	1.5	0.15
a =	0.7	0.9	0.9
b =	0.45	0.45	0.45

s = surface material silt content (%)

s = 4.8 Per UDAQ guidance given in Emission Factors for Paved and Unpaved Haul Roads, January 2015.

W_{HT} = 42.5 Mean weight of all haul trucks (tons), per UDAQ guidance given in Emission Factors for Paved and Unpaved Haul Roads, January 2015.

² PM_{2.5} emissions are 21.2% of PM₁₀ for unpaved roads (SCAQMD Updated CEIDARS Table)

Table B-19. Engine Parameters

Parameter	Jaw Crusher Generator	Screen Generator	Cone Crusher Generator
Engine Horsepower (hp)	260	175	440
Operating Hours per Day (hr/day)	14	14	14
Operating Hours per Year (hr/yr)	3285	3285	3285
Annual Activity (hp-hr/yr)	854100	574875	1445400
Max Hourly Fuel Use (gallon/hr)	14	9	23
Average Hourly Fuel Use (gallon/hr)	10	7	17
Max Annual Fuel Use (gallon/yr)	44462	29926	75243
Heating Value of Diesel (MMBtu/hr) ²	0.887	0.597	1.501
Fuel Type	Diesel	Diesel	Diesel
Fuel Sulfur Content (%) ³	0.0015	0.0015	0.0015

1. Per generator performance data sheets.

2. Per 40 CFR 98, Table C-1 to Subpart C for Distillate Fuel Oil No. 2

3. From EPA, "Diesel Fuel Standards and Rulemakings", <https://www.epa.gov/diesel-fuel-standards/diesel-fuel-standards-and-rulemakings>.

Assumes the following value for lb fuel/hp-hr: 0.367 per OFFROAD2011 Model

Assumes the following density for diesel in lb fuel/gallon: 7.05 per AP-42 Appendix A

Assumes the following engine load factor 0.74 per CalEEMod Appendix D Table 3.3

Table B-20. Criteria Pollutant and GHG Engine Emission Factors

Pollutant	Emission Factor	Emission Factor Units
CO ¹	5.76E-03	lb/hp-hr
NO _x ¹	6.58E-04	lb/hp-hr
PM ₁₀ ¹	3.29E-05	lb/hp-hr
PM _{2.5} ¹	1.76E-05	lb/hp-hr
VOC ¹	3.13E-04	lb/hp-hr
SO ₂ ²	1.21E-05	lb/hp-hr
CO ₂ ³	163.1	lb/MMBtu
CH ₄ ⁴	6.61E-03	lb/MMBtu
N ₂ O ⁴	1.32E-03	lb/MMBtu
CO ₂ e ⁵	1.64E+02	lb/MMBtu

1. EPA Tier 4 Final emission factors assuming NO_x = 0.4 g/kW-hr, CO = 3.5 g/Kw-hr, PM = 0.02 g/KW-hr, VOC = 0.19 g/Kw-hr

2. Per AP-42, Table 3.3-1, for Diesel Fuel 8.09E-3 x 0.0015% Sulfur

3. Per 40 CFR 98, Table C-1 to Subpart C for Distillate Fuel Oil No. 2

4. Per 40 CFR 98, Table C-2 to Subpart C for Petroleum Products CH₄ = 3.0E-3, NO₂ = 6.0E-4.

5. The CO₂ equivalent factor is the sum of the factors for CO₂, CH₄, and N₂O multiplied by their respective global warming potentials (GWPs), per 40 CFR 98, Table A-1 to Subpart A, Global Warming Potentials

Table B-21. Criteria Pollutant and GHG Max Potential to Emit

Pollutant	Jaw Crusher		Screen		Cone Crusher		Total	
	(lb/day)	(tpy)	(lb/day)	(tpy)	(lb/day)	(tpy)	(lb/day)	(tpy)
CO	20.96	2.46	14.11	1.66	35.47	4.16	70.54	8.28
NO _x	2.40	0.28	1.61	0.19	4.05	0.48	8.06	0.95
PM ₁₀	0.12	0.01	0.08	0.01	0.20	0.02	0.40	0.05
PM _{2.5}	0.06	0.01	0.04	0.01	0.11	0.01	0.22	0.03
VOC	1.14	0.13	0.77	0.09	1.93	0.23	3.83	0.45
SO ₂	0.04	0.01	0.03	0.00	0.07	0.01	0.15	0.02
CO ₂	5.94E+05	6.96E+04	3.99E+05	4.69E+04	1.00E+06	1.18E+05	1997410	234339
CH ₄	24.07	2.82	16.20	1.90	40.74	4.78	81.02	9.51
N ₂ O	4.81	0.56	3.24	0.38	8.15	0.96	16.20	1.90
CO ₂ e	595552.86	69871.11	400852.88	47028.63	1007858.68	118243.42	2004264.42	235143.17

Table B-22 Engine HAPs Emissions

Pollutant	Emission Factor (lb/MMBtu) ¹	Jaw Crusher		Screen		Cone Crusher	
		(lb/day) ²	(tpy) ³	(lb/day)	(tpy)	(lb/day)	(tpy)
Benzene	9.33E-04	1.16E-02	1.36E-03	7.80E-03	9.15E-04	1.96E-02	2.30E-03
Toluene	4.09E-04	5.08E-03	5.96E-04	3.42E-03	4.01E-04	8.60E-03	1.01E-03
Xylenes	2.85E-04	3.54E-03	4.15E-04	2.38E-03	2.80E-04	5.99E-03	7.03E-04
Propylene	2.58E-03	3.20E-02	3.76E-03	2.16E-02	2.53E-03	5.42E-02	6.36E-03
Formaldehyde	1.18E-03	1.47E-02	1.72E-03	9.86E-03	1.16E-03	2.48E-02	2.91E-03
Acetaldehyde	7.67E-04	9.53E-03	1.12E-03	6.41E-03	7.52E-04	1.61E-02	1.89E-03
Acrolein	9.25E-05	1.15E-03	1.35E-04	7.73E-04	9.07E-05	1.94E-03	2.28E-04
Naphthalene	8.48E-05	1.05E-03	1.24E-04	7.09E-04	8.32E-05	1.78E-03	2.09E-04
Max HAP (Propylene)		3.20E-02	3.76E-03	2.16E-02	2.53E-03	5.42E-02	6.36E-03
Total HAPs		7.86E-02	9.23E-03	5.29E-02	6.21E-03	1.33E-01	1.56E-02

1. Emission factors from AP-42 Section 3.3, Table 3.3-2.

2. Emission rate (lb/day) = (Fuel Consumption Rate (gal/hr) * Diesel Heating Value (MMBtu/gal) * Engine Load Factor) * Emission Factor (lb/MMBtu) * Operating Hours per Day (hr/day)

3. Emission rate (tpy) = (Fuel Consumption Rate (gal/hr) * Diesel Heating Value (MMBtu/gal) * Engine Load Factor) * Emission Factor (lb/MMBtu) * Operating Hours per Year (hr/yr) / 2000 lb/ton

Table B-23. Storage Tanks

1	Configuration ¹	Quantity	Capacity (gal)	Contents	Annual Throughput (gal/yr)	Total VOC Emissions ² (tpy)
Fuel Storage Tank	HFR	1	10,000	No. 2 Fuel Oil	600,000	5.70E-03
Total VOC Emissions						5.70E-03

1. HFR = Horizontal Fixed Roof

VFR = Vertical Fixed Roof

2. Tank emissions calculated per AP-42 7.1 *Organic Liquid Storage Tanks*.

Table B-24. Operating Parameters

Description	Value	Unit
Potential Daily Operating Hours	24	(hr/day)
Annual Operating Days for Max Day Calculation*	235	(day/yr)
Maximum Hourly Throughput	225	(tph)
Haulage Hourly Throughput	248	(tph)
Project Throughput	1,000,000	(tpy)

*Represents number of days over which annual emissions will be divided in determination of the max day

Table B-25. Equipment List

Type of Equipment / Activities	Number of Units or Drop Points	Throughput Percent	Maximum Hourly Limit	Potential Annual Throughput	Potential Total Annual Throughput
		(%)	(tph)	(tpy/unit)	(tpy)
Primary Crusher (Jaw Crusher)	1	100.00%	225	1,000,000	1,000,000
Secondary Crusher (Cone Crusher)	1	100.00%	225	1,000,000	1,000,000
Tertiary Crusher (VSI)	1	100.00%	225	1,000,000	1,000,000
Loader to Jaw Crusher ¹	1	100.00%	225	1,100,000	1,100,000
Jaw Crusher to 3 Deck Screen Drop	1	100.00%	225	1,000,000	1,000,000
3 Deck Screen	1	100.00%	225	1,000,000	1,000,000
3 Deck Screen to Cone Crusher Drop	1	100.00%	225	1,000,000	1,000,000
3 Deck Screen to Conveyor Drop	1	100.00%	225	1,000,000	1,000,000
Cone Crusher to 3 Deck Screen Recycle Drop	1	100.00%	225	1,000,000	1,000,000
Conveyer to Pile Drop	1	100.00%	225	1,000,000	1,000,000
Loader to Haul Trucks (Product)	1	100.00%	225	1,000,000	1,000,000
Drilling Operations	1	100.00%	45000	540,000	540,000

¹ It is assumed that 10% of the aggregate loaded to the jaw crusher is lost through, mining, grizzly and/or particulate emissions.

Table B-26. Supporting Equipment

Type of Equipment	Quantity	Maximum Annual Operating Hours
		(hr/yr/unit)
Bulldozers	1	2,903

permitted for 500

Table B-27. Roads

Parameter ¹	Quantity	Unit
Unpaved Road through Stockpile Area	0.22	(miles)
Paved Road to Property Boundary	0.46	(miles)
Empty Aggregate Haul Trucks	20.00	(tons)
Loaded Aggregate Haul Trucks	65.00	(tons)

1. All haul and tram route distances are given as roundtrip distances.

Table B-28. Tanks/Silos

Type of Equipment	Configuration ¹	Capacity (gal)	Contents	Annual Throughput	Units
Fuel Storage Tank	HFR	10,000	No. 2 Fuel Oil	600,000	(gal/yr)

1. HFR = Horizontal Fixed Roof

**Density (lb/gal) of No. 2 fuel oil, per AP-42 Section 1.3: 7.05

Table B-29. Drilling and Blasting

Parameter	Blasting	Units	Drilling	Units
Daily Maximum Frequency	1	(blast/day)	48	(holes/blast)
Annual Maximum Frequency	12	(blasts/yr)	576	(holes/yr)
Annual Maximum Area	94,675	(ft ² /yr)	--	--
Daily Maximum Area	7,890	(ft ² /day)	--	--
ANFO Usage	20,455	(lbs/blast)	--	--
Maximum Annual ANFO Usage	123	(tpy)	--	--
ANFO Heat Content	912	(cal/g)	--	--

Table B-30. Annual Potential Emissions Increase Summary

Process	Annual Emission Rates (tpy)							
	PM ₁₀ (fugitive)	PM _{2.5}	NO _x	CO	SO ₂	VOC	Total HAP	CO _{2e}
Crushing and Screening Operations	1.00	0.38	--	--	--	--	--	--
Bulldozing & Loading Operations	1.31	0.21	--	--	--	--	--	--
Drilling & Blasting	0.05	3.02E-03	0.11	2.49	2.21E-04	--	--	--
Roads	2.56	0.54	--	--	--	--	--	--
Engines	0.05	0.02	1.08	9.46	0.02	0.51	3.55E-02	268,735
Tanks ¹	--	--	--	--	--	5.70E-03	--	--
Project Total	4.97	1.15	1.19	11.95	0.02	5.19E-01	3.55E-02	268,735
Modeling Limit ²	5	--	40	100	40	--	10/25	--
Modeling Required?	No	No	No	No	No	No	No	No
Major Source Thresholds ^{3,4,5}	250	70	70	250	70	70	10/25	100,000
Exceeding Major Source Thresholds?	No	No	No	No	No	No	No	No

1. HAPs from the storage tank were considered, but are below the reasonable reporting threshold suggested by UDAQ (i.e., <1.00E-03 tpy), and are therefore considered negligible.

2. Modeling Limit is stated in UDAQ Emissions Impact Assessment Guidelines under Table 1: Total Controlled Emission Rates for New Sources.

3. Major source thresholds defined by 40 CFR section 51.165(a)(1)(iv)(A).

4. Total HAP Threshold is stated in 40 CFR Section 63.2 under definition of a Major Source.

5. 100,000 tons CO_{2e} threshold is for "anyways" sources that are already major source for another pollutant in this table.

Table B-31. Emission Factors for Crushing, Screening, & Material Handling

Source ^{1,2}		Emission Factor (lb/ton)		AP-42 Table Reference
		PM ₁₀	PM _{2.5}	
Primary Crushing	Controlled	5.40E-04	1.00E-04	AP-42 Table 11.19.2-2
Secondary Crushing	Controlled	5.40E-04	1.00E-04	AP-42 Table 11.19.2-2
Screening	Controlled	7.40E-04	5.00E-04	AP-42 Table 11.19.2-2
Conveyor Transfer	Controlled	4.60E-05	1.40E-05	AP-42 Table 11.19.2-2

1. Emission factors per EPA Potential to Emit Calculator for Stone Quarrying, Crushing, and Screening Plants last updated November 2013 and AP-42 11.19.2,

2. PM_{2.5} emission factors assumed to be 29.2% of PM₁₀ based on SCAQMD's Updated CEIDARS

Table B-32. Annual Aggregate Processed

Equipment / Activity	Source Description	Number of Units or Drop Points	Throughput Percent (%)	Potential Annual Throughput (tpy)	Controls ¹	Emission Factor (lb/ton)		Daily PTE Emissions (lb/day)		Annual PTE Emissions (tpy) ¹	
						PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}
Primary Crushing	Primary Crusher (Jaw Crusher)	1	100%	1,000,000	Wet Suppression	5.40E-04	1.00E-04	2.30	0.43	0.27	5.00E-02
Secondary Crushing	Secondary Crusher (Cone Crusher)	1	100%	1,000,000	Wet Suppression	5.40E-04	1.00E-04	2.30	0.43	0.27	5.00E-02
Conveyor Transfer	Jaw Crusher to 3 Deck Screen Drop	1	100%	1,000,000	Wet Suppression	4.60E-05	1.40E-05	0.20	5.97E-02	2.30E-02	7.00E-03
Screening	3 Deck Screen	1	100%	1,000,000	Wet Suppression	7.40E-04	5.00E-04	3.15	2.13	0.37	0.25
Conveyor Transfer	3 Deck Screen to Cone Crusher Drop	1	100%	1,000,000	Wet Suppression	4.60E-05	1.40E-05	0.20	0.06	0.02	0.01
Conveyor Transfer	3 Deck Screen to Conveyor Drop	1	100%	1,000,000	Wet Suppression	4.60E-05	1.40E-05	0.20	5.97E-02	2.30E-02	7.00E-03
Conveyor Transfer	Cone Crusher to 3 Deck Screen Recycle Drop	1	100%	1,000,000	Wet Suppression	4.60E-05	1.40E-05	0.20	5.97E-02	2.30E-02	7.00E-03
Total Emissions:								8.54	3.22	1.00	0.38

¹ Water application will be used to control PM emissions on strategic transfer points throughout the crushing and screening operations.

Table B-33. Dozing and Loading Emissions

Source	Annual Emissions (tpy)	
	PM ₁₀	PM _{2.5}
Bulldozing Operations	0.63	0.19
Loading Operations	0.68	0.02
Total Loading and Drop Emissions	0.70	0.65

Table B-34. Dozing Emissions

Vehicle Type	Maximum Annual Operating Hours (hr/yr)	Quantity	Emission Factor ¹ (lb/hr)		Control Efficiency (%)	Daily Emissions (lb/day)		Annual Emissions (tpy)	
			PM ₁₀	PM _{2.5}		PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}
Bulldozers	2,903	1	0.43	0.13	0%	5.33	1.63	0.63	0.19
Total Dozing Emissions:						5.33	1.63	0.63	0.19

1. Emissions for the bulldozer were characterized using AP-42, Section 11.9 (October 1998), Table 11.9-1 and Table 11.9-3

where:

Sil content s = 0.3 Percent (%) per AP-42 11.9.
 Moisture content M = 0.5 Material moisture content (%) per AP-42 11.9.
 Aerodynamic factor k = TSP PM₁₀ PM_{2.5}
 0.74 0.36 0.11

Scaling factors use Mojave Desert AQMD

Table B-35. Aggregate Handling and Storage Piles (stockpile erosion, loading and load out of aggregate)

Emission Activity	Potential Total Annual Throughput (tpy)	Uncontrolled Emission Factor ¹ (lb/ton)		Control Efficiency (%)	Daily Emissions (lb/day)		Annual Emissions (tpy)	
		PM ₁₀	PM _{2.5}		PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}
Loader to Jaw Crusher 1	1,100,000	1.36E-03	3.98E-05	0%	6.39	0.19	0.75	0.02
Loader to Haul Trucks (Product)	1,000,000	1.36E-03	3.98E-05	0%	5.81	0.17	0.68	0.02
Total Loading Emissions					5.81	0.17	0.68	0.02

1. Uncontrolled emission factors using the "drop equation" contained in U.S. EPA AP-42, Section 13.2.4 (Aggregate Handling and Storage Piles), November 2006:

$$E = k(0.0032) \left(\frac{U}{5}\right)^{1.3} \left(\frac{M}{2}\right)^{1.4}$$

E = Emission factor
 where:

k =	PM	PM ₁₀	PM _{2.5}	Particle size multiplier (dimensionless)
	0.74	0.35	0.010	
U =	9.00	Mean wind speed (mph) is given per UDAQ's Average Annual Wind Speed map, November 2000.		
M =	3.00	Material moisture content (%) previously recommended by UDAQ.		

Table B-36. Blasting and Drilling Area

Maximum Annual Blast Frequency (blasts/yr)	Maximum Annual Area Blasted (ft ² /yr)	Maximum Daily Blast Area (ft ² /blast)
12	94,675	7,890

Table B-37. Drilling, Blasting, and Disturbed Ground Emission Factors

Source Description	Source Activity	Throughput	Units	Emission Factor ^{1,2,3,4,5,6,7}											
				PM		PM ₁₀		PM _{2.5}		SO ₂		NO _x		CO	
				Value	Units	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units
Blasting	ANFO	123	(tpy)	9.81	(lb/blast)	5.10	(lb/blast)	0.29	(lb/blast)	0.0036	(lb/ton)	1.80	(lb/ton)	40.64	(lb/ton)
Drilling	Annual # of Drill Holes	48	(holes/blast)	1.30	(lb/hole)	0.68	(lb/hole)	3.90E-02	(lb/hole)	-	(lb/ton)	-	(lb/ton)	-	(lb/ton)
Disturbed Ground	Mine Area	10	Acres	0.38	(tons/acre yr)	0.75	(lb PM10/lb PM)	1.05E-01	(lb PM2.5/lb PM)	N/A	N/A	N/A	N/A	N/A	N/A

¹Blasting PM emission factors retrieved from AP-42 11.9, Table 11.9-1. Using the equation below the horizontal area blasted (A) is assumed to be the average daily Blast Area.

A = horizontal area (ft²), with blasting depth ≤ 70 ft

$$0.000014(A)^{1.5}$$

Scaling factors were applied to PM₁₅ and TSP emission factors to calculate PM₁₀ and PM_{2.5} emission factors respectively per Table 11.9-1:

$$PM_{10}: 0.52$$

$$PM_{2.5}: 0.03$$

As there is not data for the PM₁₅ emission factor equation, PM₁₅ is conservatively assumed to be equal to TSP.

²Drilling PM emission factor is retrieved from AP-42 11.9, Table 11.9-4, where the drilling PM emission factor is for overburden material for conservatism. The coal PM emission factor is lower and may be appropriate for some drilling operations.

Since no emission factors are provided for PM₁₀ and PM_{2.5} drilling operations, emission factors were calculated using the PM₁₀ and PM_{2.5} to TSP ratios for blasting overburden per AP-42 11.9, Table 11.9-1, where:

$$PM_{10} = PM_{15} * 0.52$$

$$PM_{2.5} = TSP * 0.03$$

³Blasting SO₂ emission factor developed using a mass balance assuming 6% fuel oil mixture with 500 ppm sulfur content, consistent with EPA non-road standards.

⁴Blasting NO_x and CO emission factors retrieved from ANFO blasting agent factor from AP-42 13.3-1.

⁶Blast and drilling quantities provided per design basis.

⁷Disturbed Ground Emissions Factor from "Wind Erosion of Exposed Areas" per AP-42 Table 11.9-4, with Scaling factors based on Bulldozing Overburden per Table 11.9-1

Table B-38. Drilling, Blasting, and Disturbed Ground Emissions

Source Description	Control Efficiency ¹ (%)	Max Daily Emissions (lbs/day) ^{2,3,6}						Annual Emissions (tpy) ^{5,6,7}					
		PM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	PM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO
Blasting	0%	9.81	5.10	0.29	0.04	18.41	415.64	0.06	0.03	1.77E-03	2.21E-04	0.11	2.49
Drilling	88.8%	6.99	3.63	0.21	--	--	--	0.04	0.02	1.26E-03	--	--	--
Disturbed Ground	0%	20.82	15.62	2.19	--	--	--	--	--	--	--	--	--
Total Annual Emissions:		16.80	8.74	0.50	0.04	18.41	415.64	0.10	0.05	3.02E-03	2.21E-04	0.11	2.49

¹Drilling operations will be controlled through wet-drilling. NIOSH reports 96% control efficiency for controlling fugitive emissions via wet-drilling (per NIOSH's Dust Control Handbook for Industrial Minerals Mining and Processing, 2012). Granite contracts a drilling company that implements wet-drilling control technologies to reduce fugitive drilling emissions but used the an average control factor of 88.8%.

²Daily Blasting PM Emissions (lb/day) = Emission Factor (lbs/day) as only one blast is allowed per day.

³SO₂, NO_x, & CO Daily Blasting Emissions (lb/day) = Emission Factor (lb/ton) * Annual ANFO Throughput (tpy) / Annual Blasts (blasts/yr)

⁴Daily PM Drilling Emissions (lb/day) = Emission Factor (lb/hole) * Drill Holes/yr / Expected Working Days/Year

⁵SO₂, NO_x, & CO Annual Blasting Emissions (tpy) = Emission Factor (lbs/ton) * Annual ANFO Throughput (tpy) * 1 ton/2000 lbs

⁶Annual Blasting PM Emissions (tpy) = Emission Factor (lb/blast) * blasts/yr * 1 ton/2000 lbs

⁷Annual PM Drilling Emissions (tpy) = Emission Factor (lb/hole) * Drill Holes/yr * 1 ton/2000 lb

Table B-39. Roads Emissions - PTE Emissions

Road Source	Controlled Emissions			
	Daily Emissions (lb/day) ¹		Annual Emissions (tpy) ¹	
	PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}
Unpaved, Chemical Application (Trucks)	19.80	4.20	1.68	0.36
Paved, Watered, Vacuum Swept (Trucks)	10.35	2.19	0.88	1.86E-01
Total	30.15	6.39	2.56	0.54

¹ Daily and annual controlled emissions are calculated by applying the controlled emission factor (per UDAQ's control efficiencies) to the vehicular miles traveled per day (paved and unpaved).

Daily Emissions (lb/day) = Miles Travelled per Day (VMT/day) * Uncontrolled Emission Factor (lb/VMT) * (1 - η)

Annual Emissions (tpy) = Miles Travelled per Day (VMT/yr) * Uncontrolled Emission Factor (lb/VMT) * (1 - η)

Table B-40. Roads Emissions - Traveling Parameters (Supporting Operations)

Road Source	Product Throughput		Mean Vehicle Weights (tons) ¹		Vehicle Haul Capacity	Hauls/Year	Hauls/Day	Total Travel Distance per Haul (miles/haul)		Total Vehicle Miles Traveled			
			Empty Vehicle	Loaded Vehicle				Daily (VMT/day)		Annual (VMT/yr)			
	(tpy)	(ton/hr)	(tons)	(tons)	(tons/haul)	Unpaved	Paved	Unpaved	Paved	Unpaved	Paved		
Haul Trucks	1,100,000	248	20.00	65.00	42.5	24445	144	0.22	0.46	31.68	66.24	5,378	11,245

¹ Vehicle weights provided by Granite Construction.

Annual Days Vehicles Operate: 235

Table B-41. Roads Emissions - Emission Factors

Road Surface	Controls ¹	Control Efficiency (%)	Vehicle Emission Factors ^{1,2} (lb/VMT)	
			PM ₁₀	PM _{2.5}
Unpaved	Granite I-80 Specific Factor	80%	0.62	0.13
Paved	Granite I-80 Specific Factor	95%	0.16	0.0331

¹ Emission controls for vehicular traffic on paved and unpaved roads per UDAQ guidelines: Emission Factors for Paved and Unpaved Haul Roads, January 2015, in conjunction with U.S. EPA AP-42 Section 13.2.2, November 2006.

$$E = k (s/12)^a (W/3)^b$$

where

- E = Size-specific emission factor (lb/VMT)
- k, a, b = Constants for equation 1a

	PM	PM ₁₀	PM _{2.5}
k =	1.8	1.5	0.15
a =	0.7	0.9	0.9
b =	0.45	0.45	0.45

- s = surface material silt content (%)

 - s = 4.8 Per UDAQ guidance given in Emission Factors for Paved and Unpaved Haul Roads, January 2015.
 - W_{HT} = 42.5 Mean weight of all haul trucks (tons), per UDAQ guidance given in Emission Factors for Paved and Unpaved Haul Roads, January 2015.

² PM_{2.5} emissions are 21.2% of PM₁₀ for unpaved roads (SCAQMD Updated CEIDARS Table)

Table B-42. Engine Parameters

Parameter	Jaw Crusher Generator	Screen Generator	Cone Crusher Generator
Engine Horsepower (hp)	260	175	440
Operating Hours per Day (hr/day)	16	16	16
Operating Hours per Year (hr/yr)	3754	3754	3754
Annual Activity (hp-hr/yr)	976114	657000	1651886
Max Hourly Fuel Use (gallon/hr)	14	9	23
Average Hourly Fuel Use (gallon/hr)	10	7	17
Max Annual Fuel Use (gallon/yr)	50813	34201	85992
Heating Value of Diesel (MMBtu/hr) ²	0.8872	0.5971	1.5013
Fuel Type	Diesel	Diesel	Diesel
Fuel Sulfur Content (%) ³	0.0015	0.0015	0.0015

1. Per generator performance data sheets.

2. Per 40 CFR 98, Table C-1 to Subpart C for Distillate Fuel Oil No. 2

3. From EPA, "Diesel Fuel Standards and Rulemakings", <https://www.epa.gov/diesel-fuel-standards/diesel-fuel-standards-and-rulemakings>.

Assumes the following value for lb fuel/hp-hr: 0.367 per OFFROAD2011 Model

Assumes the following density for diesel in lb fuel 7.05 per AP-42 Appendix A

Assumes the following engine load factor 0.74 per CalEEMod Appendix D Table 3.3

Table B-43. Criteria Pollutant and GHG Engine Emission Factors

Pollutant	Emission Factor	Emission Factor Units
CO ¹	5.76E-03	lb/hp-hr
NO _x ¹	6.58E-04	lb/hp-hr
PM ₁₀ ¹	3.29E-05	lb/hp-hr
PM _{2.5} ¹	1.76E-05	lb/hp-hr
ROG ¹	3.13E-04	lb/hp-hr
SO ₂ ²	1.21E-05	lb/hp-hr
CO ₂ ³	163.1	lb/MMBtu
CH ₄ ⁴	6.61E-03	lb/MMBtu
N ₂ O ⁴	1.32E-03	lb/MMBtu
CO ₂ e ⁴	1.64E+02	lb/MMBtu

1. EPA Tier 4 Final emission factors assuming NO_x = 0.4 g/kW-hr, CO = 3.5 g/Kw-hr, PM = 0.02 g/KW-hr, VOC = 0.19 g/Kw-hr

2. Per AP-42, Table 3.3-1, for Diesel Fuel 8.09E-3 x 0.0015% Sulfur

3. Per 40 CFR 98, Table C-1 to Subpart C for Distillate Fuel Oil No. 2

4. Per 40 CFR 98, Table C-2 to Subpart C for Petroleum Products CH₄ = 3.0E-3, NO₂ = 6.0E-4.

5. The CO₂ equivalent factor is the sum of the factors for CO₂, CH₄, and N₂O multiplied by their respective global warming potentials (GWPs), per 40 CFR 98, Table A-1 to Subpart A, Global

Table B-44. Criteria Pollutant and GHG Max Potential to Emit

Pollutant	Jaw Crusher		Screen		Cone Crusher		Total	
	(lb/day)	(tpy)	(lb/day)	(tpy)	(lb/day)	(tpy)	(lb/day)	(tpy)
CO	23.95	2.81	16.12	1.89	40.54	4.76	80.62	9.46
NO _x	2.74	0.32	1.84	0.22	4.63	0.54	9.21	1.08
PM ₁₀	0.14	0.02	0.09	0.01	0.23	0.03	0.46	0.05
PM _{2.5}	0.07	0.01	0.05	0.01	0.12	0.01	0.25	0.03
ROG	1.30	0.15	0.88	0.10	2.20	0.26	4.38	0.51
SO ₂	0.05	0.01	0.03	0.00	0.09	0.01	0.17	0.02
CO ₂	678,304	79,580	456,551	53,563	1,147,899	134,673	2282754	267816
CH ₄	27.51	3.23	18.52	2.17	46.56	5.46	92.59	10.86
N ₂ O	5.50	0.65	3.70	0.43	9.31	1.09	18.52	2.17
CO ₂ e	680,632	79,853	458,118	53,747	1,151,838	135,135	2290587.91	268735.05

Table B-45 Engine HAPs Emissions

Pollutant	Emission Factor (lb/MMBtu) ¹	Jaw Crusher		Screen		Cone Crusher	
		(lb/day) ²	(tpy) ³	(lb/day)	(tpy)	(lb/day)	(tpy)
Benzene	9.33E-04	1.32E-02	1.55E-03	8.91E-03	1.05E-03	2.24E-02	2.63E-03
Toluene	4.09E-04	5.81E-03	6.81E-04	3.91E-03	4.58E-04	9.82E-03	1.15E-03
Xylenes	2.85E-04	4.05E-03	4.75E-04	2.72E-03	3.19E-04	6.85E-03	8.03E-04
Propylene	2.58E-03	3.66E-02	4.30E-03	2.46E-02	2.89E-03	6.20E-02	7.27E-03
Formaldehyde	1.18E-03	1.67E-02	1.97E-03	1.13E-02	1.32E-03	2.83E-02	3.33E-03
Acetaldehyde	7.67E-04	1.09E-02	1.28E-03	7.33E-03	8.60E-04	1.84E-02	2.16E-03
Acrolein	9.25E-05	1.31E-03	1.54E-04	8.84E-04	1.04E-04	2.22E-03	2.61E-04
Naphthalene	8.48E-05	1.20E-03	1.41E-04	8.10E-04	9.51E-05	2.04E-03	2.39E-04
Max HAP (Propylene)		3.66E-02	4.30E-03	2.46E-02	2.89E-03	6.20E-02	7.27E-03
Total HAPs		8.99E-02	1.05E-02	6.05E-02	7.10E-03	1.52E-01	1.78E-02

1. Emission factors from AP-42 Section 3.3, Table 3.3-2.

2. Emission rate (lb/day) = (Fuel Consumption Rate (gal/hr) * Diesel Heating Value (MMBtu/gal) * Engine Load Factor) * Emission Factor (lb/MMBtu) * Operating Hours per Day (hr/day)

3. Emission rate (tpy) = (Fuel Consumption Rate (gal/hr) * Diesel Heating Value (MMBtu/gal) * Engine Load Factor) * Emission Factor (lb/MMBtu) * Operating Hours per Year (hr/yr) / 2000 lb/ton

Table B-46. Storage Tanks

1	Configuration ¹	Quantity	Capacity (gal)	Contents	Annual Throughput (gal/yr)	Total VOC Emissions ² (tpy)
Fuel Storage Tank	HFR	1	10,000	No. 2 Fuel Oil	600,000	5.70E-03
Total VOC Emissions						5.70E-03

1. HFR = Horizontal Fixed Roof

VFR = Vertical Fixed Roof

2. Tank emissions calculated per AP-42 7.1 *Organic Liquid Storage Tanks*.

Appendix C. AIR DISPERSION MODELING REPORT

MODELING REPORT
PM₁₀ 24-hour NAAQS / Modeling Report

I-80 South Quarry

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Project: 224502.0006



TABLE OF CONTENTS

1. INTRODUCTION	1-1
1.1 General Information	1-1
1.2 Project Scope	1-1
1.3 Plant Layout.....	1-1
2. AIR DISPERSION MODELING DESCRIPTION	2-1
2.1 Model Selection.....	2-1
2.2 Meteorological Data	2-1
2.3 Terrain Elevations	2-1
2.4 Receptors	2-1
2.5 UTM Coordinate System.....	2-3
2.6 Building Downwash	2-3
3. PM₁₀ SOURCE PARAMETERS AND EMISSION RATES	3-2
3.1 PM ₁₀ Volume Source Parameters and Emission Rates	3-2
3.1.1 Aggregate Material Handling Modeling Parameters and Emission Rates.....	3-4
3.1.2 Stockpile Emissions.....	3-4
3.1.3 Haul Road Modeling Parameters and Emission Rates	3-4
3.1.4 Blasting.....	3-5
3.2 PM ₁₀ Area Source Parameters and Emission Rates.....	3-5
3.2.1 Drilling and Dozing Modeling Parameters.....	3-5
3.2.2 Disturbed Areas and Wind Erosion	3-6
3.3 PM ₁₀ Point Source Parameters and Emission Rates.....	3-6
3.3.1 Combustion Equipment Modeling Parameters and Emission Rates	3-6
4. PM₁₀ MODELING ANALYSIS	1
4.1 Background PM ₁₀ Concentrations	1
4.2 Modeled PM ₁₀ Concentration	2
4.3 24-Hour PM ₁₀ NAAQS Analysis Results	2

1. INTRODUCTION

1.1 General Information

The I-80 South Quarry is proposing to install and operate an aggregates processing plant at the Small Mine Operation (SMO) S/035/0055. Drilling and blasting operations within the mining area will produce ore in a manageable size for transport to the aggregates processing plant feed hopper directly by the machine performing excavation. Bulldozers may be used to strip overburden before blasting and then rip blasted ore to facilitate digging after blasting. Materials produced by the aggregates processing plant will be stockpiled and loaded onto trucks for distribution.

Utah County is currently classified as a nonattainment area of the National Ambient Air Quality Standards (NAAQS) for particulate matter (PM) with an aerodynamic diameter of less than 2.5 microns (PM_{2.5}) and 2015 8-hour ozone; it is in attainment for all other criteria pollutants. Oxides of nitrogen (NO_x), sulfur dioxide (SO₂), volatile organic compounds (VOCs), and ammonia are considered precursors to PM_{2.5} in Utah.

This modeling protocol and report outline the methodology that Granite Construction has used in conducting air dispersion modeling. It also describes the results to demonstrate compliance with the NAAQS for one (1)-hour and annual NO₂ and 24-hour PM₁₀ at the I-80 aggregate quarry. Dispersion modeling has been conducted in accordance with R307-410-3 and 40 Code of Federal Regulations (CFR) Part 51, Appendix W Guideline on Air Quality Models.

1.2 Project Scope

The proposed I-80 aggregate quarry would consist of a quarrying area, transportation of extracted materials via loader and haul trucks, and an aggregate crushing and screening (C&S) operation. The quarry area involves use of mobile equipment as well as blasting to excavate aggregates materials. The C&S operations are comprised of various crushers, screens, conveyors, and stackers, and result in various stockpiles. The C&S operations also utilize portable generators.

Emissions sources included in the 24-hour PM₁₀ modeling analysis of the proposed Facility are as follows:

- ▶ Drilling and Blasting (not concurrent);
- ▶ Dozing;
- ▶ Windblow emissions from stockpiles and disturbed ground;
- ▶ Aggregates transfer points;
- ▶ Processing, including a Jaw Crusher, Screen, and Cone Crusher;
- ▶ Generator engines used to power the Crushers and Screen, and;
- ▶ Onsite Haul Roads.

1.3 Plant Layout

The general facility layout proposed is shown in Figure 3-1 and Figure 3-2. Aggregate is extracted and transferred to the plant facility for crushing. After processing aggregate materials are loaded into haul trucks to be transported off site.

2. AIR DISPERSION MODELING DESCRIPTION

This section describes the air quality dispersion modeling analysis performed to estimate the ambient air impacts of Granite Construction's proposed operation of the aggregate quarry. All modeling results were compared to the PM₁₀ NAAQS for the 24-hour averaging period. The objective of the NAAQS analysis is to demonstrate through air quality dispersion modeling that emissions from the proposed Granite Construction quarry do not cause or contribute to an exceedance of the 24-hour PM₁₀ NAAQS in ambient air. No nearby offsite area sources were included, as they were not required. Dispersion Modeling was conducted in accordance with R307-410-3 and 40 CFR Part 51, Appendix W Guideline on Air Quality Models.

Two models were created, in order to accurately determine the impact of two project Phases. Phase 1 represents the first two years of operation, as mining is initially established. Phase 1 assumes a lower level of activity than phase two, as discussed in section 3.1.1. Phase 2 represents the full intended activity level of the facility.

2.1 Model Selection

Near-field dispersion modeling was performed using the latest version of the Lakes MPI AERMOD modeling system, version 21112, which is an EPA approved, steady-state Gaussian mathematical plume model. AERMOD is composed of three (3) modular components: AERMAP, the terrain preprocessor that characterizes the terrain and generates source and receptor elevations and surrounding hill height scales; AERMET, the meteorological preprocessor that processes raw surface and upper air meteorological observations for use by AERMOD; and AERMOD, the control module and modeling processor.

2.2 Meteorological Data

Meteorological data used in the dispersion modeling analysis consists of five (5) individual years (2008 through 2012) of National Weather Service (NWS) surface data collected at the Salt Lake City International Airport in Utah that were then concatenated into a five (5)-year file. Concurrent upper air observations used in AERMET were obtained from the Salt Lake City Airport.

2.3 Terrain Elevations

Terrain elevations for the modeled sources and receptors were determined using National Elevation Dataset (NED), the primary elevation data product of the United States Geologic Survey (USGS).¹ NED data are distributed in geographic coordinates in units of decimal degrees, and in conformance with the World Geodesic System of 1984 (WGS84). The NED used for this analysis is at a resolution of 1 arc-second (about 30 meter) grid spacing. Elevations were converted from the NED grid spacing to the air dispersion model receptor spacing using the Lakes MPI AERMOD preprocessor, for AERMAP version 18081. All data obtained from the NED files was checked for completeness and spot-checked for accuracy.

2.4 Receptors

A modeling domain was developed for the near-field analyses to encompass the location of the maximum modeled concentration from the facility sources.

¹ NED data obtained at <https://viewer.nationalmap.gov/basic/#/> downloaded December 23, 2020.

The model receptors consisted of boundary receptors and grid based receptors with the following spacing:

- ▶ The ambient air boundary was placed at the facility property line and consists of discrete receptors placed at 10-meter intervals.
- ▶ The fine grid contains 441 receptors with less than 200 meter vertical and horizontal spacing.
- ▶ The course grid contains 441 receptors with less than 1km spacing.

Figure 2-1 and Figure 2-2 below show the receptors modeled, including off-site grid receptors (yellow crosses), and property boundary receptors (green crosses). The black outline represents the facility boundary.

Figure 2-1. Receptor Locations, Overview

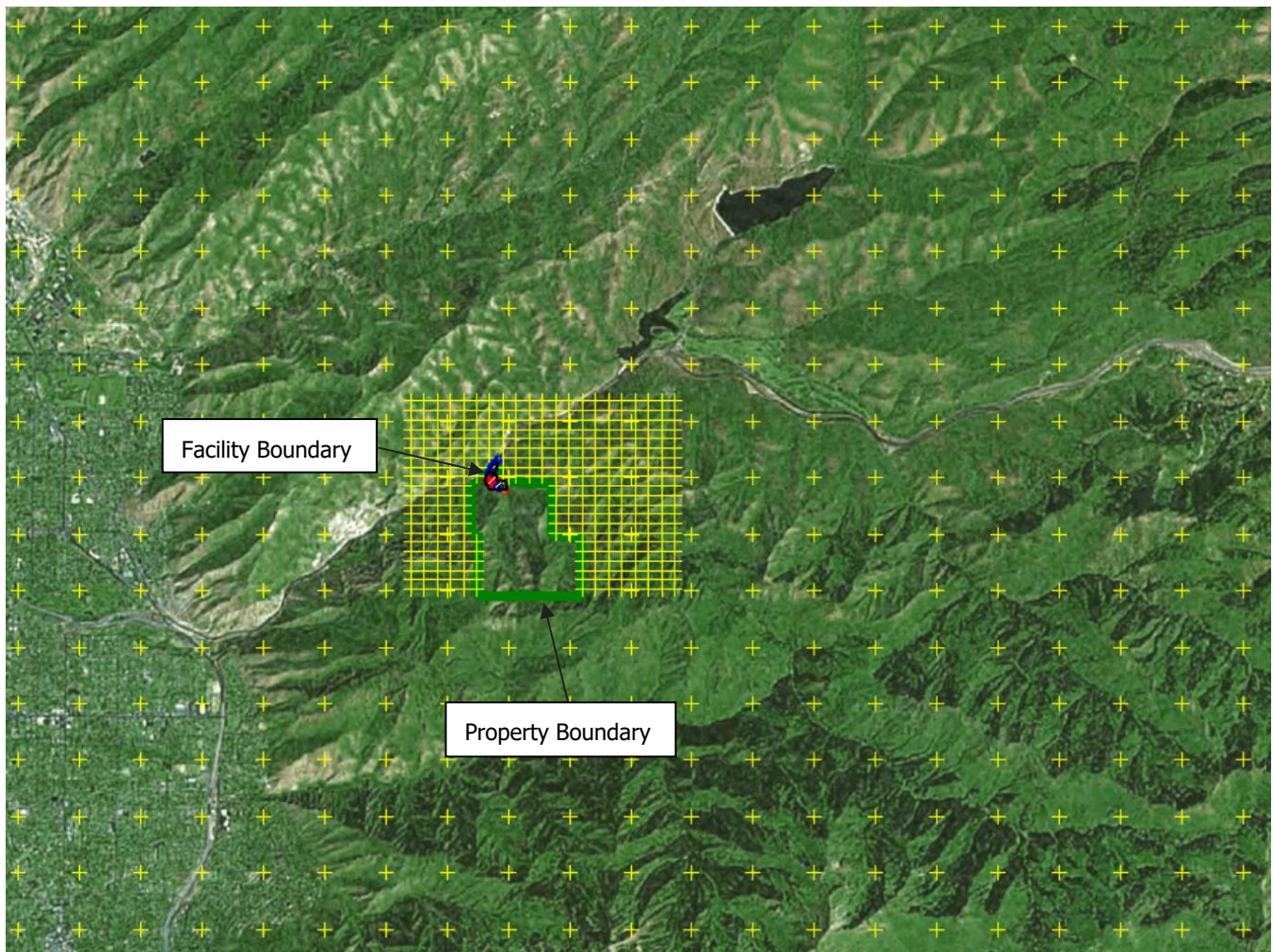
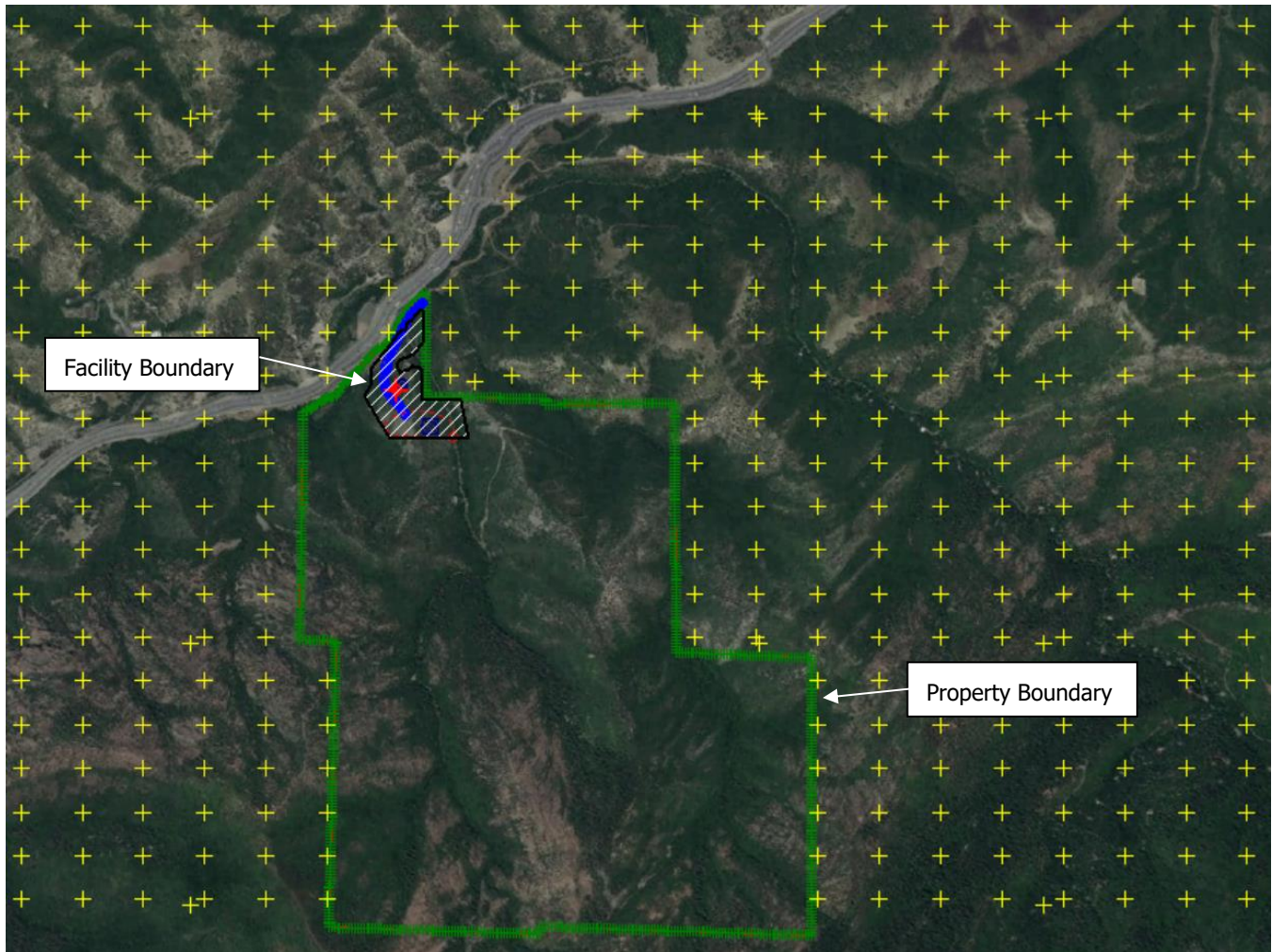


Figure 2-2. Receptor Locations, Facility



2.5 UTM Coordinate System

In all modeling analyses input and output data files, the locations of emission sources, structures, and receptors were represented in the Universal Transverse Mercator (UTM) coordinate system and based on WGS 84. In this grid, the world is divided into 60 north-south zones, each covering a strip 6° wide in longitude. The general area of the site is located in UTM Zone 12N. In each UTM Zone, coordinates are measured north and east in meters. The northing values are measured continuously from zero at the equator, in a northerly direction. A central meridian through the middle of each 6° zone is assigned an easting value of 500,000 meters. Grid values to the east of this central meridian, as in the case of the site, are greater than 500,000 meters.

2.6 Building Downwash

The emission sources were evaluated in terms of their proximity to nearby structures. The proposed quarry facility is free of structures that would have the potential to induce downwash. A downwash evaluation is not included in this analysis.

3. PM₁₀ SOURCE PARAMETERS AND EMISSION RATES

3.1 PM₁₀ Volume Source Parameters and Emission Rates

Aggregate crushing and screening, material handling, raw material and product loading and stockpiling, truck export, and blasting were all modeled as volume sources. All volume sources require release height, initial lateral dimension, initial vertical dimension, and emission rate as inputs to characterize the sources. Emissions sources outlined below represent mobile equipment or activities that take place in changing locations. Source objects were therefore intentionally designed to encompass areas where emissions are expected to originate. All inputs for volume source parameters can be seen in the included project modeling files and emissions calculations (Notice of Intent Application Appendix B). Two Phases were modeled, with Phase 1 representing initial mining activity and Phase 2 representing activity once the plant is located in the mining area. Source object locations are detailed in Figures 3-1 and 3-2 for project Phases 1 and 2 respectively.

Figure 3-1 Phase 1 Model Source Object Locations

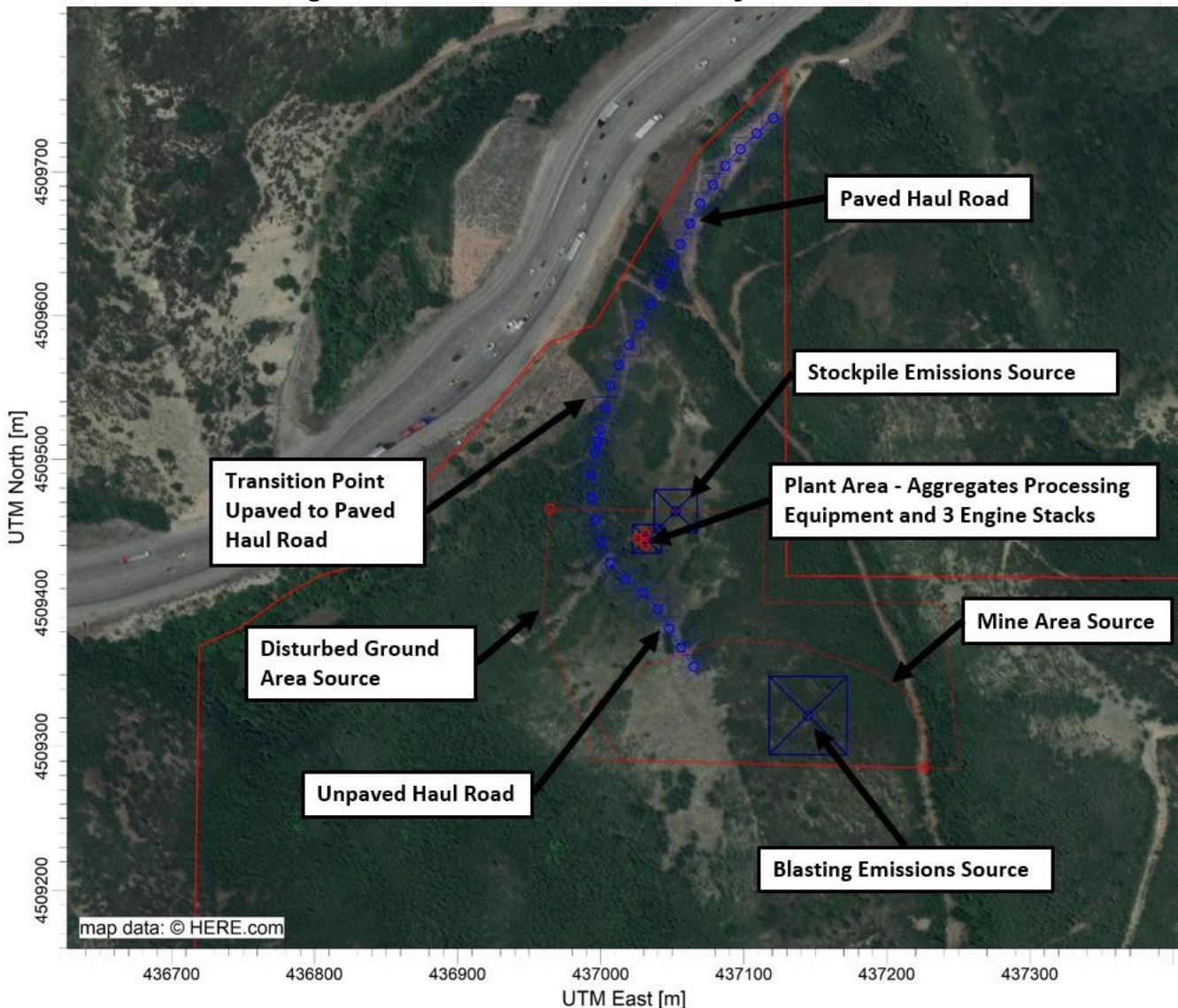
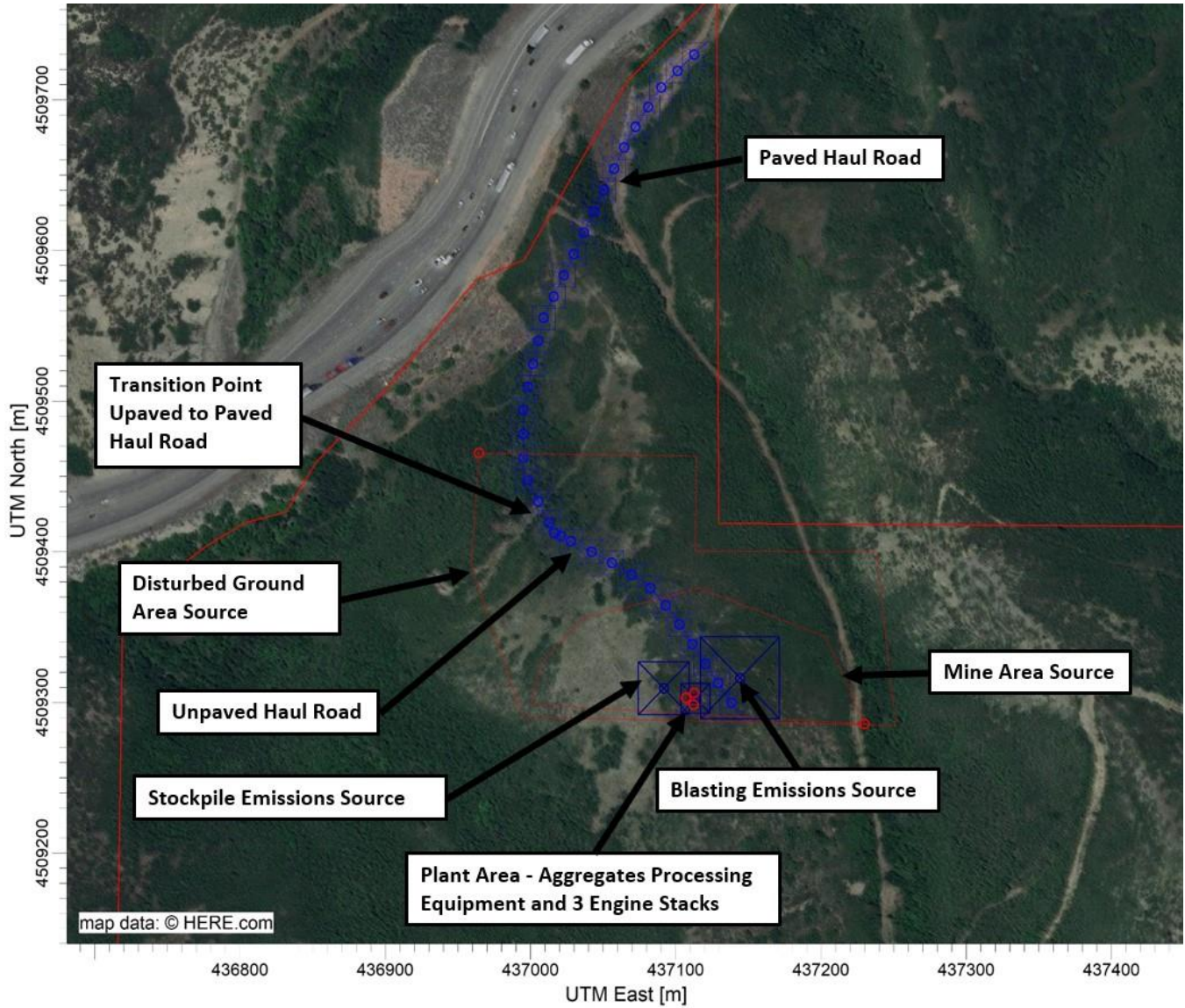


Figure 3-2. Phase 2 Model Source Object Locations



3.1.1 Aggregate Material Handling Modeling Parameters and Emission Rates

The emissions from screening, crushing and associated material transfers were modeled as various volume sources and based on the estimated dimensions of equipment. Emissions calculations and modeling analysis were conducted assuming a 1,000,000 tons per year (tpy) annual throughput, and an hourly throughput of 225 tons per hour (tph). The plant was assumed to operate approximately 19 hours per day. It was assumed that the facility operated and exported material 24 hours per day, with a daily maximum throughput of 6,480 tons exported.

The models include six (6) trips per hour for 24 hours per day for truck loading and hauling. The Unpaved haul path on the facility was assumed to have a round trip length of 0.22 miles. Phase 1 was modeled assuming a paved haul truck route round trip distance of 0.33 miles, and Phase 2 was modeled assuming a paved haul truck route round trip distance of 0.46 miles.

Modeling parameters for all fugitive material handling emission and emission rates can be found in the Project modeling files and emissions calculations (Notice of Intent Application Appendix B).

3.1.2 Stockpile Emissions

Emissions from stockpiling were modeled as volume sources. Emissions source parameters were based on the total amount of materials handled per day, and estimated assuming 2 yards of material per ton. For example, in Phase 1 approximately 1,500 yards of material will be handled per day (active stockpile emissions). Modeling stockpiles as rectangular prisms 3 meters in height, this would result in a square area with a side length of approximately 22 meters. 30 meters was therefore chosen as the side length for the stockpile model object to account for the settling of material and roadways within the stockpile area.

3.1.3 Haul Road Modeling Parameters and Emission Rates

The proposed facility will include paved road on which on-road and off-road trucks travel to transport aggregates. The Lakes AERMOD haul road parameter tool was used to estimate plume height from the road based emissions sources.

The adjusted road width, release height and emission rates are required volume source inputs for the road. The release height was half the top of the plume height, and the plume height was defined as 1.7 times the vehicle height.² Trucks were modeled applying a vehicle height of 3.0 m. The road width was assigned a value of 6.1 meters.

Applying the adjusted vehicle width and adjacent option, several volume sources were generated which include the emission rate evenly divided between each volume source of the specified road. The initial lateral dimension, initial vertical dimension, and release height for each volume source within the haul road were all identical.

² Haul Road Workgroup Final Report Submission to EPA-OAQPS Memo by Tyler Fox on March 2, 2012.

Truck traffic at the proposed Facility will consist of onsite off-road trucks transporting materials to the processing area, and on-road trucks retrieving and hauling processed aggregate off site, as well as hauling raw materials on site. There are two (2) primary haul roads:

1. A Two Way Paved road, that enters the facility, which has a round trip length of 0.33 miles during Phase 1 and 0.46 miles during Phase 2.
2. A Two Way Unpaved Road, which passes through stockpile areas and other facility operations, which has a round trip length of 0.22 miles during Phase 1 and Phase 2.

Haul road modeling parameters and emissions rates can be found in the project modeling files and emissions calculations (Notice of Intent Application Appendix B).

3.1.4 Blasting

The Facility mining operations consist of drilling holes for packing explosives in and then blasting those explosives to loosen the material to be handled by bulldozers and front-end loaders. Blasting operations are characterized by the following in the modeling:

- ▶ Blasting operations are limited to between 10:00 am and 2:00 pm daily.
- ▶ No more than 7,890 ft² of surface area may be blasted on any one day.

The blasting plume height and width were originally based on the U.S. EPA Open Burn/Open Detonation Dispersion Model (OBODM). OBODM was applied to the designed blasting at the proposed Facility and calculated a plume width of 54.36m and height of 27.2 meters at maximum temperature and minimum pressure, which was used in the model. OBODM outputs for minimum temperature and maximum pressure were determined to be functionally equivalent in regard to model outcome.

3.2 PM₁₀ Area Source Parameters and Emission Rates

Drilling, bulldozing, and wind erosion/disturbed ground emissions were modeled using area sources. All inputs for area source parameters can be seen in the project modeling files which are submitted to UDAQ under separate cover.

3.2.1 Drilling and Dozing Modeling Parameters

Dozing and drilling emissions were modeled within the same "MINE" area source.

Drilling takes place throughout the quarry area. Bulldozer operations occur intermittently throughout the site, however, their primary purpose is to move material from the blast area to the crushing and processing area. As such, bulldozer operations have been modeled within the Mine area source in the location of primary operations. Because the equipment to be used is mobile, the Mine area source is intended to represent the area in which the equipment would be used. The bulldozer modeling parameters and emission rates are detailed in the emissions calculations (Notice of Intent Application Appendix B).

3.2.2 Disturbed Areas and Wind Erosion

Fugitive dust emissions from wind erosion were determined based on a disturbed ground area of 10 acres. Both Phase 1 and Phase 2 disturbed ground emissions were modeled using a ~10 acre polygon area source labeled "DG" in the AERMOD model. Because quarrying operations will take place throughout the facility, the source is intended to represent the overall area in which disturbed ground emissions will take place.

3.3 PM₁₀ Point Source Parameters and Emission Rates

Generators used to power crushing and screening operations were modeled as point sources.

3.3.1 Combustion Equipment Modeling Parameters and Emission Rates

The modeled point sources of combustion at the facility consist of the following equipment and their release parameters.

Table 3-1. Release Parameters for Point Sources

Model Phase	Engine Use	Engine HP	UTM X (m)	UTM Y (m)	Elevation (m)	Stack Height (m)	Stack Temp. (K)	Stack Velocity (m/s)	Stack Diameter (m)
1	Jaw Crusher	260	437025	4509445	1,676	3	739	90.8	0.127
1	Screen	175	437031	4509448	1,678	3	739	90.8	0.127
1	Cone Crusher	440	437030	4509440	1,681	3	739	90.8	0.127
2	Jaw Crusher	260	437094	4509274	1,777	3	739	90.8	0.127
2	Screen	175	437100	4509278	1,777	3	739	90.8	0.127
2	Cone Crusher	440	437099	4509270	1,779	3	739	90.8	0.127

The emissions calculations and modeling analysis were conducted assuming 14 hours of operation per day during Phase 1 and 16 hours of operation per day during Phase 2. Engines were modeled with a load factor of 0.74 during operation.

Modeling parameters for all point sources and emission rates can be found in the included project Modeling files and Emissions Calculations which are submitted to UDAQ under separate cover.

4. PM₁₀ MODELING ANALYSIS

The modeling analysis predicts ambient concentrations of PM₁₀ due to emissions from the proposed facility and surrounding co-contributing sources. The modeling output includes tabulated modeling results as compared to the PM₁₀ 24-hour NAAQS.

4.1 Background PM₁₀ Concentrations

Background concentrations for PM₁₀ for the proposed facility were developed utilizing a data analysis of ambient monitoring data from the Hawthorne station. The background data consists of monthly tabulated maximums of 24-hour PM₁₀ for the years of 2019-2021. The background concentration used for the modeling was 70 (µg/m³) which is based on data presented in Table 4-1 below.

Table 4-1. Background Concentrations (µg/m³)

Year	2019	2020	2021	Monthly
Month	Max	Max	Max	Value
1	69	61	48	61
2	48	42	69	69
3	30	64	62	64
4	21	21	30	30
5	25	56	68	68
6	33	40	60	60
7	34	30	49	49
8	37	77	94	77
9	31	114	58	58
10	67	65	23	67
11	50	54	43	54
12	62	63	70	70

Days Data	339	353	352
Recovery	92.9%	96.7%	96.4%
Max Value	69	114	94

High wind days not used:

Date	PM10	Max mph	Ave mph
3/6/2021	73	15.2	5.72
4/5/2021	94	13.4	5.43
5/7/2021	77	13.3	7.4

Notes regarding the preparation of background for modeling

Use of second high if there is >90% collection of daily PM10 sampling, otherwise the highest for that year is used. The fourth highest value can be used as a single value if all 3 years have daily sampling >90% complete.

Wildfire smoke is included unless it is considered an exceptional event.

Data on high wind days are removed, and not used for background under light to moderate winds.

Monthly values can remove the highest value and use the second highest value in each year if daily sampling is >90% complete.

4.2 Modeled PM₁₀ Concentration

The resulting concentration of PM₁₀ from this air dispersion modeling analysis was compared against the PM₁₀ NAAQS to demonstrate that emissions from the proposed Facility do not cause or contribute to an exceedance of the PM₁₀ NAAQS. The primary NAAQS is the maximum concentration ceiling, measured in terms of total concentration of a pollutant in the atmosphere, which define the “level of air quality which the U.S. EPA judges are necessary, with an adequate margin of safety, to protect the public health.”³ The 24-hour PM₁₀ NAAQS requires the 6th highest concentration over the five (5) modeled years be compared to the standard. The modeled concentration was added to the monthly background concentrations for comparison to the NAAQS. This calculation was completed within the AERMOD modeling system.

4.3 24-Hour PM₁₀ NAAQS Analysis Results

A NAAQS analysis considers the impact from all sources at the proposed Facility and background concentrations to yield a total concentration which is then compared to the NAAQS which, for 24-hour PM₁₀, is 150 µg/m³. The blasting scenario was determined to be below the 24-hour PM₁₀ NAAQS for ongoing operations and blasting emissions beginning after 10:00 am and concluding by 2:00 pm, once daily at the worst-case impact hour.

Table 4-2 presents the model-predicted concentrations from the proposed Facility and background concentration, and 24-hour PM₁₀ NAAQS comparison.

Table 4-2. PM₁₀ 24-Hour NAAQS Compliance Demonstration

Operating Scenario	Pollutant	Averaging Period	Model-Predicted H6H Concentration Including Background	NAAQS	Percent of NAAQS
			(µg/m ³)	(µg/m ³)	(%)
Phase I Operations	PM ₁₀	24-hour	148.7	150	99
Phase II Operations	PM ₁₀	24-hour	147.4	150	98

In addition to this report, the AERMOD Input and Output files have been provided for UDAQ’s review.

³ 40 CFR 50.2(b).

Appendix D. TANKS EMISSIONS

Fixed-Roof Tank Emissions - Monthly

Based on AP-42 (Nov 2019), Section 7.1.3.1.

Tool Last Updated: Mar 2021

[Click Here to Go Back to Cover Page](#)

Reporting Year	2022
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Tank Reference Parameters				
Parameter Title	Notes	Parameter Symbol	Units	Value
Tank ID	Enter only Tank ID in this tab.			Diesel
Tank Name	Text Description of Tank Name	TK _{name}		Diesel Tank
Actual Location		Loc _{Act}		Salt Lake City
Location for Calculation Purposes		Loc _{Calc}		Salt Lake City, UT
Tank/Roof Type		TK _{roof}		HFR
Normal Capacity		Cap	gal	10,528
Diameter		D	ft	8
Shell Height or Length		H _S	ft	28
Effective Diameter	= ((H _S * D) / (π/4)) ^{0.5} {horiz. tanks only, Eqn. 1-14} = D {all other fixed roof tanks}	D _E	ft	16.9
Effective Height	= π/4 * D {horiz. tanks only, Eqn. 1-15} = H _S - 1 {all other fixed roof tanks}	H _E	ft	6.3
External Shell Color		SC _{ext}		White
External Shell Paint Condition		PC _{Shell}		Average
Roof Color/Shade		RC		White
Roof Paint Condition		PC _{Roof}		Average
Tank Shell Solar Absorbance		α _{Shell}		0.25
Tank Roof Paint Solar Absorbance		α _{Roof}		0.25
Average Tank Paint Solar Absorbance	= (α _{Shell} + α _{Roof}) / 2 {Note A, Table 7.1-6}	α _{Tot}		0.25
Ideal Gas Constant,		R	psia ft ³ / lbmole °R	10.731
Ambient Pressure		P _A	psia	12.620
Used Hs/D Type	Depending on Hs/D type, different equations are used for ten			Default
Hs/D		Hs/D		--

Tank Reference Parameters				
Parameter Title	Notes	Parameter Symbol	Units	Value
Underground Tank?		UT		Aboveground
Heated Tank?		HT		No
Liquid Bulk Temperature	Heated Tanks Only	T _B	Degrees F	--
Insulated Tank?		IT		No
Pressure Tank?		PT		Atmospheric
Normal Operating Pressure	Only for Pressure Tanks	P _I	psig	0.0
Vapor Tight Roof		VTR		No
Control Device	= None {No vapor tight roof} = User Specified	CD		None
Control Device Efficiency		CD _{Eff}	%	--
Minimum Liquid Height	Update it to equal to the effective tank height	H _{Ln}	ft	0
Maximum Liquid Height	Update it to equal to the effective tank height	H _{LX}	ft	7.5
Dome Tank Roof Height	= R _R - (R _R ² - (D / 2) ²) ^{0.5} {dome roof with D = 2 * R _S , Eqn. 1-20}	H _R	ft	--
Roof Outage	= S _R * (D / 2) / 3 {cone roof, Eqn. 1-17 and 1-18}	H _{RO}	ft	--
Breather Vent Pressure Setting	= 0 {no vapor tight roof, Eqn. 1-9 Note 3} = User Specified	P _{BP}	psig	0.00
Breather Vent Vacuum Setting		P _{BV}	psig	0.00
Breather Vent Pressure Setting Range	= 0 {No vapor tight roof} = P _{BP} - P _{BV} {Eqn. 1-10}	ΔP _B	psig	0.00
Dome Roof Radius	Dome Roofs Only = user input between 0.8 to 1.2 * D {AP-42 7.1-15}	R _R	ft	--
Cone Roof Slope	Cone Roofs Only Default = 0.0625 ft/ft	S _R	ft/ft	--
Tank Working Volume	= π/4 * D _E ² * (H _{LX} - H _{LN}) {Eqn. 1-37}	V _{LX}	ft ³	1,680
Days per Year	For leap years, days = 366	t _{yr}	days/yr	365

Emission Summary		
Annual Throughput, gal	600,000	Annual Emissions 0.01
Annual Turnovers	47.74	
Month	Emissions, lbs	Emissions, tons
Jan	0.35	0.000
Feb	0.39	0.000
Mar	0.61	0.000
Apr	0.75	0.000
May	1.10	0.001
Jun	1.45	0.001
Jul	1.99	0.001
Aug	1.84	0.001
Sep	1.26	0.001
Oct	0.81	0.000
Nov	0.49	0.000
Dec	0.35	0.000

Note: The emission summary table is pulled into the Tank Emissions tab using cell references A31:B42. The emission summary must remain at this cell reference to function properly.