



Company Name:	Luck Stone Corporation - Luck Edgefield	Permit Writer:	Mareesa J Singleton
Agency Air Number:	0980-0052	Date:	October 4, 2024
Permit Number:	CP-50000187 v1.0		

DATE APPLICATION RECEIVED: March 27, 2024

PROJECT DESCRIPTION:

Synthetic minor construction permit application for the installation of equipment associated with a new greenfield granite quarry and a 500 tons per hour (tph) processing plant. The processing plant will consist of crushers, screens, conveyors, a bin, and a wash plant. The facility will also install a 550-kW diesel-fired generator. The generator is portable, non-road engine and will not remain at a location for more than twelve (12) consecutive month and therefore is an exempt source.

FACILITY DESCRIPTION: (SIC CODE: 1423/NAICS CODE: 212313): Granite quarry and processing plant.

OPERATING PERMIT INCORPORATION

New Facility: The facility will be granted coverage under the General Conditional Major Operating Permit for Nonmetallic Mineral Processing Plants with the request for an operating permit.

EMISSIONS

- Drilling and truck loading
 - Uncontrolled and controlled PM, PM₁₀, and PM_{2.5} emissions from wet drilling and truck loading at the mine are calculated based on the U.S. Environmental Protection Agency (EPA) Compilation of Air Pollutant Emission Factors, AP-42, Section 11.19.2, Table 11.19.2-2, 1995 edition, August 2004 update.
 - AP-42, Table 11.19.2-2 only provides truck loading emission factors for PM₁₀ emissions. PM emissions for the truck loading within the quarry were conservatively assumed to be three times PM₁₀ emissions from truck unloading of fragmented stone.
 - AP-42 Section 11.19.2 does not provide PM_{2.5} emission factors for wet drilling or truck loading. In cases where PM_{2.5} emission factors were not determined, the PM₁₀ emission factor was used and adjusted based on the particle size multiplier (0.053 - PM_{2.5}/0.35 - PM₁₀) contained in AP-42 Section 13.2.4 for Aggregate Handling and Storage Piles.

- Material Handling
 - Uncontrolled and controlled PM, PM₁₀, and PM_{2.5} emissions from material handling are calculated based on the EPA Compilation of Air Pollutant Emission Factors, AP-42, Section 11.19.2, Table 11.19.2-2, 1995 edition, August 2004 update. Controlled emissions are based on using wet suppression.
 - AP-42, Table 11.19.2-2 only provides truck loading emission factors for PM₁₀ emissions. PM emissions for the final product truck loading were conservatively assumed to be three times PM₁₀ emissions. In cases where PM_{2.5} emission factors were not determined, the PM₁₀ emission factor was used and adjusted based on the particle size multiplier (0.053- PM_{2.5}/0.35- PM₁₀) contained in AP-42 Section 13.2.4 for Aggregate Handling and Storage Piles.
 - No PM emissions data was provided in AP-42 for primary or secondary crushing. Therefore, it was conservatively assumed that primary and secondary crushing emissions were equal to tertiary crushing.

- Material Storage
 - Emission factors of 3.2 lbs PM per day per acre, 1.6 lbs PM₁₀ per day per acre, and 0.23 lbs PM_{2.5} per day per acre were used for storage pile wind erosion calculations. The PM emission factor is based on



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an equation in the EPA Document 450/2-92-004 "Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures," Equation 2-12. Based on the referenced document, the fraction of PM which is PM₁₀ is estimated at 0.5. To obtain the PM_{2.5} emission factors, the PM emission factor was used and adjusted based on the particle size multiplier (0.053 PM_{2.5} / 0.74-PM) contained in AP-42 Section 13.2.4 for Aggregate Handling and Storage Piles.

- The wind erosion equation used to calculate the PM emission factor is shown below:

$$E = 1.7 \times (s/1.5) \times [(365-p)/235] \times (f/15)$$
 Where, E = lbs PM per day per acre
 s = 3.9 silt content % (from AP-42 5th Edition Table 13.2.4-1 for various limestone products)
 p = 110 number of days with ≥ 0.01 inches of precipitation per year (from AP-42 Figure 13.2.2-1)
 f=10 percentage of time that the unobstructed wind speed exceeds 5.4 m/s at the mean pile height (engineering estimate)
- Transportation (Haul and Customer Roads)
 - Uncontrolled emissions from the haul roads and customer roads are based on the AP-42, Section 13.2.2 (Unpaved Roads), Equations 1a and 2, for vehicles traveling on unpaved surfaces at industrial sites. The equation is provided below, and the variables are defined:

$$E_{ext} = [k (s/12)^a \times (w/3)^b] (365-P/365)$$
 Where: E_{ext} = annual or other long-term average emission factor in the same units as k, a, and b = constants (Table 13.2.2-2)
 s = Surface material silt content (%) - (Table 13.2.2-1, mean = 8.3 haul roads and 10 for customer roads)
 W = average weight of vehicles (tons)
 P = number of days with at least 0.01 inches of precipitation during the averaging period. (P = 109 days/yr as taken from <https://www.currentresults.com/Weather/South-Carolina/average-yearly-precipitation.php#c> for Columbia, South Carolina)
 - Controlled emissions from the haul roads and customer roads assume a control efficiency of 90% for keeping the roads wet suppressed during transportation activities.

PROJECT EMISSIONS						
Pollutant	Uncontrolled		Controlled		PTE	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
PM	99.38	435.27	9.29	40.70	83.394	<250.0
PM ₁₀	35.31	154.66	3.35	14.67	30.50	<100.0
PM _{2.5}	5.11	22.39	0.49	2.15	4.618	22.23

*Includes emissions from fugitive sources. ** Does not include emissions from fugitive sources since the facility is not one of the 28 source categories required to include fugitive emissions in its potential to emit.



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FACILITY WIDE EMISSIONS			
Pollutant	Uncontrolled	Controlled	PTE
	TPY	TPY	TPY
PM	435.27	40.70	<250.0
PM ₁₀	154.66	14.67	<100.0
PM _{2.5}	22.39	2.15	22.23

SPECIAL CONDITIONS, MONITORING, LIMITS: Facility production is limited to a maximum production rate of 4,380,000 tons per year to demonstrate compliance with PSD avoidance limit of less than 250.0 tons per year for PM emissions and the Title V avoidance limit of less than 100.0 tons per year of PM₁₀. The calculation demonstrating compliance is below.

$$PM = P \times EF \times N$$

Where:

PM is the PM emissions in tons per year (500 tons/hr x 8760 hr/yr = 4,380,000 ton/yr)

P is the total actual amount of material processed in tons per year

EF is the PM controlled emission factor in pounds per tons (worst case is for screening)

N is the number of sources onsite

$$PM \left(\frac{\text{ton}}{\text{year}} \right) = 4,380,000 \frac{\text{ton}}{\text{year}} \times 2.2 \times 10^{-3} \frac{\text{lbs}}{\text{ton}} \times 31 \times \frac{1 \text{ton}}{2000 \text{ lbs}}$$

$$PM_{10} \left(\frac{\text{ton}}{\text{year}} \right) = 149.36 \text{ which is less than the PSD avoidance limit of 250.0 tons per year}$$

and

$$PM_{10} = P \times EF \times N$$

Where:

PM₁₀ is the PM₁₀ emissions in tons per year (500 tons/hr x 8760 hr/yr = 4,380,000 ton/yr)

P is the total actual amount of material processed in tons per year

EF is the PM₁₀ controlled emission factor in pounds per tons (worst case is for screening)

N is the number of sources onsite

$$PM_{10} \left(\frac{\text{ton}}{\text{year}} \right) = 4,380,000 \frac{\text{ton}}{\text{year}} \times 7.4 \times 10^{-4} \frac{\text{lbs}}{\text{ton}} \times 31 \times \frac{1 \text{ton}}{2000 \text{ lbs}}$$

$$PM_{10} \left(\frac{\text{ton}}{\text{year}} \right) = 50.24 \text{ which is less than the Title V avoidance limit of 100.0 tons per year}$$

SOURCE TEST REQUIREMENTS: In accordance with 40 CFR 60 Subpart OOO



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REGULATIONS

Applicable - Section II(E) (Synthetic Minor) – The facility has uncontrolled PM emissions above the major source threshold of 250.0 tons per year (tpy) for PSD and PM₁₀ emissions above the Title V major source threshold of 100.0 tpy. The facility is requesting a PSD avoidance limit of less than 250.0 tpy of PM and a Title V avoidance limit of less than 100.0 tpy of PM₁₀.

Synthetic Minor Limits					
Permit ID	Equipment ID	Permit Issue Date	Pollutant	Emission Limit (TPY)	Explanation
CP-50000117 v1.0	Facility Wide	This Permit	PM	Less than 250.0	PSD Avoidance
CP-50000117 v1.0	Facility Wide	This Permit	PM ₁₀	Less than 100.0	Title V Avoidance

Not Applicable - Standard No. 1 (Emissions from Fuel Burning Operations) – The facility does not have any fuel burning operations.

Not Applicable - Standard No. 3 (state only) (Waste Combustion and Reduction) – The facility does not conduct waste combustion or reduction.

Applicable - Standard No. 4 (Emissions from Process Industries) Section VIII:

Process	Max Process Weight Rate (tons/hr)	PM Allowable at Max (lb/hr)	Uncontrolled Emissions PM (lb/hr)	Controlled Emissions PM (lb/hr)	Monitoring
Aggregate Processing	500	68.96	83.39	7.144	Operation of the wet suppression systems in accordance with this permit and applicable regulations

Section IX: The sources are subject to 20% opacity limit.

Section X: The facility is subject to this Section for all non-enclosed operations and is required to develop and implement a Department approved facility wide fugitive dust control plan.

Not Applicable - Standard No. 5 (Volatile Organic Compounds) – The facility was not in existence until after July 1, 1979, and July 1, 1980, and does not have any permitted VOC emissions.

Not Applicable - Standard No. 5.2 (Control of Oxides of Nitrogen (NOx)) - The portable generator is not a stationary source.



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Not Applicable - Standard No. 7 (Prevention of Significant Deterioration) - - The facility is not one of the 28 specifically listed source categories. Therefore, its major source threshold is 250.0 tpy. The facility has uncontrolled PM emissions above this threshold, but the facility is requesting a PSD avoidance limit of less than 250.0 tpy of PM.

PSD Limits					
Permit ID	Equipment ID	Permit Issue Date	Pollutant	Emission Limit (TPY)	Explanation
CP-50000117 v1.0	Facility Wide	This Permit	PM	Less than 250.0	PSD Avoidance

Applicable - 61-62.6 (Control of Fugitive Particulate Matter) – The facility is subject and shall develop and implement a Department approved facility wide fugitive dust control plan.

40 CFR 60 and 61-62.60 (New Source Performance Standards (NSPS))

Applicable - Subpart OOO (Standards of Performance for Nonmetallic Mineral Processing Plants): The crushers, screens, conveyors, and bin are subject.

Not Applicable – Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines): The facility will have a 550-kW diesel engine. It will not be subject to this Subpart because the source is a non-road, non-stationary engine.

40 CFR 61 and 61-62.61 (National Emission Standards for Hazardous Air Pollutants (NESHAP))

Not Applicable - This facility does not emit the applicable pollutants from processes subject to this standard.

40 CFR 63 and 61-62.63 (National Emission Standards for Hazardous Air Pollutants (NESHAP) for Source Categories)

Not Applicable - Subpart ZZZZ (National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines): The facility will have a 550-kW diesel engine. It will not be subject to this Subpart because the source is a non-road, non-stationary engine.

Not Applicable - 61-62.68 (Chemical Accident Prevention Provisions) - The facility does not store or use chemicals subject to 112(r) above the threshold quantities described by the regulation.

Not Applicable - 40 CFR 64 (Compliance Assurance Monitoring) - The facility is not a Title V facility.

AMBIENT AIR STANDARDS REVIEW

Applicable - Standard No. 2 (Ambient Air Quality Standards) - PM₁₀ and PM_{2.5} emissions from each individual emission point are below 1.14 lb/hr and are exempt from modeling. However, since PM₁₀ emissions from the group of mining and material handling sources (emission points V1 through V34) are greater than the exemption rate, the facility



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chose to model them with AERMOD. The Bureau also modeled PM_{2.5} from this same group of sources. The facility has demonstrated compliance with standard. See modeling summary dated April 26, 2024, for more details.

Not Applicable - Standard No. 8 (state only) (Toxic Air Pollutants) – No Standard No. 8 pollutants emitted from permitted sources. See modeling summary dated April 26, 2024, for more details.

PERIODIC MONITORING

ID	Regulatory Requirement	Measured Parameter	Required Monitoring Frequency	Reporting Frequency	Monitoring Basis/ Justification
West Suppression System	Discharge Nozzle	Water Flow to Discharge Nozzle	Monthly*	None (Onsite)	40 CFR 60.674(b) 40 CFR 60.676(b)(1)

*Condition B.11 of the permit is more stringent and requires weekly monitoring.

PUBLIC NOTICE

This construction permit(s) has undergone a 30-day public notice period, in accordance with SC Regulation 61-62.1, Section II(N) and SC Regulation 61-62.1, Section II(E), to establish a PSD avoidance limit of less than 250.0 tons per year of PM and a Title V avoidance limit of less than 100.0 tons per year of PM₁₀. The comment period was open from July 3, 2024 to August 23, 2024 and the draft permit was placed on the BAQ website during that time period. No comments on the air permit were received during the comment period.

CHANGES FOLLOWING PUBLIC NOTICE PERIOD

- Permit:
 - Condition B.3: Changed the requirements to calculate, record, and report PM 12 month rolling sums emissions to recording and reporting production records.
 - Condition B.4: Removed the condition since the facility will not be calculating, recording, and reporting PM₁₀ 12 month rolling sums emissions and will instead record and report production records in accordance with condition B.3.

- Statement of Basis: Added Special Conditions, Monitoring, Limits Section with the calculation demonstrating compliance with the PSD and Title V avoidance limits using the production rate.

SUMMARY AND CONCLUSIONS

It has been determined that this source, if operated in accordance with the submitted application, will meet all applicable requirements and emission standards.